

HYACINTHACEAE

DRIMIA COOPERI IN KWAZULU-NATAL, AND THE ETHNOMEDICINAL TRADE

Drimia cooperi (Baker) Baker is currently regarded as being restricted to the Eastern Cape Province (Jessop 1977; Manning & Goldblatt 2006). Within this province, Jessop (1977) recorded it from only the Stutterheim and Butterworth Districts, but more recent collections (*Bester 1529* NH) extend its known range northwards to Maclear (Figure 19).

Following the appearance of bulbs of an unknown member of the Hyacinthaceae in late 2004 in the Warwick Triangle medicinal market in Durban, plants purchased were grown on to flowering and subsequently identified as *D. cooperi*. This collection of market-traded material (*N.R. Crouch 1038* NH) was sold under the isiZulu name *umahlokoloza*, and noted by the trader to have been harvested in the Eastern Cape, although further details on the locality were not forthcoming.

The bulbs of this species are distinguished from other Hyacinthaceae in trade on the basis of a combination of characters: their medium size (± 50 mm diameter), flesh-pink to salmon-orange colour, and loosely arranged scales (Figure 20A). The bulb scales are not thickly succulent and brittle, but rather of a tough fibrous yet semi-succulent nature. Among other Hyacinthaceae in trade in KwaZulu-Natal, the fibrous character of the bulb best approximates that of *Drimia altissima* (L.f.) Ker Gawl., although the tough scales are tightly packed in this latter species. Notably, the vernacular name *umahlokoloza* is also applied in Durban to *D. altissima* (*N.R. Crouch 792* NH). We have since observed *D. cooperi* in the Warwick Triangle market on two further occasions during infrequent visits, suggesting that this taxon is more numerous and possibly more widely distributed than indicated by herbarium vouchers. Its Red List assessment, based

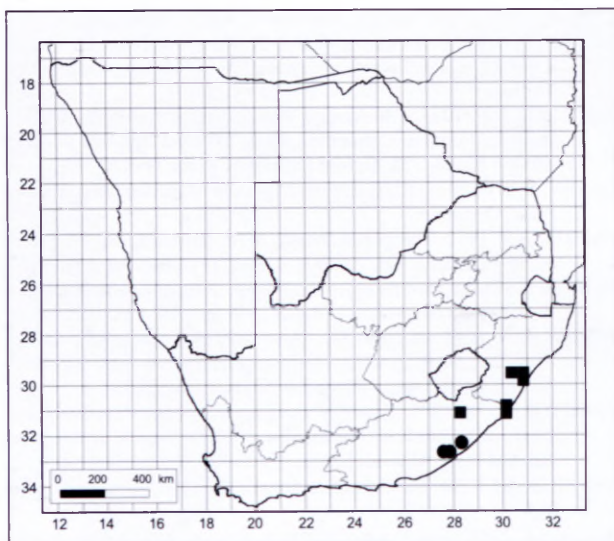


FIGURE 19.—Known distribution of *Drimia cooperi*, according to Jessop (1977), ●, with additional localities, ■, following a reassessment of herbarium materials.

on 2001 IUCN Red List criteria, is currently VU A2ad; C2a(i) (Williams & Crouch 2009). The rationale for this Vulnerable assessment is that the species is estimated to have experienced a decline of more than 30 % during the last 30 years, attributed to land transformation and medicinal plant harvesting. The extant subpopulations are fragmented and suspected to occur in fewer than 10 locations. Furthermore, the population size is estimated to be less than 10 000 mature individuals, and the number of mature individuals that have been recorded in a subpopulation is less than 100 (Williams & Crouch 2009).

