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New Combinations of *Rhaponticoides* (Asteraceae, Cardueae) from Afghanistan

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New combinations of *Rhaponticoides* (Asteraceae, Cardueae) from Afghanistan

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Abstract- In a forthcoming systematic treatment of Afghanistan species of *Rhaponticoides*, herbarium collections were examined, and as a result, increased the number species of the genus to 3 spp. for Afghanistan. Morphologically, the species of the genus are classified into three subsections: *Iranicae* (1 spp.), *Ruthenicae* (1 spp.) and *Turkestanicae* (1 spp.) in Afghanistan. Two new combinations are proposed for *Centaurea gerhardii* and *C. turkestanica*, and lectotype is designated for *R. turkestanica*. Finally, a first key of the *Rhaponticoides* species in Afghanistan is presented here.

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I. INTRODUCTION

R*haponticoides* Vail. (Greuter *et al.* 2001, 2005; Greuter 2003) is the name of a distinct group of perennial species, its systematic position has been determined as basal within the subtribe Centaureinae (Wagenitz & Hellwig 1996; Bremer 1994; Hellwig 2004), tribe Cardueae and family Asteraceae (Tzvelev 1963; Wagenitz 1975, 1980; Greuter 2003; Hellwig 2004). The genus is represented by 33 species in 3 sections and 7 subsections based on the morphological criteria, ranging from Portugal and Morocco in the west to Mongolia in the east, most being either narrow endemics or having very disjunct distributions (Wagenitz 1986, Agababian 1997, Hellwig 2004, Eren 2007, Puntillo & Peruzzi 2009). However, *C. ruthenica* Lam. is only species of the genus that demonstrates a wide distribution range from Central Europe to Western Asia. According to Agababian (1997), the mesophilous western species are more ancient than the eastern taxa which may have originated from an old broad-leaved West Anatolian base.

In Flora Iranica Wagenitz (1980) recognized 6 species for *Centaurea* sect. *Centaurea*, 2 of which occur in Afghanistan (namely *C. ruthenica* and *C. turkestanica* Franch.). Both species are well defined based on the following morphological features: mostly pinnatifid or pinnatisect leaves with serrate segments, subglabrous branched above with a few large capitula, ovoid or cupuliform involucre, coriaceous, nearly exappendiculate and glabrous phyllaries with several dark longitudinal nerves near an obtuse apex, flowers yellow and strongly radiant with staminodes (Wagenitz

1980). *C. ruthenica* was further already transferred to *Rhaponticoides* by Greuter & Agababian (Greuter 2003).

This article follows previous studies conducted on Centaureinae in Western Asia (Ranjbar *et al.* 2011, 2012a, 2012b, 2013a; Ranjbar & Negaresh 2012, 2013a, 2013b), and aims to detail the taxonomy of *Rhaponticoides* in Afghanistan.

II. MATERIALS AND METHODS

The present study is mainly based on herbarium material. Several sheets have been examined for each species, received on loan from the herbaria W and WU, as well as on digitised type material from the herbarium of K and P. The authors observed all morphological data presented and used in the key and comparison of the species from the herbarium material cited in the text under the new combinations or in the Appendix, respectively.

III. DISCUSSION

The main morphological characters (e.g. phyllaries with several dark blackish-green nerves near apex, multiseriate pappus, transversely wrinkled achenes and pinnatifid or pinnatisect leaves with serrate or remotely denticulate segments) demonstrated the studied plants clearly belong to *Rhaponticoides*. *Centaurea gerhardii* and *C. turkestanica* have rounded phyllaries with a hyaline margin, wrinkled achenes and usually divided leaves or dissected in densely regular cartilaginous-denticulate segments, showing congruence to those of *Rhaponticoides* (formerly *Centaurea* sect. *Centaurea*) species. According to Wagenitz (1980), *C. turkestanica* belongs to *Centaurea* sect. *Centaurea*, and Agababian (1997) placed it in sect. *Centaurea* subsect. *turkestanicae* M. V. Agab., while *C. gerhardii* described by Agababian (1997) is placed in *Centaurea* subsect. *Iranicae* M. V. Agab., there both species belonging to *Centaurea* subg. *Centaurea*. The latter subgenus is recognized by Greuter (2003) as the genus *Rhaponticoides*, a name previously used by Vaillant for a large and artificial genus of 29 or 30 species, characterized by blunt, non-pungent phyllaries of homogeneous consistency (Greuter *et al.* 2005). As a consequence of our analysis, two new combinations based on *Centaurea gerhardii* and *C. turkestanica* are proposed under *Rhaponticoides* below.

