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Disa staerkeriana (Orchidaceae): a new species from Mpumalanga, South Africa

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Abstract

A new orchid species, *Disa staerkeriana* is described from the Hartebeesvlakte in the Mpumalanga Province of South Africa. It is a member of *Disa* section *Stenocarpa* and is affiliated to *D. amoena* and *D. montana*. An updated artificial key to *Disa* section *Stenocarpa* is provided.

Introduction

The orchid genus *Disa* Bergius (1767: 348) (Disinae, Orchideae, Orchidoideae) currently consists of 184 species (Govaerts 2014). It is largely endemic to continental Africa but extends to Madagascar (five species), Réunion (one species) and the Arabian Peninsula (one species). In South Africa, 143 species occur of which 128 are endemic to the country and 88 are endemic to the Cape Floristic Region, its centre of diversity (Galley *et al*. 2007). Following a molecular phylogenetic analysis (Bytebier *et al*. 2007a), the segregate genus *Schizodium* Lindley (1838: 358) was included in *Disa* and the genus was subdivided into 18 sections (Bytebier *et al*. 2008).

After the publication of the authoritative "Orchids of Southern Africa" (Linder & Kurzweil 1999), six new *Disa* species have been described from South Africa. Three of these, *Disa albomagentea* E.G.H.Oliv. & Liltved in Oliver *et al.* (2011: 313), *Disa linderiana* Bytebier & E.G.H.Oliv. in Bytebier *et al.* (2007b: 558) and *Disa remota* H.P.Linder in Linder & Hitchcock (2006: 627) belong to section *Disella* and are endemic to the fynbos biome of the Cape Floristic Region. The other three, *Disa vigilans* McMurtry & T.J.Edwards in McMurtry *et al.* (2006: 551), *Disa klugei* McMurtry in McMurtry *et al.* (2008: 465) and *Disa roseovittata* McMurtry & G.McDonald in McMurtry *et al.* (2008: 466) are endemic to the grassland biome of Mpumalanga Province. Another new species is here described from these high altitude grasslands, which are very species-rich but under considerable threat.

Taxonomy

Disa staerkeriana McMurtry & Bytebier, *sp. nov*. (Figs. 1–4)

Type:—SOUTH AFRICA. Mpumalanga: Lydenburg, west of Sabie, Hartebeesvlakte, 2200 m, 25°05'S, 30°39'E (2530BA), 25 January 2014, *McMurtry 15222* (holotype: NU!; isotypes: BOL!, BNRH!, HSMC!, WAG!).

Diagnosis—similar to *Disa amoena* from which it can be distinguished by the shorter spur and the smaller flowers; and to *Disa montana* from which it can be distinguished by smaller and differently shaped petals, and by the much shorter inflorescence with fewer flowers (Table 1).

Erect terrestrial herb 250–350 mm tall. Leaves 6–8, slightly spreading at 5–15° from axis, rigid, conduplicate, linear-lanceolate, (56–) 80–90 (–105) mm long × 1.5–2.8 mm wide, 3–5 mm wide when flattened, with three main veins, veins and margins translucent, light straw-coloured. Inflorescence compact, subsecund, 55–75 mm long × 30–35 mm wide, 5–13-flowered. Bracts 16–28 mm long × 4.5–5 mm wide, acute to acuminate, pale maroon-pink, scarious at anthesis. Ovary green, tinged reddish, obliquely patent, ± 15mm long. Flowers white often suffused pale pink, lightly

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and randomly speckled violet, sweet-soapy scented; 10 mm wide, 5–8 mm tall. Median sepal white flushed pale pink along main vein, finely speckled violet, oblong, shallowly canaliculate, rounded, 10–13 (–15) mm long × 9–11 mm wide, lateral lobes recurved. Spur white, suffused pink dorsally, 8–10 mm long × 1 mm wide medially, patent, gently decurved to ± straight, narrowly funnel shaped, nectariferous. Lateral sepals white, flushed pale pink, randomly speckled violet, porrect, ± parallel, oblong, 11–14 mm long × 6–8 mm wide, subacute, apiculate, apiculus (0.5–) 1–2 mm long. Petals white, translucent, variously marked violet apically (rarely pure white), erect next to the rostellum, narrowly oblong, subfalcate, variably trilobed distally, 4–6 mm long × ± 2 mm wide, anticous basal lobe ± 1 mm in diameter. Lip white, randomly speckled violet, rarely unspotted, lorate to very narrowly spathulate, 10–11 mm long × 2–3 mm wide, apex acute to obtuse, slightly decurved, margins ± revolute. Anther purple-brown, horizontal ± 1.5 mm long. Stigma white, equally tripulvinate, 1.5 mm in diameter. Rostellum lateral lobes square, central lobe vestigial.