In flower, *Drimia cooperi* produces inflorescences up to 600 mm tall, with flowers presented on pedicels no longer than 4 mm (Figure 20B). The perianths are shorter than 6 mm long. Plants bear 2–4 sublinear leaves, each up to 270 mm long and 13 mm broad. The species was considered by Jessop (1977) to occupy rather an isolated position in the genus, although it shows similarities in floral characteristics to *D. anomala* (Baker), another species with its primary distribution in the Eastern Cape, though typically in more arid situations. *Drimia anomala* is separated by its rigid, terete leaves, which are usually produced singly each season (Dyer 1951) and its shorter bracts up to 1 mm long, and longer pedicels, up to 13 mm (Jessop 1977). Although *D. delagoensis* (Baker) Jessop is keyed out by Jessop alongside *D. cooperi*, their distribution ranges do not overlap. *D. delagoensis* possesses predominantly epigeal bulbs of an olive-green and silvery brown colour, the scales of which are somewhat more succulent, and brittle rather than fibrous. The leaves are narrower too, thicker, and strongly channelled on the dorsal surface.

Subsequent examination of herbarium specimens at NH has revealed a flowering voucher (W.J. Lawson 584 NH) documenting the presence of *Drimia cooperi* in KwaZulu-Natal for more than half a century. Jessop, in revising *Drimia* and allied genera, evidently did not utilize NH collections and accordingly missed the significant collection by Lawson. Further NH accessions misidentified as *Urginea kniphofioides* Baker are here assigned to *D. cooperi*. Subsequent to Lawson's

gathering, an imperfect collection was made (E.J. Moll 1869 PRE) during August 1965 on the fringes of what was then the Oribi aerodrome in Pietermaritzburg. As only plants in bud were found and collected by Moll, this would account for reticence on the part of Jessop to identify this specimen as *D. cooperi*, thereby reflecting a significant range extension for the species.

A recent field trip (October 2008) to Pietermaritzburg surrounds to revisit the perimeter of Oribi Airport has revealed that this species is still to be found in grassland bordering the cordoned off area. The species is also extant within the Hesketh Conservation Area adjacent to the old Roy Hesketh racetrack in Hayfields, a 65 hectare site of grassland and savanna that since 1995 has been afforded some protection by the local municipality. At both sites, plants grow in shallow clay soils overlying Lower Ecca Shale in vegetation corresponding to Ngongoni Veld (Svs 4) (Rutherford *et al.* 2006). The hypogeal bulbs develop a 20–30 mm long neck that protrudes above the soil surface. Residual fibrous leaf bases persist to provide the bulb apex with protection from flames, and necks were observed to be intact following veld fires that occurred approximately one month prior to the site visits. Although flowering was observed on these occasions, the extent to which fire stimulates this process is presently unknown. The linear leaves of *D. cooperi* are partly synanthous, with a single inflorescence produced per bulb, and within a single subpopulation at Oribi in Pietermaritzburg, two floral colour forms are evident: tepal segments are either cream-coloured with green central stripes, or salmon-brown with brown stripes. Geophytes associated with *D. cooperi* at Oribi include *Cyrtanthus breviflorus* and *C. contractus* (Amaryllidaceae), *Ledebouria ovatifolia*, *Albuca virens*, and *Schizocarphus nervosus* (Hyacinthaceae). At the Hesketh site, *Albuca* sp. cf. *pachychlamys* Baker grows alongside *D. cooperi*. Small bulb clumps of up to six plants occur, indicating limited vegetative reproductive capacity.

Additional records from the Umtamvuna Nature Reserve in southern KwaZulu-Natal document the occurrence of *Drimia cooperi* in the intervening part of its range (Figure 19), and show that it occurs within at least this formally protected area.

