



Cypsela morphology in the genus *Nolletia* (Asteraceae, Astereae) and a revision of the genus

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Abstract

The genus *Nolletia* has never been revised. There is no key available to all the species, making identification extremely difficult and resulting in misidentifications. For only a few species there are fairly comprehensive species descriptions available. A complete revision of the genus was undertaken, a key to all the species was drawn up, full descriptions were made and distribution maps were provided. Five new species were described: *N. annemarieae*, *N. annetjieae*, *N. vanhoopeniae*, *N. jeanettiae* and *N. welmaniae*. One southern African species (*N. arenosa*) is synonymized under *N. chrysocomoides*. The genus could be divided into two groups on the grounds of the cypsela morphology: one group has oblong epicarpic cells arranged in parallel rows, seen in surface view, while the other group has circular to elliptic epicarpic cells, seen in surface view. One species was reported to be poisonous to stock. It was previously identified as *N. gariepina* but is described here as one of the new species, *N. vanhoopeniae*.

Key words descriptions, distribution maps, epicarp, key, taxonomy

Introduction

The genus *Nolletia* Cassini (1825: 479) belongs to the tribe Astereae of the family Asteraceae. Bremer (1994) put it in the *Amellus* group of the subtribe Asterinae but Nesom & Robinson (2007) placed it in the subtribe Homochrominae of the Astereae. Bremer (1994) reported 10 species in the genus, nine in southern Africa and one in North Africa and Spain. Nesom & Robinson (2007) similarly reported 10 species for Africa, one of which extends to Spain. Herman (2003) listed only eight species for southern Africa and Klopper *et al.* (2006) mentioned nine species for Sub-Saharan Africa. Wild (1975) noted three *Nolletia* species for the *Flora Zambesiaca* area, all of which occur also in southern Africa. Durand & Barratte (1910) reported *N. chrysocomoides* (Desfontaines 1799: 269, t. 232) Cassini ex Lessing (1832: 187), the type species of the genus, for Morocco, Algeria, Tunisia and Spain. Recently Dobignard & Chatelain (2011) reported it for Mauritania, Morocco, Algeria, Tunisia and Libya in North Africa.

Until now, no key has been available to all the species. The only available keys were published by Merxmüller (1967), Wild (1975) and Hilliard (1977). The first covers six species and the other two include three species each. The only reasonably comprehensive species descriptions can be found in Wild (1975) and Hilliard (1977).

The cypselae of the Asteraceae are known to render much taxonomically useful information (Harvey 1865, Roth 1977, Bremer 1994, Anderberg *et al.* 2007). In many instances cypsela morphology was used to delimit and refine genera (Pope 1983, Källersjö 1985, Källersjö 1988, McKenzie *et al.* 2005) and to describe new genera and species (Källersjö 1985, Källersjö 1988, Nordenstam 1994, Herman 1999, Nordenstam 2006, Nordenstam *et al.* 2006). The cypselae of the genus *Nolletia* were mostly described as glabrous or variously hairy by Desfontaines (1799), De Candolle (1836), Harvey (1865), Willkomm & Lange (1870), Bentham (1873), Phillips (1951), Merxmüller (1967), Dyer (1975), Wild (1975), Hilliard (1977), Bremer (1994) and