Table 1. Comparison of the morphological characters of *D. staerkeriana* with its two allied species, *D. amoena* and *D. montana*.

	D. staerkeriana	*D. amoena*	*D. montana*
Plant height (mm)	250–350	280–490	300–600
Leaf length (mm)	mostly 80–90	100–300	80–170
Inflorescence length (mm)	55–75	60–120	150–220
Number of flowers	5–13	4–8	15–22
Flower colour	Uniform; white to pale pink with lilac speckles	Variable; from light pink to dark, magenta pink, with or without lilac speckles	Variable; from pale pink with almost no speckles to cream with maroon speckles
Dorsal sepal length (mm)	10–15	15–25	10–18
Lateral sepal length	11–14	13–20	12–17
Petal length (mm)	4–6	7	6–9
Petal shape	Narrowly oblong, subfalcate	Narrowly oblong, subfalcate	Narrowly oblanceolate
Petal apex	Shortly trilobed	Trilobed	Acute
Spur length (mm)	8–10	25–45	8–13
Spur shape	Patent, straight to very gently decurved	Patent, decurved at length	Patent, straight to gently decurved at length
Lip length (mm)	11–12	15–20	10–15
Lip shape	Lorate to narrowly spathulate; widest near the apex	Lorate	Narrowly oblong to elliptic; widest in the middle

Affinities and diagnostic characters:—*Disa staerkeriana* is a member of section *Stenocarpa* Lindley (1838: 347, 352) *sensu* Bytebier *et al.* (2008) on the basis of its rigid, cauline leaves, erect petals free from the rostellum and square lateral rostellum lobes.

D. staerkeriana is most likely closely related to the sympatric *D. amoena* Linder (1981: 236) but is distinguishable by its spur length, flower size and flower shape. The spur in *D. amoena* ranges between 25–45 mm and is amongst the longest in the section *Stenocarpa*, whereas that of *D. staerkeriana* is only 8–10 mm long (Figure 3B). The flowers of *D. staerkeriana* are also smaller compared to those of *D. amoena*; dorsal sepal ranges from 10–15 *vs.* 15–25 mm, lateral sepals 11–14 *vs.* 13–20 mm, petals 4–6 *vs.* 7 mm and lip length 11–12 *vs.* 15–20 mm. With regard to shape, the flowers of *D. staerkeriana* are rather cupped in comparison to the much more open *D. amoena* flowers (Figure 3). Lastly, flower colour is uniform within the population of *D. staerkeriana*, whereas it is variable within and between populations of *D. amoena*.

Disa staerkeriana is also somewhat similar to *D. montana* Sonder (1846: 90) but differs in several aspects (Table 1). In particular the petals are very different (Figure 4). They are smaller (4–6 mm *vs*. 6–9 mm), have a different shape (narrowly oblong and *vs*. narrowly oblanceolate) and a differently shaped apex (trilobed *vs.* acute). *Disa staerkeriana* is in general also a much smaller plant. The inflorescence is considerably shorter (55–75 *vs.* 150–220 mm) and the number of flowers per inflorescence is considerably less (5–13 *vs*. 15–22). *D. montana* has only been recorded from the southern Drakensberg (Eastern Cape and KwaZulu-Natal Provinces), which is about 600 km to the southwest in a straight line, from the only currently known locality of *D. staerkeriana*. Furthermore, *D. montana* flowers from late November until the middle of December, whereas *D. staerkeriana* flowers in late January.

Flowering Time:—late January.

Etymology:—Named for Herbert and Helga Staerker of Vienna, Austria who have spent the last nine years photographing South African orchids and discovered this species in January 2013.

FIGURE 1. *Disa staerkeriana*. A. Plant in grassland habitat. B. Close up of inflorescence.

