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Two new species of the genus *Psephellus (Compositae, Cardueae*[1]*)* from eastern Turkey

Abstract

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Psephellus erzincani and *P. recepii* from the province of Erzincan in eastern Turkey are described as species new to science and illustrated. Both can be assigned to *P.* sect. *Psephelloidei* although the former species differs by the yellowish colour of the flowers and rather inconspicuous marginal flowers. Both are endemic to small areas and must be classified in the IUCN categories Endangered (EN) and Critically Endangered (CR), respectively.

Additional key words: *Psephellus erzincani, Psephellus recepii*, endemics, endangered species, taxonomy

Introduction

The flora of Turkey has an astonishingly large number of endemic species of the genus *Centaurea* L. s.l. (Wagenitz 1975). Turkish botanists scrutinizing in detail areas so far not explored regularly find new species. *Psephellus* Cass. was first described as a genus in 1826, later, however, usually treated as a section of *Centaurea* or as a genus mainly occurring in the Caucasus area and adjacent Turkey. Wagenitz & Hellwig (2000) on the basis of pollen morphology, micromorphology of flowers and other characters established a broader view of *Psephellus* including, e.g., *Aetheopappus* Cass., *Amblyopogon* DC., *Centaurea* sect. *Psephelloideae* (Boiss.) Sosn., *C.* sect. *Hyalinella* Tzvelev and several others. So far c. 90 species have been accepted in *Psephellus* s.l. The most recent new species from Turkey are *P. goeksunensis* (Aytaç & H. Duman) Greuter (Aytaç & Duman 2005) and *P. turcicus* Duran & Hamzaoğlu (2005) from the vilayets (provinces) of Kahramanmaraş and Yozgat, respectively. The two new species from the province of Erzincan seem to be closely related with each other, showing, however, clear differences.

[1] Recently the tribal name *Cynareae* has been accepted by some authors instead of *Cardueae* Cass. 1819, e.g., in Fl. N. Amer. 19: 82. 2006. *Cynareae* is ascribed to Lam. & DC., Syn. Pl. Fl. Gall.: 267. 1806, where, however, the name *Cynarocephalae* is published. Contrary to the opinion of Jeffrey (see footnote in Kadereit & Jeffrey, Fam. Gen. Vasc. Pl. 8: 123. 2007) Art. 19.6 of the Code does not apply here: *-cephalae* (meaning "with the heads of") is not a termination such as -oideae, -inae, -ales but a descriptive word, which cannot be corrected to *Cynareae*.

Fig. 1. *Psephellus erzincani* – isotype at GOET. – Scale bars: overall view = 5 cm, detail view = 5 mm.

Psephellus erzincani Wagenitz & Kandemir, **sp. nov.** – Fig. 1, 2a
Holotype: Turkey, B7 Erzincan, Ilıç, 117 km from Erzincan to Divriği, (UTM) 37 0454331 E, 4367148 M, gypsum, 5.6.2007, *Kandemir 8001* (GAZI; isotypes: ANK, B, GOET, ISTE).

Planta perennis rhizomate lignosa provisa. *Caules* 20-23 cm alti, graciles, ascendentes, appresse griseo-tomentosa, paulo supra basim ramosa, saepe 3-8-cephali. *Folia* juniora albo-tomentosa, serius omnia tenuiter appresse tomentosa, plus minusve glabrescentia, apicula cartilaginea coronata (in superioribus in mucrone elongata), ovalia, indivisa, supremis exceptis longe petiolata, in foliis inferioribus petiolus lamina longior, in mediis circiter aequilongus, folia superiora in petiolo breve angustata. *Involucrum* in statu florendi fere cylindricum, 15-16 mm longum, 7-8 mm latum, in statu maturo anguste infundibuliforme. *Phylla* multiserialia, viridula, nervis longitudinalibus prominentibus; *appendices* membranaceae, stramineae, in phyllis mediis triangularia, leviter decurrentia, ciliata ciliis utrinque 9-11, hyalinis, 1-2.2 mm longis, mucrone terminali iis similis vix prominente; in phyllis internis sensim elongatis et vix ciliatis. *Flores* ochroleuci, marginales steriles ceteris breviores, staminodiis provisi, flores interni hermaphroditi, tubulosi, 17 mm longi. *Achaenia* 7 mm longa; *pappus* albus, multiserialis, setis scabris penultimis 7-8 mm longis, series interna e setis paulum latioribus c. 3 mm longis.

