

Title: Systematics of the genus *Scabiosa* (Dipsacaceae) and allies in Southern Africa

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Level: Masters

Additional information:

There are only two genera of the family Dipsacaceae recorded from the Southern Africa region, of which *Scabiosa* L. (consists of 9 species in southern Africa) and was last revised by Sonder (1865) and is in serious need of study/revision. *Cephalaria* Schrad. ex Roem. &Schult., with up to ca. 100 species, is one of the largest genera in the Dipsacaceae family. Preliminary molecular phylogenetic analysis places it as sister to *Dipsacus* L. (Avino *et al.*, 2009), from which it is morphologically separated by the softer indumentum on the vegetative parts and by the floral bracts not strong and more or less as long as the flowers, and anatomically by the more or less continuous sub epidermal sclerenchyma layer in the epicalyx (Mayer and Ehrendorfer, 2013). The most distinctive feature of Dipsacaceae is an epicalyx that functions in ovary protection, germination, and seed dispersal (Carlson *et al.*, 2009).

Delimitation of taxa within the family has always been subject to argument; as a result, circumscription of genera and tribes has constantly changed over time because of the overall morphological similarity among the taxa in the family and of their diversity in structural detail, particularly the classical concepts of *Scabiosa* L. and *Pterocephalus* (Vaill.) Candolle (1830) divided this family into two tribes: Morineae, with the single genus *Morina*, and *Scabiosa*, including *Dipsacus*, *Cephalaria*, *Knautia*, *Pterocephalus*, and *Scabiosa* (Khalik, 2010). *Scabiosa columbaria* L. (Dipsacaceae) is a perennial species with a maximum life span of ten years. Flowering rosettes have stems 20 to 80 cm in height, with one to a few flower heads. Each flower head produces up to 100 achaena. In the Swiss Jura S. *columbaria* occurs in nutrient-poor grassland (Mesobromion) remnants (Pluess and Stöcklin, 2004). *Scabiosa canescens* one the many rare and threatened plants occurring in small and isolated populations due to the increasing fragmentation of their natural habitats. Such populations are at risk of extinction from a variety of demographic and genetic factors, including the unmasking of deleterious recessive genes (inbreeding depression) as well as the fixation of new detrimental mutations (Andersson and Waldmann, 1998).

The aim of this project is to provide the updated taxonomy of the genus *Scabiosa*, and assess the potential phylogenetic relationships.

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