

## The rediscovery of *Ornithogalum britteniae* (Hyacinthaceae) and an amendment to the description

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*Ornithogalum britteniae* F.M. Leight. ex Oberm., described in 1978 and until now only known from the type specimen of uncertain origin, was recollected near Grahamstown in 2001 enabling the description and illustration of leaf surface, pollen, capsule, seed and habitat for the first time. The conservation status is

assessed following the current IUCN red data criteria and a status of Vulnerable (VU A3cD2) is applied. The habitat, an ecotone between Succulent Thicket and Nama-Karoo, is discussed in light of the high succulent plant diversity and several rare and localised endemic species found there.

### Introduction

*Ornithogalum britteniae* F.M. Leight. ex Oberm., described in 1978 by Amelia Obermeyer (1978), is founded on a single herbarium sheet (*L. L. Britten s.n. sub BOL23902 holo.*) comprising three fertile plants together with Francis Leighton's descriptive hand-written notes. It is evident from the specimen that the three plants were collected by Lillian Britten in 1946, in the Grahamstown District (the exact locality is not known), and sent to Leighton at the Bolus Herbarium in Cape Town who grew them and prepared the type specimen a year later when flowers were produced. Several questions arise from an examination of the specimen. Why did Leighton not ask Britten, who lectured at Rhodes University's Botany Department at the time, for more detailed locality information when she had no doubt that the plant was distinct? Why did she not attempt to obtain fruiting material before pressing all the bulbs — immediately on flowering? Why does Obermeyer state that the type specimen consists of two bulbs when there are clearly three? One could speculate that perhaps Britten received the plants from a third party and did not know the exact locality herself; perhaps Leighton attempted to fertilise the flowers but was unsuccessful; perhaps Obermeyer believed the third bulb to be a vegetative offshoot of one of the larger bulbs. Whatever the explanations the fact remains that this species was only known from a single (incomplete) specimen of uncertain origin at the time of its description.

In her revision of the genus Obermeyer (1978) remarks on *O. britteniae*: 'A unique species because of its xerophytic distichous leaves with fimbriate margins. The raceme and flowers are typical of *Ornithogalum*, and it is placed near the *O. juncifolium* group of species, because

of its primitive flowers. One could speculate that a common ancestor of the tribe *Aloineae* might have looked somewhat similar to this species; it could possibly be a relic.' Furthermore, in a synopsis of taxonomic characters, she adds: 'A most unusual species, unfortunately known only from one gathering, is *O. britteniae* from the eastern Cape. The 4–7 xerophytic, hard and thick leaves are distichous and somewhat resemble those of some *Gasteria* species. The leaves appear to be permanent and not deciduous. The flowers conform to the subgenus *Aspasia*, the *O. juncifolium* group of species. One could speculate: does it represent an ancestral form of the tribe *Aloineae*?'

Fifty years after its discovery Müller-Doblies and Müller-Doblies (1996) note that the species is still only known from Britten's type and add that according to her cousin, Miss Grace Britten, it is possible that she brought the plant from near Oudtshoorn. It is not known why this speculative locality was introduced as the type specimen clearly gives Grahamstown–Albany Division, as the locality. Müller-Doblies and Müller-Doblies (1996) provide no additional descriptive data. In 2001 four plants of *O. britteniae* were rediscovered ±12km west of Grahamstown on Table Farm enabling the description of leaf surface, pollen, capsule, seed and habitat for the first time.

### Material and Methods

Material was examined and measurements taken using a light microscope. Habitat slides were taken with a SLR camera and scanned for printing. Leaf epidermis, pollen and seeds were examined with a JEOL–JSM 840 scanning electron microscope.

### Amendment to the description

Obermeyer's (1978) description is only illustrated by means of a photograph of the type specimen. The plant in habitat, marginal cilia, inflorescence and perianth are therefore illustrated in more detail for clarity (Figure 1, 2c, 3a, 3b). Only additional information not previously provided by Obermeyer (1978) is discussed here and it is therefore also necessary to refer to the original description.

To the naked eye the leaf epidermal surface appears smooth and minutely white-dotted excepting for three or four pale green lines, representing the vascular bundles, radiating from the leaf apex down the length of the leaf. Two of these lines run submarginally along the whole length of the leaf (Figure 2c). SEM photographs reveal that the leaf surface is deeply pitted by sunken stomata and the epidermal cells are raised and arranged in parallel ridges (Figure 2b).

The pollen of *O. britteniae* is monosulcate with foveolate exine, 0.06–0.07mm x 0.02–0.02mm, and is yellow in colour (Figure 2a).