Perennial with woody rhizome. *Stems* 20-23 cm high, slender, ascending, appressed-grey-tomentose, ramified near the base, plants with 3-8 capitula. *Leaves* white-tomentose when young, later thinly appressed-tomentose and ± glabrescent, with a minute cartilagineous tip, elongate into a mucro in the uppermost leaves, undivided, in the lower and median ones 2-3.5 cm broad, oval, and, apart from the uppermost, with a long petiole, in the lower leaves petiole longer than the blade, in the median nearly equally long, upper leaves narrowed into a short petiole. *Involucre* at flowering time nearly cylindrical, 15-16 mm long, 7-8 mm broad, at fruiting time narrowly funnel-shaped. *Phyllaries* in many series, greenish, with prominent longitudinal nerves; *appendages* membranous, stramineous, in the median phyllaries triangular, shortly decurrent, ciliate with

Fig. 2. A: *Psephellus erzincani;* B: *P. recepii*. – Photographs of both species taken by A. Kandemir at their type localities, A on 5 June 2007, B on 9 June 2007.

9-11 hyaline cilia, 1-2.2 mm long on each side and a similar terminal mucro scarcely prominent; appendages of inner phyllaries gradually longer and scarcely ciliate. *Flowers* yellowish white, the sterile marginal shorter than the central ones, with staminodes, the inner hermaphrodite flowers tubular, 17 mm long. *Achenes* 7 mm long; *pappus* white, with scabrous bristles in many series, gradually differing in length, the longest 7-8 mm, the innermost broader, c. 3 mm long.

Ecology. – *Psephellus erzincani* grows in gypsum steppe with *Onosma sintenisii* Hausskn. & Bornm., *Achillea sintenisii* Hub.-Mor., *Scrophularia lepidota* Boiss., *Ebenus macrophylla* Jaub. & Spach, *Teucrium multicaule* Benth., *Scorzonera aucherana* DC., *Thesium stellerioides* Jaub. & Spach, *Salvia euphratica* subsp. *leiocalycina* (Rech. f.) Hedge, *S. divaricata* Benth., *Gypsophila eriocalyx* Boiss. and *Allium nevsehirense* Koyuncu & Kollman.

Conservation status. – *Psephellus erzincani* is a narrow endemic. It is very rare and known only from the type locality in Erzincan. The estimated area of occupancy is less than 10 km^2 and the number of individuals below one hundred. It should be classified as Endangered (EN) according to criterion D (IUCN 2001).

Psephellus recepii Wagenitz & Kandemir, **sp. nov.** – Fig. 2b, 3
Holotype: Turkey, B7 Erzincan, Kemah, top of Kömür village, (UTM) 37 503131 E, 4388572 N, 1189 m, gypsum, 9.6.2007, *Kandemir 8006* (ISTE; isotypes: B, GAZI, GOET).

Planta perennis caudice lignosa multicaule. *Caules* 30-35 cm alti, erecti, appresse griseo-tomentosa, in vel sub medio ramosa, 3-5-cephala. *Folia* tenuiter floccoso-tomentosa, omnia integra, basalia florendi tempore emarcida, evidenter longe petiolata, inferiora et media petiolata, petiolo ad 3 cm longo, ovata vel late ovalia, 3-5 cm lata, acuta, apice mucrone minuta provisa, folia superiora minora, in petiolo breve angustata vel fere sessilia. *Involucrum* subovoideum, 17-18 mm longum, 13-14 mm latum. *Phylla* multiserialia, viridula, nervis longitudinalibus prominentibus; *appendices* membranaceae, stramineae, semilunares, decurrentia, ciliata ciliis utrinque c. 15, 1.5-2 mm longis, hyalinis vel dilute brunneis, mucrone terminali iis breviore. *Flores* roseo-purpurei, marginales radiantes staminodiis provisi, flores interni hermaphroditi, 19-20 mm longi. *Achaenia* 6 mm longa, hilo latero-basali; *pappus* griseus, multiserialis, setis scabris, penultimis 9 mm longis, pappus internus e squamis angustis 3.5 mm longis.

