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Centaurea raimondoi, a new species from *Asteraceae*

Abstract

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Centaurea raimondoi (*Asteraceae*) is described as a new species from surroundings of the cities of Mengen and Pazarköy, Turkey: A3 Bolu and is a steno-endemic species. The closest affinities are with *C. eflanensis* Kaya & Bancheva from Turkey, Karabük (A4): Eflani town, which occurs in an area of ca. 200 km distance. The new species is assessed as Critically Endangered (CR) according to IUCN criteria.

Key words: *Cardueae*, *Centaurea*, *Cyanus*, IUCN Red List, Bolu, Turkey.

Introduction

Centaurea L. is one of the largest genera in *Asteraceae*. Depending on the criteria for species delimitation used, it comprises between 200-700 species (Bremer 1994; Hellwig 2004; Bancheva & Greilhuber 2006). Turkey is one of the main centers of diversity for the genus *Centaurea* (Wagenitz 1986). In the Flora of Turkey, 172 plus six imperfectly known species of *Centaurea* were accepted (Wagenitz 1975). Since then, about 30 new species have been described.

Material and methods

Critical material of *Centaurea* was collected in June 2007 and again in June 2012: between the cities of Mengen and Pazarköy, on rocky places, Turkey: A3 Bolu, during field investigations related to a joint Research Project between TUBITAK and Bulgarian Academy of Sciences. Morphological characters of the critical population were studied from the original material in comparison with those of the related species observed in the following Herbaria: BGBM, ISTE, MA, P, PRM, SOM, W. The karyotype was studied from mitotic metaphase plates obtained from root tips of three plants collected in the wild from the type locality. Root tips were pretreated with 8-oxychinoline for 30 min, then fixed in acetic alcohol (1:3) for 24 h at 4°C, hydrolysed in 1 M HCl for 15 min at 60°C, stained with haematoxylin after Gomori (Melander & Wingstrand 1953) for 30 min at 60°C, then

squashed in 45% acetic acid. The karyotype has been determined according to Levan & al. (1964) on the basis of eight metaphase plates. Herbarium specimens of the new species and allied taxa are deposited in ISTE and SOM.

On the basis of the obtained results the studied population has been recognized as a new species, endemic to Bolu province, here described and named *Centaurea raimondoi*.

***Centaurea raimondoi* Bancheva & Kaya, sp. nov.** (Figs 1-4)

Holotype. Turkey: A3 Bolu: between the cities of Mengen and Pazarköy, on rocky places, N 40 55' 25" N, E 32 8' 12", 13 June 2012, coll. S. Bancheva & Z. Kaya, SOM-171075! Isotype PAL!

Resembling *C. eflanensis* Kaya & Bancheva from Turkey, Karabük (A4): Eflani town, but plants densely lanate, with procumbent to decumbent stems; less thickened roots 0.7–0.9 mm, instead of 1–1.5 mm in *C. eflanensis*, violet florets and smaller achenes 2.8–3.5 mm long, instead of 4–4.5 in *C. eflanensis*.

Perennial. Rhizome short, truncate, without stolons, with single thickened root up to 10 cm long, about 0.7–0.9 cm wide, dauciform, at abruptly narrowing in short apex. Stems single to several (2–3), ascending, 9–21.5 cm high. Leaves densely lanate; lower entire to pinnatifid with 1–2 pairs of lanceolate segments, usually forming basal rosette at flowering time; median and upper leaves entire to pinnatifid, sessile. Capitula single, 1.5–3 cm wide. Involucre 12–14 mm high and 6–10 mm wide. Phyllaries prolong-triangular, glabrate. Appendages with decurrent, light to black, 0.1–0.3 mm wide margin; cilia 0.7–1.5 mm long, silver to the top. Florets violet; marginal florets radiant, divided into 4–6 triangle lobes. Achenes 2.8–3.5 mm long, 2 mm wide, with lateral elaiosome; pappus about four times shorter than the achene (Figs 1-4).



Fig. 1. *Centaurea raimondoi* in its natural habitat.



Fig. 2. Holotype of *Centaurea raimondoi*.



Fig. 3. Indumentum of leaf segment of *Centaurea raimondoi*.



Fig. 4. Phyllaries of *Centaurea raimondoi*.