The capsule is ellipsoid, 3-locular, 4.5–5.0mm x 3.0–3.4mm diam., leathery, pale golden brown in colour. Loculicidal dehiscence is incomplete from the apices, thereafter the tips spread outwards and the capsule appears ± urceolate. The capsule remains enclosed within the persistent dry, papery perianth segments (Figure 3c–d). Following Obermeyer (1978) the persistent perianth segments enclosing the capsule are typical of the subgenus *Aspasia*.

Seeds are ± tetrahedrally angled, 1.2–1.4mm x 0.7–1.0mm, glossy, black, with deeply sinuate cell walls (Figure 4a–c). The unusual seed surface sculpture is not described by Obermeyer (1978) in her discussion on the taxonomic value of seed characters.

The three cultivated plants comprising the type specimen (*Britten sub BOL23902*) are not entirely representative of the species in its natural habitat. Plants in habitat (*Dold 4458*) are shorter (15–40mm), the more numerous leaves (5–9) are less slender (10–40mm x 6–12mm) and the inflores-

cence is less exserted (up to 120mm). The species is nevertheless unmistakable. Obermeyer (1978) is correct in suggesting that the leaves are persistent. In 20 months one plant lost only a single outer leaf and a single new leaf grew from the centre of the plant. The flowers open at midday, close at nightfall and are slightly fragrant. Plants are single, scattered and rare, being difficult to find under the protection of low growing karroid shrubs.



Figure 1: *Ornithogalum britteniae* (Dold 4458) in habitat

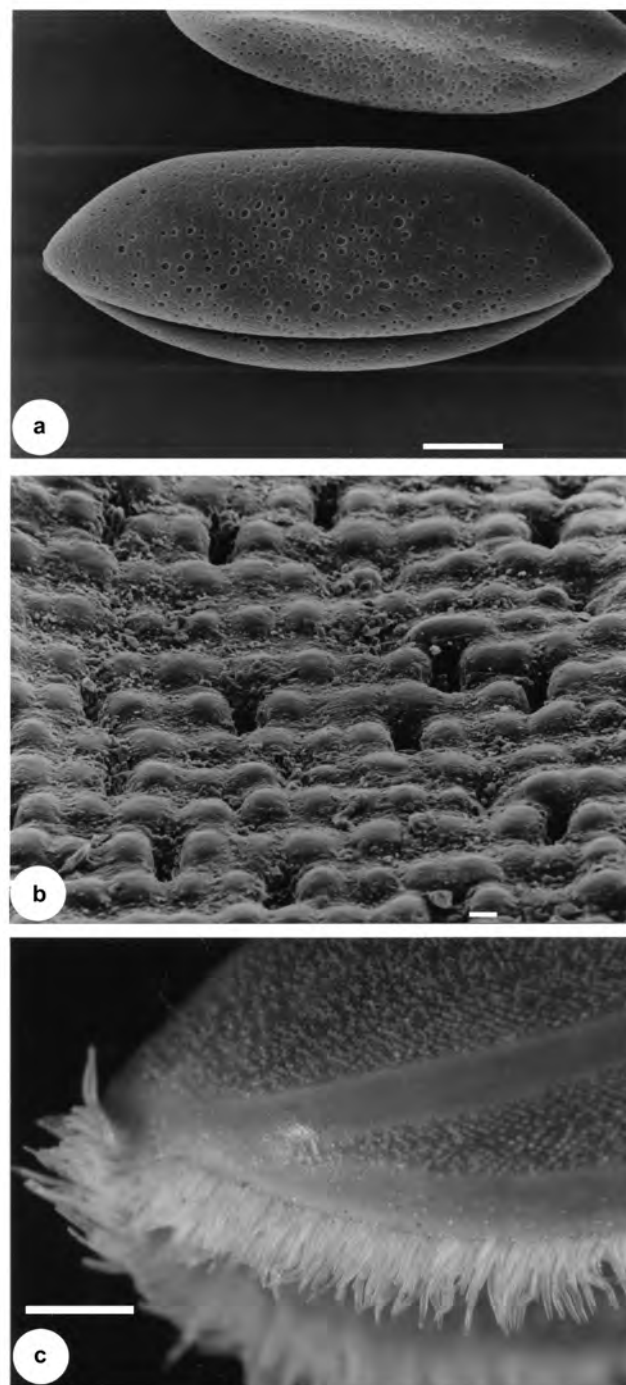
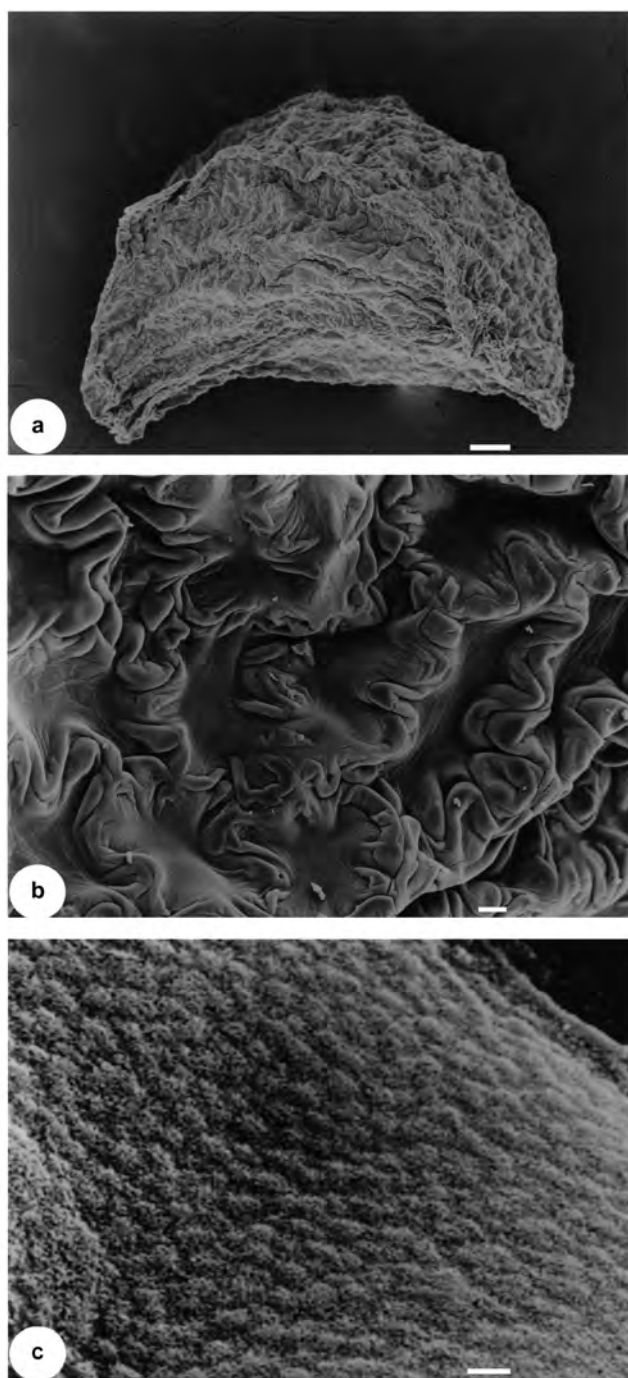


