

***Kniphofia albomontana* (Asphodelaceae): A new caulescent species from South Africa**

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Kniphofia albomontana Baijnath, a new species from the Drakensberg region and vicinity is described. It is a caulescent species which, according to Codd's groupings within the genus, belongs to Section 5. The new species is related to *K. caulescens* Bak., and *K. northiae* Bak., and differs from these by displaying fibrous leaf bases, larger bracts and capsules, and a lesser exertion of filaments. Some of these diagnostic characters are illustrated and discussed. Also, in conclusion, the main differences between the three caulescent species are tabulated.

Kniphofia albomontana Baijnath, 'n nuwe soort vanaf die Drakensberg-gebied en omgewing word beskryf. Dit is 'n kortstammige soort wat in Seksie 5 van Codd se indeling van die genus behoort. Die nuwe soort is verwant aan *K. caulescens* Bak., en *K. northiae* Bak., en verskil van daardie soorte deur veselagtige blaarbasisse, groter skutblare en kapsules en minder-uitstaande helmgrade. Sommige van hierdie diagnostiese kenmerke word geïllustreer en bespreek. Die hoof verskille tussen die drie kortstammige soorte word ten slotte in tabelvorm voorsien.

Keywords: Asphodelaceae, *Kniphofia*, taxonomy

***Kniphofia albomontana* Baijnath, sp. nov.**

K. albomontana Baijnath species nova *K. caulescens* Bak. et *K. northiae* Bak. affinis sed ab utraque basi foliorum fibrosa, bracteis capsulisque maioribus et filamentis minus exsertis, etiam a *K. northiae* foliis in forma 'V', et a *K. caulescens* foliis rigidis differt.

TYPUS: South Africa, Natal, Thabamhlope, Farm 'Marshlands' about 10 km from Thabamhlope Police Station, 21.2.1986, Baijnath 1876 (UDW, holotypus; K, MO, PRE, isotypii.)

Kniphofia albomontana Baijnath sp. nov., related to *K. caulescens* Bak., and *K. northiae* Bak., but differs from both by exhibiting fibrous leaf bases, larger bracts and capsules, and a lesser exertion of filaments; in addition, differs from *K. northiae* by exhibiting V-shaped leaves and from *K. caulescens* in having stiff leaves.

Plants rhizomatous with 3–4 upright branched stems. Stems up to 250 mm tall, 40–60 mm in diameter, clothed with a tight mat of roots and leaf fibres (Figure 1). *Roots* 3–5 mm wide, appearing in circles around the stem, tough, with old roots usually persistent. *Leaves* forming a rosette at the apex of the stem, V-shaped, stiff, recurved, 600–1000 mm long, 22–36 mm wide at midway (c. 45 mm wide towards base), margin and upper half of keel markedly toothed. *Peduncle* upright, generally overtopping leaves (Figure 2), 800–1200 mm tall, 18–25 mm in diameter, with several large sterile bracts below the inflorescence. *Inflorescence* (Figure 3) ovoid, rather dense, 110–220 mm long, 50–70 mm wide, buds brownish-purple, purple-orange or purple-brown, erect to subspreading; flowers pale yellow-green, yellow-green with hints of orange, or greenish-yellow, central veins greenish. *Bracts* lanceolate to narrowly lanceolate, 18–22 mm long, 4–6 mm wide, almost acute or slightly obtuse at apex, margin minutely eroso-denticulate especially along upper half and apex. *Pedicels* 1,4–2,2 mm long, 0,7–1,1 mm wide at anthesis, increasing to 5,2–6,9 mm long and 1,9–2,9 mm wide at fruiting. *Perianth* funnel-shaped, slightly curved, 30–35 mm long, c. 3,1 mm wide near the base, constricted above ovary to c. 1,9 mm wide, broadening to c. 5 mm at the widest point just above midway; lobes ovate, directed towards inside, outer slightly longer than inner, 2,5–3 mm long, 2–2,5 mm wide, margin minutely eroso-dentate. *Stamens* apparently of two lengths, longer series with anthers exerted by c. 5 mm, shorter series exerted by c. 2 mm; filament c.0,5 mm in diameter; anther c.2 mm long, c.1 mm wide. *Ovary* ellipsoid, c. 3 mm long, c. 2 mm wide; style

c. 44 mm long, 0,5 mm wide, exerted beyond anther, at stigma receptivity exerted by c.10(–15) mm, tapering close to the apex; stigma small, papillate. *Capsule* (Figure 4) ovoid, 11,8–13,6 mm long, 8,5–10,4 mm wide, erect, outer surface with transverse ribs (probably through drying); seeds deltoid, 2–3 mm wide, 1–14 per loculus, margins winged, surface with yellow powdery coating.

