



The significance of one versus two styles: the return of *Seddera* section *Socotroseddera* to *Convolvulus*

JAVIER A. LUNA^{1,4}, SEBSEBE DEMISSEW², IAIN DARBYSHIRE³ & MARK A. CARINE¹

¹Department of Life Sciences, The Natural History Museum, Cromwell Road, London, SW7 5BD, United Kingdom.
Email: m.carine@nhm.ac.uk

²The National Herbarium, Addis Ababa University, P.O. Box 3434 Addis Ababa, Ethiopia. Email: s_demissew@yahoo.com

³Herbarium, Library, Art & Archives, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, United Kingdom.
Email: i.darbyshire@kew.org

⁴Present address: Royal Botanic Garden Edinburgh, Inverleith Row, Edinburgh EH3 5LR, United Kingdom.
Email: J.Luna-Castro@rbge.ac.uk

Abstract

The generic placement of the Socotran endemic *Seddera* section *Socotroseddera* is reassessed. A molecular phylogenetic analysis using the chloroplast *matK* resolves *Seddera* as polypyletic with samples of *Seddera* section *Socotroseddera* resolved within *Convolvulus*. This placement is congruent with morphology, notably style morphology as the species of this section possess one style, in keeping with *Convolvulus* and in contrast to other species of *Seddera*. It also reflects the original generic placement of these species. The return of species of *Seddera* section *Socotroseddera* to *Convolvulus* is proposed. A new combination for a recently described species is necessary to enact this transfer and so is provided.

Key words: DNA barcoding, generic delimitation, *matK*, style morphology, phylogeny

Introduction

The genus *Seddera* Hochstetter (1844: t5; Convolvulaceae) comprises 31 species with a distribution centred on East Africa but extending to the rest of Africa, Arabia, Socotra, Madagascar and the Indian subcontinent (Sebsebe Demissew and Mill, 2009). A higher-level phylogenetic analysis of Convolvulaceae (Stefanovic *et al.* 2002) suggested that *Seddera* is sister to *Hildebrandtia* and *Cladostigma* in the tribe Cresseae (*sensu* Stefanovic *et al.* 2003) and that this group is nested within a major clade of Convolvulaceae, referred to as the Dicranostyloideae Clade (Stefanovic *et al.* 2003). The latter is characterised by possession of a style that is divided into two to the base or almost so. Within *Seddera* most species (28 of the 31 recognised) exhibit this trait and they are placed in section *Seddera* (Demissew and Mill, 2009). The remaining three species are all endemic to the Socotran archipelago and are placed in section *Socotroseddera* that is atypical of the Dicranostyloideae Clade as it is characterised by a single style that divides at the apex into two small stigmatic arms, each bearing a clavate stigma.

Verdcourt (1971) was the first to recognise section *Socotroseddera*, erecting the section to accommodate two species within *Seddera*, *Seddera spinosa* (Vierh.) Verdc. (1971: t3688) and *Seddera fastigiata* (Balf.f.) Verdc. (1971: t3688), that had previously been placed within *Convolvulus*. He proposed that the species within this section are more appropriately placed within *Seddera* because their apparently simple styles can be separated into two halves down to the apex of the ovary, in contrast to the genuinely single-styled condition of *Convolvulus*. A third species, *S. semhaensis* R.R. Mill (in Sebsebe Demissew and Mill, 2009: 231) was recently described in this section.

Within the framework of Stefanovic *et al.* (2002)'s phylogeny, the style morphology of *Seddera* section *Socotroseddera* would be interpreted as a reversal to the single-styled condition within the Dicranostyloideae clade, which has also been suggested to occur in several other groups within the clade (e.g. *Stylisma*, *Maripeae*; Stefanovic *et al.* 2003). However, none of the species of *Seddera* section *Socotroseddera* were sampled in their analysis, and Sebsebe and Mill (2009) in their revision of *Seddera* recently resurrected the idea that at least one species of the section (*S. fastigiata*) may be '...closer to the genus *Convolvulus* than to *Seddera*'.

Convolvulus kossmatii Vierhapper (1907: 416)

=*Seddera spinosa* (Vierh.) Verdcourt (1971: t.3688) = *Bonamia spinosa* Vierhapper (1904: 287).

Lectotype (designated by Demissew & Mill, 2009):—YEMEN. Soqotra, Abd al Kuri island, Hallat Salih up to the N foot of Djebel Salih (Qarat Salih), 17–21 Jan. 1899, *Paulay s.n.* (WU, photo. K).

Convolvulus socotranus Verdcourt (1957: 344)

=*Seddera fastigiata* (Balf. f.) Verdcourt (1971: t.3688) = *Breweria fastigiata* Balfour (1883: 83).

Lectotype (designated by Sebsebe Demissew & Mill, 2009):—YEMEN. Soqotra, on the plains, Feb.–March 1880, *Balfour, Cockburn & Scott 73* (K).

Convolvulus fastigiatus sensu Hallier (1894:97) non Roxburgh (1832: 468).

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