Our investigation has revealed that plants growing in Pietermaritzburg, and those reputedly harvested in the Eastern Cape, differ in several respects from the ones described by Jessop (1977). Whereas Jessop (1977) described the bulb scales as more or less firmly arranged, we observed the scales to be loosely attached (Figure 20A), although we do not dismiss the possibility that this is turgor-related. Such is their looseness that *Drimia cooperi* bulbs readily disintegrate if cut tangentially in the course of preparing herbarium specimens. This phenomenon would account for the scale-depleted bulb specimen (H.G. Flanagan 1302 PRE), essentially the central core, that seemingly informed Jessop of bulb shape and dimensions. Given the difficulty of pressing these organs, most sheets of this species lack well-preserved bulbs. The largest field bulb measured 80 × 75 mm (excl. neck), as opposed to the length range of 25–50 mm recorded earlier (Jessop 1977). Such non-representative herbarium bulb vouchers and associated artifactual information (Baker 1897) were earlier noted by



FIGURE 20.—*Drimia cooperi*, N.R. Crouch 1180 (NH): A, bulb; B, median portion of inflorescence. Photographs: N.R. Crouch.

Dyer (1942) for *D. delagoensis*. As indicated above, the scales of *D. cooperi* were uniformly dark salmon-orange or flesh-coloured, rather than 'more or less white' as indicated by Jessop—a likely artifact of the preservation process. Perianth segments in the field were observed to spread, as anticipated by Jessop (1977), with margins distinctly rolled under (Figure 20B). The stability of this margin character has not been ascertained. Consideration of the holotype of *Urginea echinostachya* Baker has revealed this to be conspecific with *D. cooperi* rather than with *D. macrocentra* (Baker) Jessop as concluded by Jessop (1977). The type of *Urginea echinostachya* is of a plant with a peduncle substantially less stout at the base (± 4.5 mm diameter) than that of *D. macrocentra* (± 25 mm diameter). The raceme of the *U. echinostachya* type is less dense and the flowers have shorter perianths.

***Drimia cooperi* (Baker) Baker** in *Flora capensis* 6: 443 (1897). *Ornithogalum cooperi* Baker: 284 (1873). Type: Cape [Eastern Cape], 'ad oram orientalis', *Barber s.n.* (TCD, lecto., designated by Jessop: 287 (1977); -K, photo.).

Urginea echinostachya Baker (1897), syn. nov. Type: Natal [KwaZulu-Natal], Inanda, *J.M. Wood* 276 (K, holo.!; NH, iso.).

Additional specimens examined

KWAZULU-NATAL.—2930 (Pietermaritzburg): Oribi, Pietermaritzburg, (-CB), 25-09-1957, *W.J. Lawson* 584 (NH); Oribi aerodrome, Pietermaritzburg, grassland, 730 m, (-CB), 17-08-1965, *E.J. Moll* 1869 (PRE); Hesketh Conservation Area, top of Hayfields, Pietermaritzburg.

To west of old Hesketh racing track, 700 m, S 29° 36' 59.68", E 30° 25' 30.73", (-CB), 12-10-2008, *N.R. Crouch* 1179 (NH); grassland adjacent to Oribi Airport alongside railway line near Oribi Village, Pietermaritzburg, 710 m, S 29° 38' 36.64", E 30° 24' 7.57", (-CB), 12-10-2008, *N.R. Crouch* 1180 (NH); Inanda, (-DB), October, *J.M. Wood* 276 (NH); New Germany, mountain ridge, along M19, ± 700 m from Otto Volek Drive towards Blair Atholl, 300 m, (-DD), 17-09-1998, *Y. Singh* 402 (NH). 3030 (Port Shepstone): Umtamvuna Forestry Reserve, grassveld, (-CC), 22-09-1966, *R.G. Strey* 6967 (NH). 3130 (Port Edward): Umtamvuna Nature Reserve, Pont Outpost, grassland, (-AA), 11-09-1983, *A. Abbott* 1313 (NH), 300 m, (-AA), 01-09-1994, *A. Abbott* 6268 (NH, PRE); Umtamvuna Nature Reserve, Clearwater, grassland, 240 m, (-AA), 14-08-1985, *A. Abbott* 2704 (NH). Without locality: purchased at Warwick Triangle medicinal plant market, Durban, 01-12-2004, *N.R. Crouch* 1038 (NH); 23-01-2008, *V.J. Brueton* 33 (J).

