



## A contribution to *Centaurea* sect. *Acrocentron* (Asteraceae) from Iran

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### Abstract

*Centaurea sanandajensis* is described and illustrated as a new species from Kurdistan Province, W Iran. The characters that distinguish the new species from its nearest relative *C. longipedunculata* are given. In addition, *C. elegantissima* is reported as new to Iran, and its chromosome number ( $2n = 2x = 22$ ) is counted for the first time. The description of *C. elegantissima* is completed with the characters of mature achenes, and its differences from the nearest relative *C. kandavanensis* are summarized. The geographical distribution of discussed species is presented.

**Key words:** Chromosome counts, Compositae, Kurdistan, new records, new species, taxonomy

### Introduction

*Centaurea* Linnaeus (1753: 909) s.l. is one of the largest genera of the family Asteraceae. Its greatest subdivision is *C. sect. Acrocentron* (Cassini 1826: 37) Candolle (1838: 586), a huge section with approx. 100 species distributed mainly in the Mediterranean region (Font *et al.* 2009). Among other characters, this section is well defined by the “*Centaurea scabiosa*” pollen type (Wagenitz 1955).

In Iran, *Centaurea* s.l. is the second large genus of Asteraceae and comprises 70 species in 28 sections (Wagenitz 1980). The Iranian representatives of the genus are mostly endemic with very restricted or even local distribution. *Centaurea* sect. *Acrocentron* is the largest section of the genus in Iran; in *Flora Iranica* (Wagenitz 1980) it was represented by 10 species, of which 2 species, *C. kandavanensis* Wagenitz (1980: 392) and *C. luristanica* Rechinger (1951: 265), and 2 subspecies, *C. carduiiformis* Candolle (1838: 590) subsp. *iranica* Wagenitz (1980: 391) and *C. pseudoscabiosa* Boissier & Buhse in Boissier (1860: 131) subsp. *armata* Wagenitz (1980: 399) were strict endemics of Iran (Wagenitz 1980). A new overview of the section in Iran was provided by Rahiminejad *et al.* (2010) but with no change at the level of species or subspecies. Since then 2 new species were described and 1 new combination was published from Iran (Ranjbar & Negaresh 2013, Ranjbar *et al.* 2013).

Basic chromosome numbers in *C. sect. Acrocentron* are  $x = 11$  and  $x = 10$  (Bakhshi-Khaniki 1995, Garcia-Jacas & Susanna 1992, 1997, 1998, Gaffari 1999, Martín *et al.* 2009). The basic number  $x = 10$  is more frequent than  $x = 11$  because of the trend towards descending dysploidy (Garcia-Jacas & Susanna 1992). According to the hypothesis of Garcia-Jacas & Susanna (1992), species with relict, restricted or disjunct distributions possess the primitive basic chromosome number  $x = 11$ ; and species with a wide distribution usually have the derived basic chromosome number  $x = 10$ . Most of the species of *C. sect. Acrocentron* in Iran are narrow endemics with very small distribution areas. So far, none of the eight studied Iranian species (out of 10) of this section has been found with the basic chromosome number  $x = 11$  except *C. pseudoscabiosa*, the more primitive species according to Garcia-Jacas & Susanna (1992). This suggests that this group of species is of recent origin, probably by fragmentation of the area of a single species with  $x = 10$  followed by an explosive speciation process.

Type:—IRAQ. Prov. Kurdistan: Sakri Sakran mountains near Rawandiz, 1500 m, *Bornmüller 1489* (holotype B!).

Achenes oblong, 5.5–6 mm long, 2–2.2 mm wide, yellow, smooth and shiny, adpressed white hairy; hilum lateral, ca. 0.6 mm long, long-barbellate. Pappus double, scabrous, whitish; outer ca. 10–11 mm long; inner shorter, 2.5–3 mm long.

**Specimen examined:**—IRAN. Prov. Kurdistan: Marivan, first road beginning Dezli, 1295 m, 20 July 2012, *Ranjbar & Negaresh 31631* (BASU!).

**Distribution and habitat:**—*Centaurea elegantissima* occurs in mountains Dezlei, around Marivan in Kurdistan Province, W Iran (Fig. 3). It grows on gravelly and rocky mountain slopes or scattered between shrubs of *Pistacia atlantica*, at elevations of 1200–1350 m. *Centaurea elegantissima* is an Irano-Turanian element. In addition, some other plants that occurred with the species are *Avena barbata* subsp. *barbata*, *Centaurea behen*, *Centaurea amadanensis* var. *gymnoclada*, *Zoegea crinita*, *Centaurea aggregata* subsp. *aggregata*, *Stachys kurdica*, *Silene latifolia*, *Pistacia atlantica*, *Onosma* sp.

**Relationships:**—*Centaurea elegantissima* makes a new record from Iran (Fig. 3). The species was collected once by Bornmüller about 84 years ago in the Sakri Sakran mountains in E Iraq. Previously *C. elegantissima* was considered endemic to Iraq (Wagenitz 1980). It is similar to *C. kandavanensis*, endemic to N Iran, in shape of appendages, indumentum of phyllaries and length of achenes, but differs from this species by its stem erect and thick (vs. robust and slender), up to 50 cm (vs. up to 90 cm) tall, subglabrous (vs. pilose in lower part, otherwise  $\pm$  glabrous), leaves subglabrous (vs. pilose), involucre hemispherical (vs. subglobose) and ca. 30  $\times$  35 mm (vs. (20–)25–35  $\times$  20–35 mm), phyllaries green (vs. purple-tinged), appendages (spine included) 13–18 mm (vs. 15–30 mm) long, flowers pink-purple (vs. dark purple), and also pappus ca. 10–11 mm (vs. (4–)6–8(–10) mm) long.

**Chromosome number report:**—*Centaurea elegantissima* is a diploid species with the base chromosome number of  $2n = 2x = 22$ , which is consistent with the proposed base number of  $x = 11$  for the section. This is the first chromosome report for this species (Fig. 6D).

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