



Stellarioides littoralis (Asparagaceae, Scilloideae), a distinct new species from eastern South Africa

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Abstract

A new South African endemic species, *Stellarioides littoralis* is described and illustrated, with data provided on morphology, ecology and distribution. The species appears to be closely related to *S. longibracteata* and whilst it shares in common an epigeal habit of the bulb with the latter species, several reproductive and vegetative morphological features clearly distinguish it. The affinities and divergences with other close allies are also discussed.

Key words: Asparagaceae, Hyacinthaceae, Ornithogaleae, Scilloideae, South Africa, *Stellarioides*, taxonomy

Introduction

Hyacinthaceae sensu APG (2003) includes ca. 1000 species of bulbous plants distributed through Africa, Europe and Asia, with a single genus, *Oziroë* Rafinesque (1837: 53), occurring in South America (Speta 1998a,b, APG 2003). Within this family four monophyletic clades were accepted as the subfamilies Hyacinthoideae, Ornithogaloideae, Oziroëoideae and Urgineoideae (Speta 1998b, Pfosser & Speta 1999, Manning *et al.* 2004, Martínez-Azorín *et al.* 2011). Alternatively Hyacinthaceae is treated as Asparagaceae subfamily Scilloideae, and consequently the former subfamilies are reduced to the tribes Hyacintheae, Ornithogaleae, Oziroëeae and Urgineae (APG 2009, Chase *et al.* 2009). However, we favour Hyacinthaceae at family rank based on morphological grounds.

The latest comprehensive study in Ornithogaloideae (Martínez-Azorín *et al.* 2011) accepts 19 monophyletic genera characterized by clear syndromes of morphological characters. The generic concepts of Martínez-Azorín *et al.* (2011) are intuitive, homogeneous in floral and fruit morphology, readily defined and straightforward to work with. The species here described belongs to *Stellarioides* Medikus (1790: 369), a long-overlooked genus restored by Speta (1998a) and corroborated by Martínez-Azorín *et al.* (2011). *Stellarioides* is endemic to Africa, with its highest diversity concentrated in the summer rainfall region of eastern South Africa, where the subject of the current report originates. The genus is characterized by the usually long, narrow and dense, racemose-spiceiform inflorescence (rarely subcorymbose or subglobose); the small and numerous flowers; tepals with a longitudinal green band visible on both sides, that become rusty-reddish when withered; the capsule ovoid, subglobose or obovoid; the seeds flattened or irregularly compressed, with sharpened edges, obliquely stalked and arranged in two rows per locule and puzzle-like testa (Martínez-Azorín *et al.* 2011, 2013, Martínez-Azorín & Crespo 2013).

The taxonomy of *Stellarioides* is far from satisfactory. The synthetic taxonomic revision of *Ornithogalum* sensu lato in southern Africa by Obermeyer (1978) included 18 synonyms in *O. tenuifolium* Delaroché (1811: 6) and 4 synonyms in *O. longibracteatum* Jacquin (1776: 18). These two species were based on wide species concepts and have been distinguished mainly by capsule and seed sizes, with capsules 5 mm high and seeds 3–4 mm long in *O. tenuifolium*, and capsules 10 mm high with seeds 5–7 mm long in *O. longibracteatum*.

The subject of this report is somewhat intermediate between *S. tenuifolia* (Delaroché 1811: 6) Speta (2001: 174)

TABLE 1. Main diagnostic characters among *Stellarioides littoralis*, *S. tenuifolia* s.str. and *S. longibracteata*.

	<i>S. littoralis</i>	<i>S. tenuifolia</i> s.str.	<i>S. longibracteata</i>
Bulb	25–40 mm diam. epigeal bulbils pediculate, attached to the basal plate of the parent bulb	20–30 mm diam. hypogeal bulbils pediculate, attached to the basal plate of the parent bulb	30–80 mm diam. epigeal bulbils sessile, attached to the bulb scales beneath the tunic
Leaves	mostly flat narrowly linear to narrowly lanceolate 22–36 × 1–1.8 cm often flaccid and loosely spiralled at the tip	mostly canaliculated narrowly linear 18–35 × 0.2–0.8 cm erect and straight	mostly flat wide and long tapering 40–100 × 2–5 cm often flaccid and spreading, straight
Inflorescence	raceme in head-like terminal cluster ca. 3 × 2 cm 11–20 flowers up to 30 cm long	raceme long and narrow 10–30 × 2–4 cm long 20–90 flowers up to 60 cm long	raceme long and narrow 20–50 × 3–5 cm long up to 300 flowers up to 150 cm long
Bracts	not pronounced in the bud stage 7–9 mm long	shortly overtopping buds 6–20 mm long	much exceeding flowers and buds in length 10–40 mm long
Capsule	ovoid, very shortly apiculate	ovoid, acute	globose, obtuse
Seeds	3–4 mm	3–4 mm	5–7 mm