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IV. CONCLUSIONS: TAXONOMIC PROPOSAL

Rhaponticoides (subsect. ***Iranicae*** M. V. Agab.) ***gerhardii*** (M. V. Agab.) Ranjbar & Negaresh, comb. nov. (Fig. 1)

Basionym. — *Centaurea gerhardii* M. V. Agab., *Lagascalia* 19(1–2): 897 (1997).

Typus. — Afghanistan, NE Badakhshan: in valle Kokchia N Kishm, near conglomerate slope site, 1450 m, 30.V.1971, *Gibbons* 560 (holo-, K!).

Phenology. — Flowering from May to July; fruit ripening from July to August.

Distribution and Ecology. — *Centaurea turkestanica* occurs in Afghanistan. It is an Irano-Turanian element known only from the midmontane zone, occurring on rocky slopes, near conglomerate slope site at altitudes of 1400–1500 m.

Additional Specimens Examined. — Afghanistan, NE Badakhshan: in valle Kokchia N Kishm, near conglomerate slope site, 1450 m, 30.V.1971, *Gibbons* 560 (K!).

Rhaponticoides (subsect. ***Turkestanicae*** M. V. Agab.) ***turkestanica*** (Franch.) Ranjbar & Negaresh, comb. nov. (Fig. 2)

Basionym. — *Centaurea turkestanica* Franch., *Annales. Sciences. Nattales. Botanique. sér. 6*, 16: 325 (1883).

LECTOTYPUS. — Kirgizstan, dans les montagnes du Tchirtchik, ca. 1350 m, *Capus* 684 (lecto-, P!; isolecto-, P! (designated here): two sheets).

Phenology. — Flowering from May to July; fruit ripening from July to August.

Distribution and Ecology. — *Centaurea turkestanica* occurs in Afghanistan and Kirgizstan. It is an Irano-Turanian element known only from the midmontane zone, occurring on dry rubbly and rocky slopes, talus, eroded shaly hills and banks at altitudes of 500–2400 m.

Additional Specimens Examined. — Kirgizstan, Namangane (Ferghanah), ca. 500 m, *Capus* 685 (syn-, P!). Afghanistan, Deh Kundi, Siah Darreh prope Segatak ad viam versus Deh Kundi, 2350 m, 30.VII.1970, *Podlech* 19058 (W!)

KEY TO THE SPECIES OF *Rhaponticoides* IN AFGHANISTAN

1. Leaves undivided or with 1-2 lobes in lower, mucronate at apex; median and upper cauline leaves decurrent; pappus 7-9 mm long *R. turkestanica* Leaves entirely pinnatisect or pinnatifid, acute at apex; median and upper cauline leaves not decurrent; pappus 4-6 mm long 2.
2. Involucres hemiglobose, 25-30 mm wide; median appendages of phyllaries suborbicular and 10-14 mm wide; inner pappus bristles almost as long as outer one *R. gerhardii* Involucres ovoid, 14-20 mm wide; median appendages of phyllaries narrowly triangular and 0.5 mm wide; inner pappus bristles

usually strongly reduced *R. ruthenica*.

V. ACKNOWLEDGMENTS

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Figure 1 : Holotype of *Rhaponticoides gerhardii* (M. V. Agab.) Ranjbar & Negaresh (Gibbons 560, K).

