



Eliokarmos craibii (Asparagaceae, Scilloideae), a new species from Pella se Berge, Northern Cape Province, South Africa

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Abstract

Within the framework of a taxonomic revision of the genus *Eliokarmos* we here describe a new species from Pella se Berge in South Africa. *Eliokarmos craibii* sp. nov. is at first sight related to *E. decus-montium* and *E. pendens*, but the former can be clearly differentiated by the 2(–3) succulent, appressed, proteranthous leaves with lateral portions bent upwards, giving the appearance of thickened raised margins; the dimorphic filaments; the yellow ovary which is slightly verrucose in the upper half and white below; and the pyriform, apiculate seeds with papillate testa. A complete description is presented for this species, and data on morphology, ecology, and distribution are reported. Affinities and divergences with *E. decus-montium* and *E. pendens* are also discussed.

Key words: distribution, ecology, Hyacinthaceae, Ornithogaloideae, taxonomy

Introduction

Subfamily Scilloideae tribe Ornithogaleae is alternatively regarded as Hyacinthaceae subfam. Ornithogaloideae, a treatment that we favour here (cf. Martínez-Azorín *et al.* 2014). Generic circumscription within Ornithogaloideae has been a matter of controversy in the last decades. After diverse and contrasting taxonomic treatments proposed in the group in recent years (Speta 1998a, Pfosser & Speta 1999, Manning *et al.* 2004, 2009), Martínez-Azorín *et al.* (2011) presented a comprehensive study in the subfamily that demonstrates the existence of 19 monophyletic genera which are characterized by a distinct syndrome of morphological characters, making genus concepts easy to recognize, homogeneous in floral and fruit morphology, and therefore easy to define and to work with.

The genus *Eliokarmos* Rafinesque (1837: 24) was long-overlooked until Speta (1998a) restored it and Martínez-Azorín *et al.* (2011) corroborated its autonomy. This genus includes about 30 species traditionally included in *Ornithogalum* Linnaeus (1753: 306) and is endemic to southern and western South Africa and southern Namibia (cf. Martínez-Azorín *et al.* 2011). *Eliokarmos* includes two groups based on morphology. The first group comprises species such as *Eliokarmos thyrsoides* (Jacquin 1777: 17) Rafinesque (1837: 24), *E. dubius* (Houttuyn 1780: 309) Martínez-Azorín *et al.* (2011: 29), *E. pruinus* (Leighton 1944: 104) Martínez-Azorín *et al.* (2011: 30) and related species, which are known colloquially as “chinchinchees”. Some of them have great ornamental value and are widely cultivated (Obermeyer 1978, Manning *et al.* 2007). This group of taxa was accepted as *Ornithogalum* subgenus *Aspasia* (Salisbury 1866: 34) Obermeyer (1978: 333) “group *Aspasiae*” (Obermeyer 1978) or *Ornithogalum* subgenus *Aspasia* section *Aspasia* (Müller-Doblies & Müller-Doblies 1996, Manning *et al.* 2007). The species of section *Aspasia* are characterized by the ciliate or fimbriate (rarely glabrous) leaves; membranous, ovoid, wide and petaloid bracts; large colourful flowers; white, yellow, orange or reddish tepals, sometimes with basal or apical maculae but lacking a darker longitudinal band; and filaments usually expanded or winged below (cf. Obermeyer 1978; Manning *et al.* 2007).

The second group was accepted as *Ornithogalum* subgenus *Aspasia* “group *Hispidae*” (Obermeyer 1978) or *Ornithogalum* section *Hispidaspasia* Müller-Doblies & Müller-Doblies (1996: 404). This group includes species such as *E. pilosus* (Jacquin 1793: t. 416) Martínez-Azorín *et al.* (2011: 29) (= *Ornithogalum hispidum* Hornemann 1813: 331), *E. constrictus* (Leighton 1945: 136) Martínez-Azorín *et al.* (2011: 29), *E. bicornutus* (Leighton 1945: 143) Martínez-Azorín *et al.* (2011: 29), *E. deltoideus* (Baker 1872: 281) Martínez-Azorín *et al.* (2011: 29), and is