EASTERN CAPE.—3128 (Umtata): Maclear, Farm Sunny Slopes, 1 300 m, S 31° 6' 54", E 28° 24' 29", (-AB), 06-11-93, *S.P. Bester* 1529 (NH). 3227 (Stutterheim): near Komgha, grassy hills, 605 m, (-DB), December 1892, *H.G. Flanagan* 1302 (PRE).

ACKNOWLEDGEMENTS

The Curators of BOL, GRA, J, NBG, NH, NU, PRE and SAM kindly facilitated use of their collections. The staff of the Mary Gunn Library facilitated access to literature, and Dr H.F. Glen is thanked for helpful discussions.

REFERENCES

- BAKER, J.G. 1873. Revision of the genera and species of Scilleae and Chlorogaleae. *Journal of the Linnean Society, Botany* 13: 209–292.
BAKER, J.G. 1897. Order CXXXVII. Liliaceae. *Flora capensis* 6: 253–528. Reeve, London.

- DYER, R.A. 1942. *Urginea delagoensis*. *The Flowering Plants of South Africa* 22: t. 858.
- DYER, R.A. 1951. *Drimia anomala*. *The Flowering Plants of Africa* 28: t. 1117.
- JESSOP, J.P. 1977. Studies in the bulbous Liliaceae in South Africa: 7. The taxonomy of *Drimia* and certain allied genera. *Journal of South African Botany* 43: 265–319.
- MANNING, J.C. & GOLDBLATT, P. 2006. Hyacinthaceae. In G. Germishuizen, N.L. Meyer, Y. Steenkamp & M. Keith, *A checklist of South African plants*. Southern African Botanical Diversity Network Report No. 41: 952–971. SABONET, Pretoria.
- RUTHERFORD, M.C., MUCINA, L., LÖTTER, M.C., BREDEKAMP, G.J., SMIT, J.H.L., SCOTT-SCHAW, C.R., HOARE, D.B., GOODMAN, P.S., BEZUIDENHOUT, H., SCOTT, L., ELLIS, F., POWRIE, L.W., SIEBERT, F., MOSTERT, T.H., HENNING, B.J., VENTER, C.E., CAMP, K.G.T., SIEBERT, S.J., MATTHEWS, W.S., BURROWS, J.E., DOBSON, L., VAN ROOYEN, N., SCHMIDT, E., WINTER, P.J.D., DU PREEZ, J., WARD, R.A., WILLIAMSON, S. & HURTER, P.J.H. 2006. Savanna Biome. In L. Mucina & M.C. Rutherford, *The vegetation of South Africa, Lesotho and Swaziland*. *Strelitzia* 19: 438–538.
- WILLIAMS, V.L. & CROUCH, N.R. 2009. *Drimia cooperi*. In D. Raimondo, L. Von Staden, W. Foden, J.E. Victor, N.A. Helme, R.C. Turner, D.A. Kamundi & P.A. Manyama, *Red List of South African Plants*. *Strelitzia* 25. South African National Biodiversity Institute, Pretoria.
- N.R. CROUCH, *¹, V.L. WILLIAMS, **², T.J. EDWARDS ***³ and V.J. BRUETON **⁴
-
- * Ethnobotany Unit, South African National Biodiversity Institute, P.O. Box 52099, 4007 Berea Road, Durban / School of Chemistry, University of KwaZulu-Natal, 4041 Durban.
- ** School of Animal, Plant and Environmental Sciences (APES), University of the Witwatersrand, Private Bag 3, 2050 Wits, Johannesburg.
- *** Formerly: School of Biological and Conservation Sciences, University of KwaZulu-Natal, Private Bag X01, 3209 Scottsville, Pietermaritzburg. Present address: Botany Department, La Trobe University, 3086 Bundoora Victoria, Australia.
- MS. received: 2009-06-04.