Figure 2: *Ornithogalum britteniae* (Dold 4458): (a) pollen, (b) leaf epidermis, (c) leaf marginal cilia. Scale bars a and b = 10µm; c = 1mm



**Figure 3:** *Ornithogalum britteniae* (Dold 4458): (a) inflorescence, (b) perianth, (c) capsule, (d) capsule with persistent perianth lobes removed. Scale bars a = 5mm; b–d = 1mm



**Figure 4:** *Ornithogalum britteniae* (Dold 4458): (a) seed, (b–c) seed surface. Scale bars a = 100µm; b = 10µm; c = 1µm

#### **Distribution and ecology**

The only known locality of *Ornithogalum britteniae* is Table Farm, 12km west of Grahamstown (33°10'50"S, 26°25'15"E), at an altitude of 550m, with an average annual rainfall of 389mm (R White, pers. comm., Table Farm, Grahamstown 2002). The vegetation type is classified as Eastern Mixed Nama-Karoo by Hoffman (1996), which was previously known as False Karroid Broken Veld (Acocks

1988). Dominant species are *Aristida congesta* Roem. and Schult., *Felicia muricata* (Thunb.) Nees, *Merxmüllera disticha* (Nees) Conert, *Nenax microphylla* (Sond.) Salter, *Pentzia globosa* Less. and *Tragus koelerioides* Aschers. Succulent species include *Corpuscularia lehmannii* (Eckl. and Zeyh.) Schwantes, *Euphorbia meloformis* Ait., *E. gorgonis* Berger, *Senecio radicans* (L. f.) Sch. Bip. and *Trichodiadema bulbosum* (Haw.) Schwantes. The geological formation underlying Table Farm is Grahamstown Silcrete that comprises silcrete remnants overlying kaolinised bedrock (Johnson and Le Roux 1994). The soil is consequently very shallow and nutrient poor.