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References

- Angiosperm Phylogeny Group (2003) An update of the Angiosperm Phylogeny Group Classification for the orders and families of flowering plants: APG II. *Botanical Journal of the Linnean Society* 141: 399–436.
<http://dx.doi.org/10.1046/j.1095-8339.2003.t01-1-00158.x>
- Angiosperm Phylogeny Group (2009) An update of the Angiosperm Phylogeny Group Classification for the orders and families of flowering plants: APG III. *Botanical Journal of the Linnean Society* 161: 105–121.
<http://dx.doi.org/10.1111/j.1095-8339.2009.00996.x>
- Bolus, L. (1928) *Notes on Mesembryanthemum and allied genera* 1. The Speciality Press of South Africa, Cape Town, 143 pp.
- Chase, M.W., Reveal, J.L. & Fay, M.F. (2009) A subfamilial classification for the expanded asparagalean families, Amaryllidaceae, Asparagaceae and Xanthorrhoeaceae. *Botanical Journal of the Linnean Society* 161: 132–136.
<http://dx.doi.org/10.1111/j.1095-8339.2009.00999.x>
- Delaroché, F. (1811) *Ornithogalum tenuifolium*. In: Redouté, P.J. (Ed.) *Les Liliacées* vol. 6. Didot Jeune, Paris, tab, 312 pp.
- Haworth, A.H. (1819) *Supplementum Plantarum Succulentarum*. J. Harding, London, 160 pp.
<http://dx.doi.org/10.5962/bhl.title.9314>
- IPNI (2014) *The International Plant Names Index*. Available from: <http://www.ipni.org> (accessed: April 2014).
- Jacquin, N.J. (1776) *Hortus Botanicus Vindobonensis* 3. L.J. Kaliwoda, Vienna, 51 pp.
<http://dx.doi.org/10.5962/bhl.title.531>
- Jacquin, N.J. (1795) *Icones Plantarum Rariorum* 2. C.F. Wappler, London, t, 454 pp.
<http://dx.doi.org/10.5962/bhl.title.329>
- Kuntze, O. (1891) *Revisio Generum Plantarum* 2. A. Felix, Leipzig, 377–1011 pp.

<http://dx.doi.org/10.5962/bhl.title.327>

- Manning, J.C., Goldblatt, P. & Fay, M.F. (2004) A revised generic synopsis of Hyacinthaceae in Sub-Saharan Africa, based on molecular evidence, including new combinations and the new tribe Pseudoprosperae. *Edinburgh Journal of Botany* 60(3): 533–568.
<http://dx.doi.org/10.1017/s0960428603000404>
- Martínez-Azorín, M., Crespo, M.B., Juan, A. & Fay, M.F. (2011) Molecular phylogenetics of subfamily Ornithogaloideae (Hyacinthaceae) based on nuclear and plastid DNA regions, including a new taxonomic arrangement. *Annals of Botany* 107: 1–37.
<http://dx.doi.org/10.1093/aob/mcq207>
- Martínez-Azorín, M. & Crespo, M.B. (2013) What is *Ornithogalum canaliculatum*? New data on the African genus *Stellarioides* (Hyacinthaceae). *Nordic Journal of Botany* 31: 213–221.
<http://dx.doi.org/10.1111/j.1756-1051.2012.01633.x>
- Martínez-Azorín, M., Crespo, M.B. & Dold, A.P. (2013) *Stellarioides chartacea* (Hyacinthaceae, Ornithogaloideae), a new species from the Eastern Cape Province in South Africa. *Phytotaxa* 85: 1–8.
<http://dx.doi.org/10.11646/phytotaxa.85.1.1>
- Medikus, F.K. (1790) Von zwei neuen Pflanzengeschlechtern, deren Hauptcharaktere in dem Wurzelbaue liegen. *Historia et Commentationes Academiae Electoralis Scientiarum et Elegantiorum Litterarum Theodoro-Palatinae* 6: 369–373.
- Mucina, L. & Rutherford, M.C. (Eds.) (2006) *The vegetation of South Africa, Lesotho and Swaziland*. Strelitzia 19. SANBI, Pretoria, 807 pp.
- Obermeyer, A.A. (1978) *Ornithogalum*: a revision of the southern African species. *Bothalia* 12: 323–376.
- Pfossor, M. & Speta, F. (1999) Phylogenetics of Hyacinthaceae based on plastid DNA sequences. *Annals of the Missouri Botanical Garden* 86: 852–875.
<http://dx.doi.org/10.2307/2666172>
- Rafinesque, C.S. (1837) *Flora Telluriana* 3. H. Probasco, Philadelphia, PA, 100 pp.
- Speta, F. (1998a) Hyacinthaceae. In: Kubitzki, K. (ed.), *The families and genera of vascular plants* 3. Springer, Berlin, pp. 261–285.
- Speta, F. (1998b) Systematische Analyse der Gattung *Scilla* L. s.l. (Hyacinthaceae). *Phyton. Annales Rei Botanicae. Horn* 38(1): 1–141.
- Speta, F. (2001) Die echte und die falsche Meerzwiebel: *Charybdis* Speta und *Stellarioides* Medicus (Hyacinthaceae), mit Neubeschreibungen und Neukombinationen im Anhang. *Stapfia* 75: 139–176.
- Thiers, B. (2014) *Index Herbariorum: A global directory of public herbaria and associated staff*. New York Botanical Garden's Virtual Herbarium. Available from: <http://sweetgum.nybg.org/ih/> (accessed: April 2014)
- Walter, T. (1788) *Flora Caroliniana, secundum Systema vegetabilium Linnæi digesta, characteres essentielles naturalesve et differentias veras exhibens; cum emendationibus numerosis, descriptionum antea evulgatarum adumbrationes stirpium plus mille continens, necnon generibus novis non paucis, speciebus plurimis novisq. ornata*. J. Fraser, London, 263 pp.
<http://dx.doi.org/10.5962/bhl.title.9458>