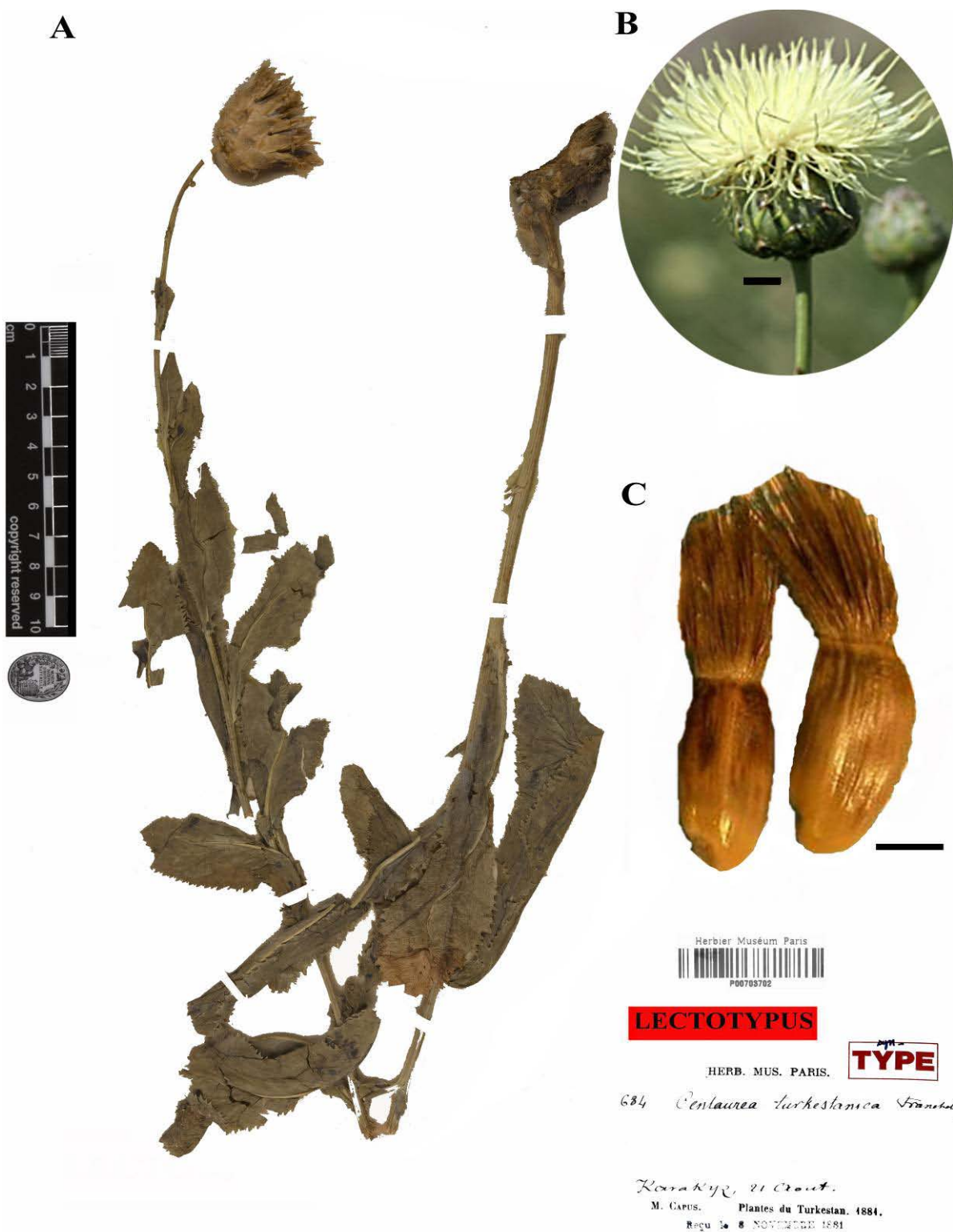


Figure 2 : A, Lectotype of *Rhaponticoides turkestanica* (Franch.) Ranjbar & Negaresh (Capus 684, P); B, Capitule; C, Achenes with pappus. Scale bar: A, 5 mm; B, 2 mm. Photograph 2B by L. Valdshmyt

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21. **APPENDIX Studied specimens of *Rhaponticoides ruthenica***
22. Iran, West Azerbaijan: Chalil Kuh, in faucibus NW Selvana, in rupium fissuris, 1750–2000 m, *Rechinger* 48895 (W!). Afghanistan, Ghorat: Darrah-e Ghuk prope Puni, 2200 m, 6.VI.1971, *Podlech* 21933 (W!); Wakhan: in valle Daryao Baroghil, 3200–3300 m, *Anders* 7850 (W!).