In his description of *Ornithogalum unifolium* R.A. Dyer. (= *O. dyeri* Poelln.), from precisely the same locality as *O. britteniae* on Table Farm, Dyer (1930) notes that the species is associated with many other miniature species of specialised growth form, such as *Eriospermum dregei* Schönl., *Schizobasis* cf. *macowanii* Baker and *Bulbine mesembryanthemoides* Haw. — in reality an undescribed species (H Baijnath pers. comm.) referred to as *Bulbine 'inaei'* by Vanderplank (1998). Dyer's (1930) observation is supported by the recent discovery of *Brachystelma luteum* R.G. Peckover (Peckover 1992), a dwarf variant of *Orthopterum waltoniae* L. Bolus (Hammer 2001) and *Ornithogalum perdurans* A.P. Dold and S.A. Hammer (Dold and Hammer 2003) from the same locality. This proliferation of endemic succulent species on Table Farm is found on the ecotone between Succulent Thicket in the east and Nama-Karoo in the west and deserves further investigation. Dyer (1930), however, did not collect or record *Ornithogalum britteniae* despite its close proximity to *O. unifolium*, most likely due to its cryptic habit and evident rarity, nor did he find (or recognise) *O. perdurans*.

#### **Conservation status**

Regarding the conservation status of *O. britteniae*, Müller-Doblies and Müller-Doblies (1996) note that Hilton-Taylor (1996) did not assess this species and therefore, based on Hilton-Taylor's (1996) criteria, assigned it a Red Data status of Rare. The current Southern African Plant Red Data List (Victor 2002) does not include this species and therefore, based on the new IUCN categories (IUCN 2001), it is clear that the status of Vulnerable (VU A3c D2) must be applied.

#### **Specimens examined**

EASTERN CAPE.—3326 (Grahamstown): precise locality unknown. 09–12–1946, *Britten* sub BOL23902 (PRE photo.); Table Farm, Cradock Road, ±12km west of Grahamstown (–BC), 590 m, 08/06/2001, Dold 4458 (GRA).

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#### **References**

- Acocks JPH (1988) Veld types of South Africa (3<sup>rd</sup> edn). *Memoirs of the Botanical Survey of South Africa* 57: 67–71
- Dold AP, Hammer SA (2003) A new species of *Ornithogalum* from the Eastern Cape, South Africa. *Bothalia* 33: 8–11

- Dyer RA (1930) New species of *Ornithogalum* and *Albuca* from Albany Division. Records of the Albany Museum **4**: 111
- Hammer S (2001) Rustles of spring. *Mesemb Study Group Bulletin* **16**: 31
- Hilton-Taylor C (1996) *Red Data List of southern African plants. Strelitzia* **4**: 8, 23. ISBN 1-874907-29-3
- Hoffman T (1996) Eastern Mixed Nama Karoo. In: Low AB, Rebelo JE (eds) *Vegetation of South Africa, Lesotho and Swaziland*. Department of Environmental Affairs and Tourism, Pretoria, pp 55. ISBN 0-621-17316-9
- IUCN (2001) IUCN Red List Categories and Criteria: version 3.1. IUCN Species Survival Commission, Gland, Switzerland and Cambridge, UK. ii + 30pp. ISBN 2-8317-0633-5
- Johnson MR, Le Roux FG (1994) The geology of the Grahamstown area; Explanation of sheet 3326, Scale 1:250 000. Council for Geosciences, Geological Survey of South Africa, pp 18-20. ISBN 0-621-16032-6
- Müller-Doblies U, Müller-Doblies D (1996) Revisionula incompleta *Ornithogalorum Austro-Africanorum* (Hyacinthaceae). *Feddes Repertorium* **107**: 361-548
- Obermeyer AA (1978) *Ornithogalum*: a revision of the southern African species. *Bothalia* **13**: 323-376
- Peckover R (1992) A new species of *Brachystelma* from the Grahamstown area. *Aloe* **29**: 66
- Vanderplank HJ (1998) *Wildflowers of the Port Elizabeth Area: Swartkops to Sundays River*. Bluecliff Publishing, Hunters Retreat, Port Elizabeth pp 14-15. ISBN 0-620-22162-3
- Victor JE (2002) South Africa. In: Golding JS (ed) *Southern African Plant Red Data Lists. Southern African Botanical Diversity Network Report* **14**: 93-120. SABONET, Pretoria. ISBN 1-919795-64-2