



## A revision of *Rhaponticoides* (Asteraceae, Cardueae–Centaureinae) from Iran

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### Abstract

A taxonomic review of *Rhaponticoides* in Iran is based on morphological characters of the specimens from the authors' expeditions and other herbarium collections. *Rhaponticoides lachnopus*, *R. schmidii*, *R. sect. Iranicae* and *R. sect. Ruthenicae* are proposed as new combinations. Full description for the genus *Rhaponticoides* and *R. sect. Iranicae* and *R. sect. Ruthenicae* are presented for the first time here. Three names, *R. lachnopus*, *R. ruthenica* and its synonym, are typified. A synopsis with recognized sections and species, relevant synonyms, type citations, lists of specimens examined and an identification key are provided for the genus *Rhaponticoides* in Iran. In addition, some notes about ecology and habitat of *Rhaponticoides* especially in Iran are given. Finally, the geographical distribution of all the 4 species recognized in Iran is presented and mapped.

**Key words:** *Centaurea*, Compositae, Flora Iranica, identification key, lectotypifications, neotypifications, new combinations, taxonomy

### Introduction

*Centaurea* Linnaeus (1753: 909) is one of the largest genera of the family Asteraceae (Bremer 1994, Wagenitz & Hellwig 1996, Hellwig 2004). *Centaurea* s.l. is considered as a non-monophyletic genus and recent approaches have separated it into more monophyletic genera, namely *Centaurea* s. str., *Cyanus* Miller (1754: 4), *Psephellus* Cassini (1826: 488), and *Rhaponticoides* Vaillant (1754: 165) (Wagenitz & Hellwig 2000, Greuter 2003, Hellwig 2004).

According to Hellwig (2004), the genus *Rhaponticoides* comprises 32 species occurring from Portugal and Morocco in the west to Mongolia in the east. However, recently 4 new species and 4 new combinations were published in this genus (Eren 2007, Martins 2007, Doğu *et al.* 2009, Puntillo & Peruzzi 2009, Tan *et al.* 2009, Greuter & Raus 2009, Cinbilgel *et al.* 2014, Ranjbar & Negaresh 2014a). With these treatments the number of species in *Rhaponticoides* has increased to 40.

When the first revision of *Centaurea* for the flora of Iran was made by Wagenitz (1980), *C. ruthenica* Lamarck (1785: 663), *C. bachtiarica* Boissier & Haussknecht in Boissier (1875: 587), *C. lachnopus* Rechinger (1940: 152) and *C. schmidii* Wagenitz (1980: 330) were classified under *C. sect. Centaurea* as Iranian representatives of a well defined group based on the following morphological features: mostly pinnatipartite or pinnatisect leaves with serrate or remotely denticulate segments, subglabrous stems, branched above with a few large capitula, ovoid or subglobose involucre, coriaceous, nearly exappendiculate and glabrous involucral bracts with several dark longitudinal nerves near an obtuse apex, peripheral flowers yellow and strongly radiant, with staminodes (Wagenitz 1980). Two of these species were transferred to *Rhaponticoides*: *Centaurea ruthenica* by Greuter & Agababian (Greuter 2003) and *C. bachtiarica* by Martins (2007).

Studies of herbarium specimens and earlier treatments showed that the genus *Rhaponticoides* is represented by 4 species in Iran. There are still two neglected species which need to be transferred into the genus *Rhaponticoides*. We carried out a comprehensive morphological comparison between the sections and species of *Rhaponticoides* in Iran. Also, full descriptions were presented for the genus and two its sections for the first time. Finally, in order to establish the taxonomic positions of the Iranian members of *Rhaponticoides*, a literature review was performed. On the basis