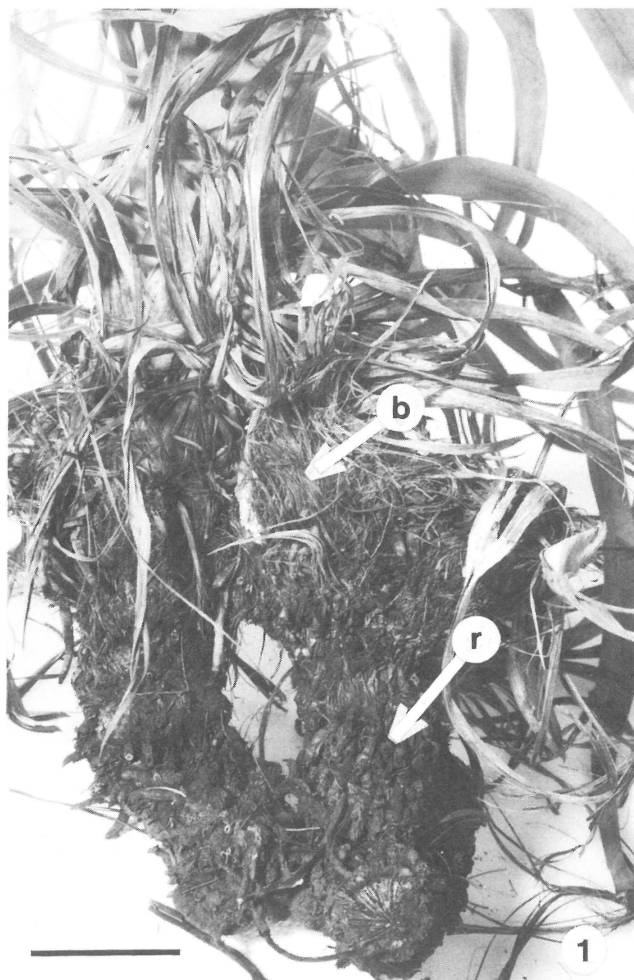


Figure 1 Basal portion of *K. albomontana* illustrating branched stem with remains of roots (arrow r) and fibrous leafy bases (arrow b). Scale bar = 50 mm.



Figure 2 Whole plant of *K. albomontana* illustrating V-shaped leaf together with a separate infructescence showing upright capsules. Scale bar = 150 mm.

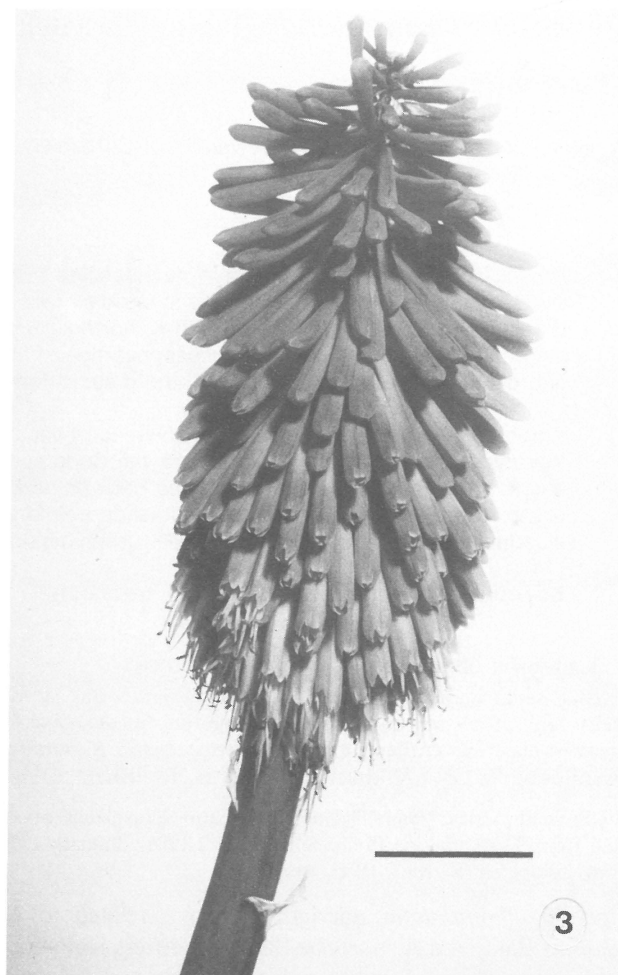


Figure 3 Inflorescence of *K. albomontana* with partly opened flowers illustrating exerted anthers and non-spreading perianth lobes. Scale bar = 15 mm.