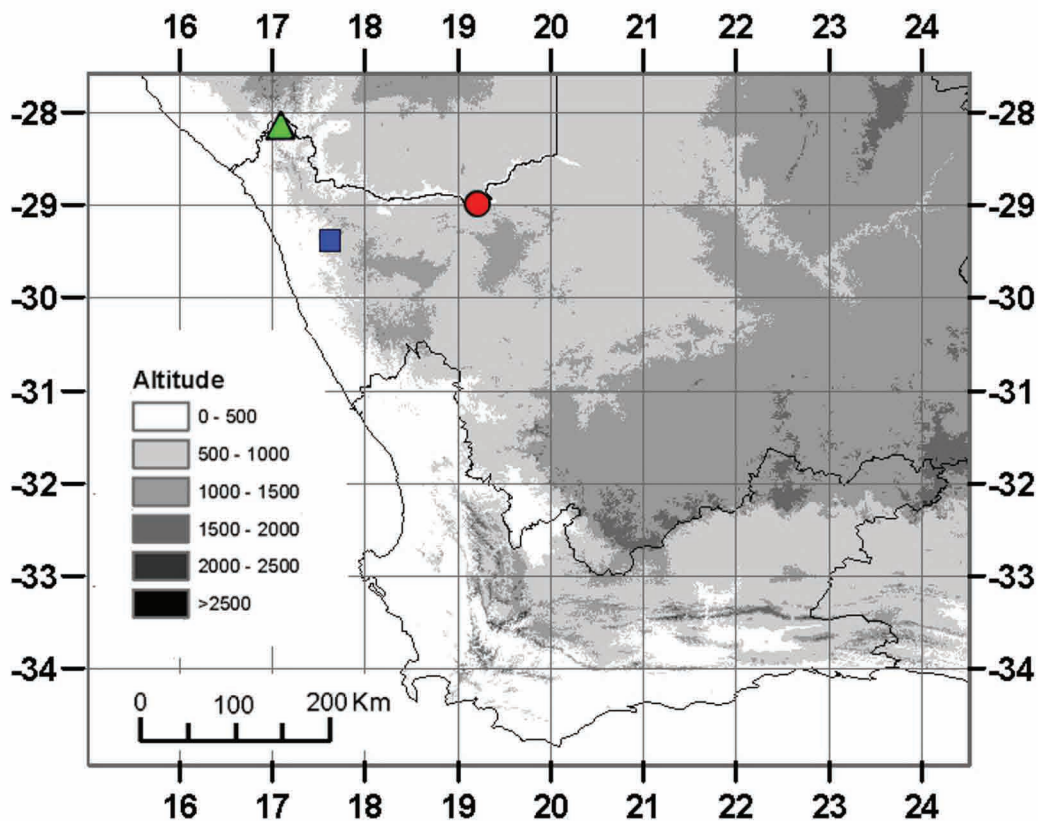


FIGURE 6. Known distribution of *Eliokarmos craibii* Mart.-Azorín, M.B.Crespo, M.Pinter & Wetschnig (red circle), *E. decus-montium* (G.Will.) Mart.-Azorín, M.B.Crespo & Juan (green triangle) and *E. pendens* (Van Jaarsv.) Mart.-Azorín, M.B.Crespo, M.Pinter & Wetschnig (blue square) in north western South Africa.

References

- Baker, J.G. (1872) Revision of the genera and species of Scilleae and Chlorogaleae. *Journal of the Linnean Society, Botany* 13: 209–292.
- Barker, W.F., Compton, R.H., Leighton, F.M., Dyer, R.A. & Smith, C.A. (1943) *Plantae Novae Africanae Series 19. Journal of South African Botany* 9: 109–136.
- Decaisne, J. (1880) Note sur le *Galtonia*, nouveau genre de Liliacées de l’Afrique australe. *Flore des serres et des jardins de l’Europe, ser. 2* 23 (13): 32–33.
- Gray, S.F. (1821) *Natural arrangement of British plants*, 2. Baldwin, Cradock & Joy, London, 757 pp.
- Hornemann, J.W. (1813) *Hortus regius botanicus Hafniensis, in usum tyronum et botanophilorum* 1. E.A.H. Mölleri, Hafniae, 436 pp.
- Houttuyn, M. (1780) *Natuurlijke Historie of uitvoerige Beschryving der Dieren, Planten en Mineralen, volgens het Samenstel van der Heer Linnaeus* II, 12. De Erven van F. Houttuyn, Amsterdam, 558 pp. + 10 pl.
- IPNI (2015) The International Plant Names Index. Available from: <http://www.ipni.org> (accessed January 2015).
- Jacquin, N.J. (1777) *Hortus botanicus Vindobonensis* 3. Typis Josephi Michaelis Gerold, Vienna, 52 pp.
- Jacquin, N.J. (1791) *Collectanea ad Botanicam, Chemicam, et Historiam Naturalem, Spectantia, cum Figuris* 4. Wappler, C.F., Vindobonae, 359 pp.
- Jacquin, N.J. (1793) *Icones Plantarum Rariorum* 2. C.F. Wappler, Vindobonae, pp. 201–454 + 253 tab.
- Leighton, F.M. (1944) A revision of the South African species of *Ornithogalum*. *Journal of South African Botany* 10: 82–122.
- Leighton, F.M. (1945) A revision of the South African species of *Ornithogalum*. *Journal of South African Botany* 11: 138–192.
- Linnaeus, C. (1753) *Species plantarum*. Salvius, Stockholm, 1200 pp.
- 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 Pseudoprosperaeae. *Edinburgh Journal of Botany* 60 (3): 533–568.
- Manning, J.C., Martínez-Azorín, M. & Crespo, M.B. (2007) A revision of *Ornithogalum* subgenus *Aspasia* section *Aspasia*, the chinchinchees (Hyacinthaceae). *Bothalia* 37: 133–164.