Distribution and altitudinal range:—Currently known from a single population in which 30 individuals were counted, covering an area of ± 500 × 700 m in size between 2160–2231 m elevation.

Habitat and associated species:—The habitat falls within the Wolkberg Centre of Plant Endemism (Matthews *et al*. 1993) on the upper reaches of the Hartebeesvlakte, an area of pristine grassland. The individuals are scattered, rarely closely adjacent, on a steep south-easterly slope, growing between widely scattered Black Reef quartzite boulders in well-drained Lydenburg Montane Grassland (Gm18) (Mucina & Rutherford 2006). At anthesis of *D. staerkeriana* only three other orchid species were found in the immediate surrounds, namely *Disa clavicornis* Linder (1984: 261), *Neobolusia tysonii* (Bolus 1884: 485) Schlechter (1895: 5) and *Satyrium longicauda* Lindley (1838: 337). Other associated flora of *Disa staerkeriana* includes *Alepidea* cf. *setifera* Brown (1896: 161), *Berkheya echinacea* (Harvey in Harvey & Sonder, 1865: 495) O.Hoffm. ex Burtt Davy in Burtt Davy & Pott-Leendertz (1912: 121), *B. radula* (Harvey in Harvey & Sonder, 1865: 491) De Wildeman (1901: 89), *Chaenostoma neglectum* J.M.Wood & M.S.Evans in Wood (1897: 352), *Cyphia* cf. *stenopetala* Diels (1898: 112), *Erica atherstonei* Diels ex Guthrie & Bolus in Thiselton-Dyer (1905: 120), *Inezia integrifolia* (Klatt in Schinz, 1896: 840) Phillips (1932: 297), *Mohria marginalis* (Savigny in de Lamarck & Poiret 1798: 655) Roux (1990: 401), *Monsonia* cf. *burkeana* Planch. ex Harvey in Harvey & Sonder (1860: 255), *Streptocarpus dunnii* Hooker (1886: t. 6903) and *Xyris* cf. *obscura* N.E.Br. in Thiselton-Dyer (1902: 16).

Specimens examined:—SOUTH AFRICA. Mpumalanga: Lydenburg, west of Sabie, Hartebeesvlakte (2530BA), 25 January 2013, *Staerker s.n.* (NU!), *Staerker sub McMurtry 14795*. (HSMC!).

Conservation:—The number of narrow endemic *Disa* species in the Mauchsberg-Hartebeesvlakte area has been further increased by the addition of *D. staerkeriana*. The area is an important refuge for a surprising number of range restricted orchid species. *Schizochilus lilacinus* Schelpe ex Linder (1980: 426), *Disa alticola* Linder (1981: 252), *D. clavicornis*, *D. klugei*, *D. vigilans* and now *D. staerkeriana* are all endemic to this area. The Hartebeesvlakte covers an area of 1970 hectares and is an important mountain catchment area, presently protected by the Department of Agriculture, Forestry and Fisheries (M. Lotter, pers. com.).

FIGURE 2. Dissected flower of *Disa staerkeriana* (left) and the unspeckled deep pink form of *D. amoena* (right).

Key to *Disa* sect. *Stenocarpa*

Linder & Kurzweil (1999) presented an artificial key to *Disa* sect *Stenocarpa*. Since then, the circumscription of this section has changed (Bytebier *et al*. 2008) and two new species have been described, *Disa vigilans* and this new taxon. Thus, we present an updated key to this section below.

