



A taxonomic study on *Centaurea* sect. *Rhizocalathium* and *C.* sect. *Pseudoseridia* (Asteraceae, Cardueae–Centaureinae) in Iran

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Abstract

A taxonomic review of *Centaurea* sect. *Rhizocalathium* Tzvelev and *C.* sect. *Pseudoseridia* Wagenitz in Iran was carried out. The latter, with only one species, *Centaurea stevenii*, is reported here as new to Iran. In *Centaurea* sect. *Rhizocalathium*, *C. lasiorhiza* is treated as a correct name, *C. ispahantica* subsp. *sirjanensis* is described as a new subspecies and *C. ispahantica* subsp. *macrocarpa* is proposed as a new combination. Finally, *C. ispahantica* is typified and its chromosome number is reported for the first time, and a new basic chromosome number for *C.* sect. *Rhizocalathium* is proposed.

Key words: chromosome numbers, Compositae, Flora Iranica, identification key, lectotypifications, new combination, new records, nomenclature

Introduction

The genus *Centaurea* Linnaeus (1753: 909) s. str. from the family Asteraceae with about 200–250 annual, biennial and perennial species occurs mainly in Europe, Mediterranean region and SW Asia (Dittrich 1977, Bremer 1994, Wagenitz & Hellwig 1996, Hellwig 2004, Garcia-Jacas *et al.* 2006, Susanna & Garcia-Jacas 2007, López *et al.* 2011). In his account for the Flora Iranica area, Wagenitz (1980) recognized 28 sections of *Centaurea* s.l. By adding a new section, *C.* sect. *Ranjbariana* Negaresh in Negaresh & Rahiminejad (2014: 233), this number was increased to 29.

The present study mainly aims to provide a thorough taxonomic revision of *C.* sect. *Rhizocalathium* Tzvelev (1959: 438) in Iran. This section comprises 4 Iranian species, of which two, i.e., *C. ustulata* Candolle (1838: 576) and *C. ispahantica* Boissier (1845: 133) are endemics (Wagenitz 1980). Although the involucre shape and the color of flowers (except *C. ispahantica* that is entirely distinct) are shared between the sections *C.* sect. *Rhizocalathium* and *C.* sect. *Pseudoseridia* Wagenitz (1974: 220), a syndrome of diagnostic characters belonging to the stem (caulescent/acaulescent), leaves (rosulate/not rosulate) and appendages of the phyllaries (erect/digitate) clearly distinguish these two sections. In addition, taking into account the distributional range of the above sections indicates that *C.* sect. *Rhizocalathium* is restricted to the Irano-Turanian areas whereas *C.* sect. *Pseudoseridia* includes only Mediterranean species. Therefore, separation of these two sections is suggested and accepted here. In their molecular phylogenetic study using genomic and chloroplastic DNA, Garcia-Jacas *et al.* (2000, 2006) showed that except for one species, *C. stevenii* Marschall von Bieberstein (1808: 356) which was nested among *C.* sect. *Rhizocalathium* clade, otherwise the two sections were entirely different from each other. This ambiguous position of *C. stevenii* can be justified for two reasons: either the specimen used as *C. stevenii* by Garcia-Jacas *et al.* (2000, 2006) was identified incorrectly or this species was misplaced in *C.* sect. *Pseudoseridia*. Since we have access neither to the specimen used by Garcia-Jacas *et al.* (2000, 2006) nor to the holotype of this species, the taxonomic placement of *C. stevenii* remains an open question for the future.

We carried out a comprehensive morphological comparison between the species of *C.* sect. *Rhizocalathium* and *C.* sect. *Pseudoseridia* in Iran. Also the chromosome number in *C. ispahantica* was counted. Finally, in order to establish the taxonomic boundaries of the Iranian members of *C.* sect. *Rhizocalathium*, a literature review was performed. We established the relationships between species and made a new taxonomic delimitation of

Selected specimens examined:—IRAN. Prov. West Azerbaijan: mountains around Bazargan, 1415 m, 22 May 2011, *Ranjbar & Negaresh 25787* (BASU!); Bazargan, 1860 m, 24 June 2012, *Ranjbar & Negaresh 32152* (BASU!); Maqoo, Ghara Ziaheddin toward Siah Cheshme, 40 km to Siah Cheshme, 1570 m, 10 July 2003, *Rahiminejad & Dehghan 15247* (HUI!). GEORGIA. Prov. Tiflis, Dushet, *Grossheim s.n.* (B!). ARMENIA. Ani, inter stationes viae ferreae Ani et Bagravan, in declivibus stepposis lapidosis, 1500 m, 5 July 1960, *Czerepanov & Tzvelev s.n.* (B!).

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