Karyology. *C. raimondoi* is a diploid species with karyotype comprising 20 small chromosomes (ca. 2–4 μm) with the submetacentric chromatid type prevalent. Four of the chromosomes have satellites (Fig. 5).

Distribution and ecology. *C. raimondoi* is currently known only from one locality, in the Bolu province (A3), between the cities of Mengen and Pazarköy. It was growing on rocky places at an altitude of 1200 m alt., at the edge of forest dominated by *Pinus nigra* J. F. Arnold. The population comprises c. 350 individuals distributed in several small groups occupying an area of c. 5 000 m².

Phenology. Flowering in June. Fruiting in July.

Conseravtion status. The species is apparently very rare and local – it is known only from one population in the type locality and from an area of 5000 m². The population numbers approximately 300–350 plants. It should be regarded as belonging to Critically Endangered (CR) category (IUCN, 2001), because of its local distribution and rather small population size.

Etymology. The species is named in honour of Prof. Francesco M. Raimondo at the University of Palermo, Italy, the distinguished expert of Mediterranean flora and vegetation, to whom this paper is modestly dedicated on occasion of his 70 year anniversary.

Taxonomic relationships. Based on morphological caracters, the closest ally of *C. raimondoi* is *C. eflanensis*. The authors conducted herbarium and the literature comparison (Wagenitz 1975; Dostal 1976; Bancheva & Raimondo 2003; Kaya & Bancheva

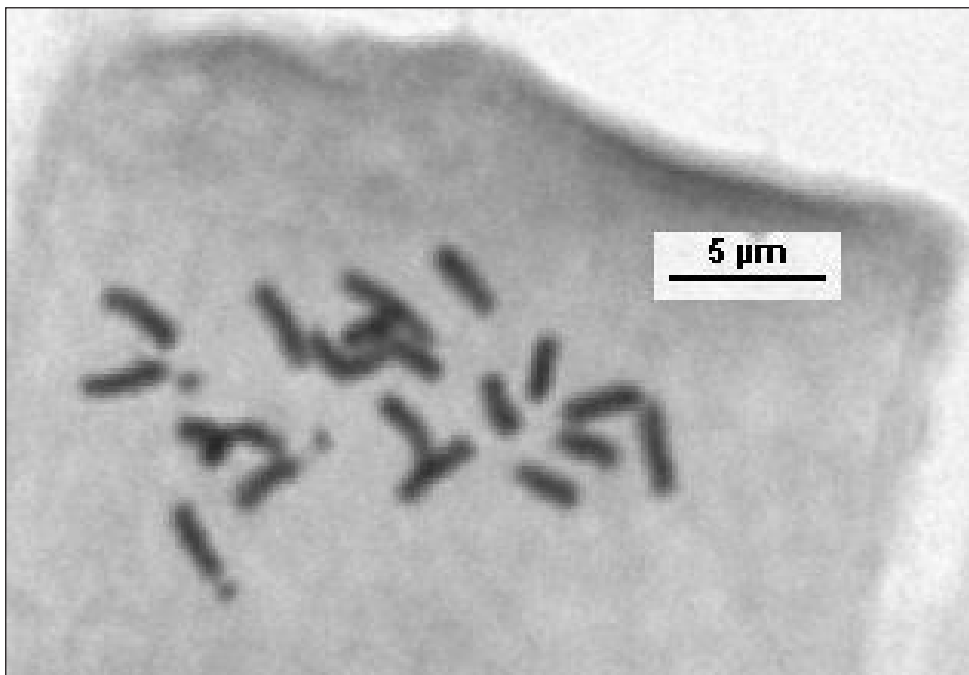


Fig. 5. Karyotype of *Centaurea raimondoi*. Scale bar 5 μm .

- 2009) and conclude that *C. raimondoi* differs morphologically from *C. eflanensis*. The diagnostic characters are contrasted in the following key couplet:
- Glabrescent plant with thickened 1-1.5 cm wide dauciform root; florets violet-purple; achenes 4-4.5 mm long *C. eflanensis*
 Densely lanate plant with thickened 0.7-0.9 cm wide dauciform root; florets violet, achenes 2.8-3.5 mm long *C. raimondoi*

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