1a. Leaves radical, hysteranthous....2
1b. Leaves cauline, green at anthesis....5
2a. Galea as deep as long; flowers red or orange, spur as long as or longer than the median sepal....3
2b. Galea longer than deep, laterally flattened; flowers white, pink or blue....4
3a. Spur longer than 20 mm, ascending....*D. porrecta*
3b. Spur shorter than 20 mm, horizontal....*D. ferruginea*
4a. Spur longer than the lateral sepals; flowers mauve....*D. arida*
4b. Spur shorter than the lateral sepals; flowers white to pink....*D. gladioliflora*
5a. Spur 25–45 mm long....6
5b. Spur less than 25 mm long....7
6a. Sepals more than 13 mm long; from Mpumalanga....*D. amoena*
6b. Sepals less than 13 mm long; from KwaZulu-Natal, Lesotho or Eastern Cape....*D. nivea*
7a. Leaves soft; plants usually flexuose;....8
7b. Leaves rigid; plants rarely flexuose (except *D. oreophila*)....9
8a. Sepals less than 10 mm long....*D. saxicola*
8b. Sepals more than 15 mm long....*D. aristata*
9a. Inflorescence capitate or subcapitate....*D. cephalotes*
9b. Inflorescence a lax or dense spike....10
10a. Spur 2.5–5 mm long; flowers blue or pale mauve with darker veins....11
10b. Spur 5–20 mm long; flowers pink or white....12
11a. Sepals 7–13 mm long; flowers pale mauve....*D. dracomontana*
11b. Sepals 4–5 mm long; flowers blue....*D. stricta*
12a. Sepals less than 10 mm long; plants flexuose....*D. oreophila*
12b. Sepals more than 10 mm long; plants not flexuose....13
13a. Median sepal 10–18 mm long....14
13b. Median sepal 20–30 mm long....*D. pulchra*
14a. Leaves more than 6 mm wide; ovaries more than 20 mm long....*D. montana*
14b. Leaves less than 5 mm wide; ovaries less than 18 mm long....15
15a. Median sepal less than 7 mm wide....*D. vigilans*
15b. Median sepal more than 9 mm wide....*D. staerkeriana*

FIGURE 3. Close-up comparison of single flowers of the speckled light pink form of *Disa amoena* (left) and *D. staerkeriana* (right). A. Front view. B. Side view.

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FIGURE 4. Close-up comparison of the petal of *Disa montana* (left), *Disa staerkeriana* (middle) and *Disa amoena* (right).

References

Bergius, P.J. (1767) *Descriptiones plantarum ex Capite Bonae Spei*. Typis et impensis direct. Laur. Salvii., Stockholm, 362 pp.

Bolus, H. (1884) Contributions to South African botany. *The Journal of the Linnean Society. Botany* 20: 467–488.

Brown, N.E. (1896) Decades Kewenses. Plantarum novarum in herbario horti regii conservatarum. DecadesXXVIII.-XXX. *Bulletin of Miscellaneous Information (Royal Gardens, Kew)* 1896: 158–167.
http://dx.doi.org/10.2307/4118335

Burtt Davy, J. & Pott-Leendertz, R. (1912) A first check-list of the flowering plants and ferns of the Transvaal and Swaziland. *Annals of the Transvaal Museum* 3: 119–182.

Bytebier, B., Bellstedt, D.U. & Linder, P.H. (2007a) A molecular phylogeny for the large African orchid genus *Disa*. *Molecular Phylogenetics and Evolution* 43: 75–90.
http://dx.doi.org/10.1016/j.ympev.2006.08.014

Bytebier, B., Oliver, E.G.H. & Liltved, W.R. (2007b) *Disa linderiana* (Orchidaceae), a new orchid from the Western Cape of South Africa. *South African Journal of Botany* 73: 558–562.
http://dx.doi.org/10.1016/j.sajb.2007.04.066

Bytebier, B., Bellstedt D.U. & Linder, H.P. (2008) A new phylogeny-based sectional classification for the large African orchid genus *Disa*. *Taxon* 57: 1233–1251.

de Lamarck, J.B.A.P.M. & Poiret, J.L.M. (1798) *Encyclopedie méthodique, Botanique. 4 (2).* Chez Panckoucke, Paris, pp. 401–754.

De Wildeman, E. (1901) *Icones selectae horti thenensis Vol 2.* Veuve Monnom, Bruxelles, pp. 179.

Diels, L. (1898) Campanulaceae Africanae. *Botanische Jahrbücher fur Systematik, Pflanzengeschichte und Pflanzengeographie* 26: 111–119.

Galley, C., Bytebier, B., Bellstedt, D.U. & Linder, H.P. (2007) The Cape element in the Afrotemperate flora: from Cape to Cairo?

Proceedings of the Royal Society B-Biological Sciences 274: 535–543.
http://dx.doi.org/10.1098/rspb.2006.0046

Govaerts, R. (2014) *World Checklist of Orchidaceae*. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet. Available from: http://apps.kew.org/wcsp/ (accessed 10 July 2014)

Harvey, W.H. & Sonder, W.O. (1860) *Flora Capensis, 1*. Hodges, Smith, and Co., Dublin, 546 pp.