Discussion

Two modern taxonomic treatments of the genus *Kniphofia* exist; one by Codd (1968) on the South African species and the other by Marais (1973) on the tropical species. In his account, Codd commented on two leaf forms in the caulescent species, *K. northiae*. The typical form characterized by crescentiform leaves is distributed in the eastern Cape, Transkei, Lesotho and the Drakensberg mountains. The second form with V-shaped leaves occurs in Lesotho and the Bergville and Estcourt districts.

In a study of the leaf anatomy of several species in the genus using both light and scanning electron microscopy, it was found that the leaf shape, surface ornamentation and internal structure of the two leaf forms were very distinctive (Bajjnath 1980). It was, therefore, suggested that the group with the V-shaped leaf form ought to be regarded as a separate entity. Having made these suggestions, nothing further was attempted until living plants could be located in the field. Further research has now indicated that the V-shaped leaf form of *K. northiae* is indeed a new species and that it is also closely related to *K. caulescens*. The epithet of this new species has been derived from a translation of the locality, 'Thabamhlope' which in the language of the Zulu people means 'white mountain'. In this paper no specimens besides the type will be cited because Codd has already examined and recorded all the material (Codd 1968) and will be referring to these again

in his treatment of the genus for the Flora of South Africa.

The population from which the type specimens were collected on the farm 'Marshlands', occupies an area about 50 m². The plants extend from a raised area next to the road towards a depression which adjoins cultivated ground. In the lower reaches, the soil is peat-like and in the upper regions towards the road, it is sandy with much organic material. From the present distribution of plants there, it is quite evident that this population of *K. albomontana* was much larger than at present and the remaining plants are constantly threatened by agriculture. The close distribution of specimens in this population reminds one of the gregarious nature of *K. caulescens*.

The habitat of the new species could be considered a mountain grassland seepage, but plants do extend into higher drier ground. Two solitary plants were also discovered in the vicinity, about 10 km away close to Thabamhlope Police Station on a partly shaded cool bank. It is quite probable that during the wet seasons, the lower parts of the type population would be inundated and the basal organs completely submerged.

Most of the attributes of leaves which are useful in demarcating species within the genus *Kniphofia* have been discussed by Codd. From my own work, three main categories of leaf shapes have been recognized and these include crescentiform, V-shaped and triangular. Within these categories it was possible to recognize individual species or species groups in

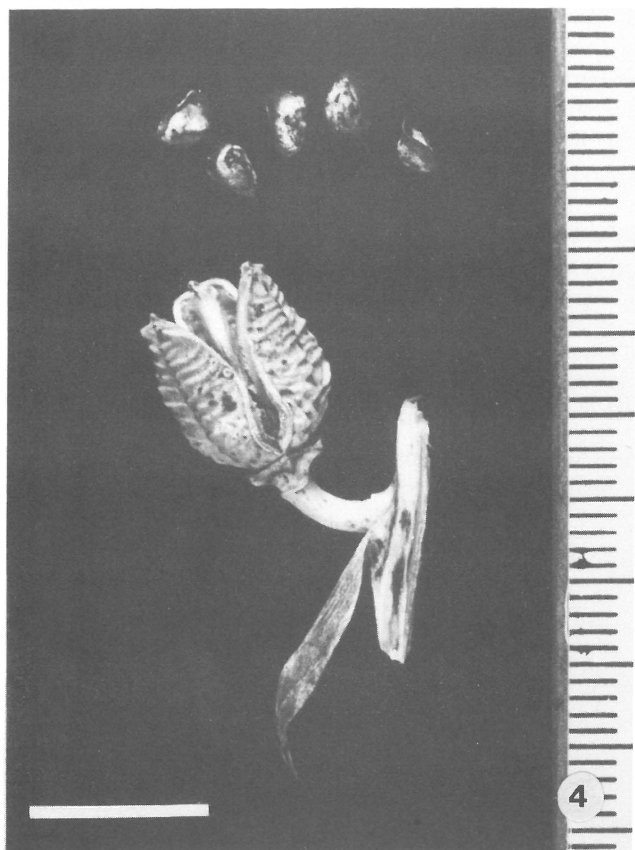


Figure 4 Close-up view of a capsule and seeds of *K. albomontana* illustrating lanceolate fertile bract, ribbed capsule surface and winged seeds with yellow powdery coating (white zones). Scale bar = 10 mm.