- Manning, J.C., Forest, F., Dion, S.D., Fay, M.F. & Goldblatt, P. (2009) A molecular phylogeny and a revised classification of Ornithogaloideae (Hyacinthaceae) based on an analysis of four plastid DNA regions. *Taxon* 58: 77–107.
- Martínez-Azorín, M., Crespo M.B. & Juan A. (2007) Taxonomic revision of *Ornithogalum* subg. *Cathissa* (Salisb.) Baker (Hyacinthaceae). *Anales del Jardín Botánico de Madrid* 64: 7–25.
<http://dx.doi.org/10.3989/ajbm.2007.v64.i1.47>
- Martínez-Azorín, M., Crespo M.B. & Juan A. (2009). Taxonomic revision of *Ornithogalum* subg. *Beryllis* (Hyacinthaceae) in the Iberian Peninsula and the Balearic Islands. *Belgian Journal of Botany* 142: 140–162.
- 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. & Dold, A.P. (2013) *Trimelopter craibii* (Hyacinthaceae, Ornithogaloideae), a new species from the North West Province of South Africa. *Phytotaxa* 87 (3): 50–60.
<http://dx.doi.org/10.11646/phytotaxa.87.3.3>
- Martínez-Azorín, M., Pinter, M., Deutsch, G., Brudermann, A., Dold, A.P., Crespo, M.B., Pfosser, M. & Wetschnig, W. (2014) *Massonia amoena* (Asparagaceae, Scilloideae), a striking new species from the Eastern Cape, South Africa. *Phytotaxa* 181 (3): 121–137.
<http://dx.doi.org/10.11646/phytotaxa.181.3.1>
- Martínez-Azorín, M., Crespo, M.B. & Dold, A.P., Pinter, M. & Wetschnig, W. (2015) New combinations and lectotypifications in Asparagaceae subfam. Scilloideae. *Phytotaxa*: 201 (2): 165–171.
<http://dx.doi.org/10.11646/phytotaxa.201.2.7>
- Mucina, L. & Rutherford, M.C. (2006) The Vegetation of South Africa, Lesotho and Swaziland. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria, 807 pp.
- Müller-Doblies, U. & Müller-Doblies, D. (1996) Revisionula incompleta Ornithogalorum Austro-Africanorum (Hyacinthaceae). *Feddes Repertorium* 107: 361–548.
- Overmeyer, A.A. (1978) *Ornithogalum*: a revision of the southern African species. *Bothalia* 12: 323–376.
- Pfosser, 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* 2. H. Probasco, Philadelphia, 112 pp.
- Salisbury, R.A. (1866) *The genera of plants: a fragment containing part of Liriogamae*. John van Voorst, London, 143 pp.
- Schönland, S. (1912) *Neopatersonia*, a new genus of Liliaceae. *Records of the Albany Museum* 2: 251–253.
- Smith, G.F. (2003) *Aloe craibii* Gideon F.Sm. (Asphodelaceae: Aloioideae): a new species of grass aloe from the Barberton Centre of Endemism, Mpumalanga, South Africa. *Bradleya* 21: 25–28.
- Smith, G.F. (2012) Charles Louis Craib: natural historian extraordinaire. *Bradleya* 30: 9–12.
- 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 (Horn)* 38: 1–141.
- Thiers, B. (2015) *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 January 2015).
- Toelken, H.R. (1977) New taxa and a new combination in the genus *Cotyledon*. *Bothalia* 12: 191–194.
- Toelken, H.R. (1978) New taxa and combinations in *Cotyledon* and allied genera. *Bothalia* 12: 377–393.
- Van Jaarsveld, E.J. (1983) *Bowiea gariensis*: a new *Bowiea* species (Liliaceae) from the North Western Cape. *Journal of South African Botany* 49: 343–346.
- Van Jaarsveld, E.J. (1989) *Tylecodon sulphureus* var. *armianus*. *Flowering Plants of Africa* 50: t. 1984.
- Van Jaarsveld, E.J. & Van Wyk, A.E. (2009) *Ornithogalum pendens* (Hyacinthaceae), a new cliff-dwelling succulent from the Northern Cape (South Africa). *Aloe* 46: 30–32.
- Victor, J.E. (2001) *Ceropegia craibii* Apocynaceae. *Curtis's Botanical Magazine* 18: 210–213.
- Williamson, G. (1998) A new species of *Ornithogalum* from the Richtersveld, South Africa. *Bothalia* 28: 62–65.