Harvey, W.H. & Sonder, W.O. (1865) *Flora Capensis, 3*. Hodges, Smith, and Co., Dublin, 633 pp.

Hooker, J.D. (1886) *Streptocarpus Dunii*. Native of the Transvaal. *Curtis's Botanical Magazine* 42: t.6903.

Linder, H.P. (1980) An annotated revision of the genus *Schizochilus* Sond. (Orchidaceae). *Journal of South African Botany* 46: 379–434.

Linder, H.P. (1981) Taxonomic studies on the Disinae: 3. A revision of *Disa* Berg. excluding sect. *Micranthae* Lindl. *Contributions from the Bolus Herbarium* 9: 1–370.

Linder, H.P. (1984) A new species of *Disa* (Orchidaceae). *Journal of South African Botany* 50: 261–263.

Linder, H.P. & Hitchcock, A.N. (2006) *Disa remota*, a remarkable new orchid species from the Western Cape. *South African Journal of Botany* 72: 627–629.
http://dx.doi.org/10.1016/j.sajb.2006.06.003

Linder, H.P. & Kurzweil, H. (1999) *Orchids of Southern Africa.* A.A. Balkema, Rotterdam, 492 pp.

Lindley, J. (1838) *The genera and species of orchidaceous plants, 5.* Ridgways, Piccadilly, London, 45 pp.

Matthews, W.S., van Wyk, A.E. & Bredenkamp, G.J. (1993) Endemic flora of the north-eastern Transvaal Escarpment, South Africa. *Biological Conservation* 63: 83–94.
http://dx.doi.org/10.1016/0006-3207(93)90077-E

Mucina, L. & Rutherford, M.C. (Eds.) (2006) *The vegetation of South Africa, Lesotho and Swaziland*. *Strelitzia 19*. South African National Biodiversity Institute, Pretoria, 807 pp.

McMurtry, D., Edwards, T.J. & Bytebier, B. (2006) A new species of *Disa (Orchidaceae*) from Mpumalanga, South Africa. *South African Journal of Botany* 72: 551–554.
http://dx.doi.org/10.1016/j.sajb.2006.03.013

McMurtry, D., Grobler, L., Grobler, J. & Burns, S. (2008) *Field guide to the orchids of northern South Africa and Swaziland*. Umdaus Press, Pretoria, 482 pp.

Oliver, E.G.H., Liltved, W.R. & Bytebier, B. (2011) *Disa albomagentea* (Orchidaceae), a new species from the Hottentots Holland Mountains in the Cape Floristic Region, South Africa. *South African Journal of Botany* 77: 313–318.
http://dx.doi.org/10.1016/j.sajb.2010.08.010

Phillips, E.P. (1932) *Inezia*, a new genus of Compositae from South Africa. *Bulletin of Miscellaneous Information (Royal Botanic Gardens, Kew)* 1932: 297–298.
http://dx.doi.org/10.2307/4113443

Roux, J.-P. (1990) A new species and combination in *Mohria* (Schizaeaceae: Pteridophyta) from South Africa. *South African Journal of Botany* 56: 399–402.

Schinz (1896) Beiträge zur Kenntnis der Afrikanischen Flora. *Bulletin de L'Herbier Boissier* 4: 809–846.

Schlechter, R. (1895) Beiträge zur Kenntnis neuer und kritischer Orchideen aus Südafrika. *Beiblatt zu den Botanischen Jahrbüchern* 50: 1–44.

Sonder, G. (1846) Enumeratio orchidearum, quas in Africa Australi Extratropica collegerunt C.F. Ecklon, Dr., et C. Zeyher. *Linnaea* 19: 71–112.

Thiselton-Dyer, W.T. (1902) *Flora of Tropical Africa, 8*. L. Reeve & Co., Ltd. London, 548 pp.

Thiselton-Dyer, W.T. (1905) *Flora Capensis 4, Sect. 1 Part 1*. L. Reeve & Co., Ltd. Ashford, Kent, 192 pp.

Wood, J.M. (1897) New Natal Plants. *The Journal of Botany, British and Foreign* 35: 350–353.