which the individuals may be totally unrelated. The outline of the leaf in *K. albomontana* is V-shaped and in *K. northiae* shallowly crescentiform. Leaves in *K. caulescens* are normally recorded as V-shaped, but plants raised at Kew from seeds collected in the wild exhibit both V-shaped and almost crescentiform adult leaves on the same plants. More field observations of *K. caulescens* would help to establish how widespread this variation may be. For comparisons to be valid it is necessary to make transverse sections at midway between the base and the apex of adult leaves. The results from juvenile leaves could be rather confusing. Plants of *K. northiae* in cultivation at the National Botanic Gardens in Pietermaritzburg with typical crescentiform adult leaves show distinctly

V-shaped or almost triangular juvenile leaves. Juvenile leaves of all three species in this group are similar. It would be interesting to compare the distribution of vascular bundles in juvenile and adult leaves.

The arrangement of leaves in all three species is similar except in *K. caulescens*, where several narrow new leaves appear as 3–5 separate clusters around the peduncle. Leaves are green in colour and in addition very glaucous in *K. caulescens*. Also, on senescing, the leaves in this species change to a purple colour. A study of all the herbarium specimens at PRE and K indicated that this coloration occurs in all the specimens of *K. caulescens*. In some instances, the whole plant turns purple on drying. There does not seem to be any evidence of this type of coloration in other members of the genus. An analysis of the compounds involved may prove to be of taxonomic interest.

Old leaves in all three species appear to be persistent to a certain degree. Often, these are either lost through further ageing or may persist for some time as sheathing bases. However, in *K. albomontana*, leaf bases are eventually reduced to fibres as illustrated (Figure 1, arrow b). It is quite easy to appreciate the type of leaf remains when the internal anatomy is examined. *K. northiae* has leathery leaves with no internal strengthening and this would probably also apply to *K. caulescens* where the leaf is soft and somewhat fleshy. The leaf in *K. albomontana* is stiff and the internal anatomy shows the abundant presence of strengthening tissue as has been illustrated (Baijnath 1980, recorded as V-shaped leaf form of *K. northiae*). This strengthening tissue would undoubtedly be responsible for the fibrous remains so characteristic of *K. albomontana*.

In the genus *Kniphofia* the flowering time of a particular species could be a useful guide to species recognition when combined with other characters. However, some species display very asynchronous flowering and this phenomenon has not been explained satisfactorily. *K. albomontana* flowers between January and March with a peak in February; *K. caulescens* flowers between October and April with a peak during February/March, and *K. northiae* flowers from September to March with two peaks, October and December. It is very evident that in the three caulescent species there is much overlap in flowering times. It would appear that only detailed field and glasshouse studies would be able to explain this flowering phenology.

It has been well documented that hybridization in *Kniphofia*

Table 1 Salient diagnostic features of *K. albomontana*, *K. caulescens* and *K. northiae*

	<i>K. albomontana</i>	<i>K. caulescens</i>	<i>K. northiae</i>
Leaf			
texture	stiff	almost fleshy	leathery
outline (t.s.)	V-shaped	V-shaped and almost crescentiform	crescentiform
basal remains	fibrous	sheathing	sheathing
colour on drying	straw	purple	straw
Bract			
1 × b (mm)	18–22 × 4–6	7–11 × 1,5–2	7–12 × 1,5–2
Pedicle length (mm)			
in flower	1,4–2,2	3–5	2,5–3
in fruit	5,2–6,9	5–7	7–10
Perianth length (mm)	30–35	22–24	22–32
Filament exertion (mm)	2–5	8–13	10–13
Capsule			
1 × b (mm)	11,8–13,6 × 8,5–10,4	5–6 × 4–5	7–10 × 5–8

occurs often in the field and, also, that it is possible to cross most species under controlled conditions. The ability of the three species in question to hybridize with one another is not known but since there is sufficient overlap in their ranges and also their flowering times, it would be necessary to investigate this possibility further.

The sets of characters exhibited by the three caulescent species are sufficiently distinct to maintain them as separate species. Some of these characters have been discussed adequately already and Table 1 shows the salient diagnostic features of the three species.

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