Perennial with a woody base and several stems. *Stems* 30-35 cm high, erect, appressed-grey- tomentose, branched near the middle or below, with 3-5 capitula. *Leaves* thinly floccose-tomentose, undivided, the basal ones at flowering time withered, apparently with a long petiole, lower and median with a petiole up to 3 cm, ovate, acute, with a mucro at the tip, upper leaves narrowed into a short petiole or nearly sessile. *Involucre* narrowly ovoid, 17-18 mm long and 13-14 mm large. *Phyllaries* in many series, greenish, with prominent longitudinal nerves; *appendages* membranous, stramineous, crescent-shaped, decurrent, ciliate with c. 15 cilia on each side, 1.5-2 mm long, hyaline or brownish, the terminal mucro shorter. *Flowers* rose-purple, the marginal sterile radiating, with staminodes, the inner ones tubular, hermaphrodite, 19-20 mm long. *Achenes* 6 mm long, with a lateral-basal hilum; *pappus* greyish, in many series, the bristles scabrous, gradually differing in length, the longest 9 mm, the inner row of narrow scales 3.5 mm long.

Eponymy. – *Psephellus recepiis* is named in honour of Recepi Yazioğlu, governor of the province of Erzincan, who died in a traffic accident in 2003. He was an ardent supporter of the investigation of the biodiversity in the province of Erzincan.

Ecology. – The new species grows in gypsum steppe, with a vegetation of herbaceous species including *Teucrium multicaule, Scorzonera aucherana, Thesium stellerioides, Salvia euphratica* subsp. *leiocalycina, S. divaricata, Verbascum alyssifolium, Scrophularia lepidota, Centaurea patula* Boiss. and *Hedysarum pestalozzae* Boiss.

Conservation status. – *Psephellus recepii* is apparently a narrow endemic too. It is very rare and known only from the type locality in Erzincan. The estimated area of occupancy is less than

Fig. 3. *Psephellus recepii* – isotype at GOET. – Scale bars: overall view = 5 cm, detail view = 5 mm.

10 km², the number of individuals is under one hundred and the population seems under continuous threat of excessive grazing. Therefore, the species should be classified as Critically Endangered (CR) according to criteria B2a+b (IUCN 2001).

Delimitation and relationships

Both species can be assigned to *Psephellus* sect. *Psephelloidei* (Boiss.) Wagenitz & Hellwig with tomentose (not bicoloured) leaves and a long double pappus. Undivided leaves are rather rare in this section. They can be found in *P. mucroniferus* (DC.) Wagenitz and *P. holtzii* (Wagenitz) Wagenitz, which are, however, very different in habit. It is thus difficult to name species really close to the new ones. It should be noted that there are some resemblances between *P. erzincani* and *P. kopet-daghensis* (Iljin) Wagenitz of *P.* sect. *Czerniakovskya* (Czerep.) Wagenitz & Hellwig. As stated before (Wagenitz & Hellwig 2000) there are close connections between the sections of *Psephellus* and future investigations may alter their limits.

The two new species are remarkably similar in most characters but differ clearly by the following ones:

	Psephellus erzincani	*Psephellus recepii*
Petiole in median leaves	longer than lamina	shorter than lamina
Involucre at flowering time	cylindrical, 15-16 × 7-8 mm	narrowly ovate, 17-18 × 13-14
Appendages	triangular	crescent-shaped
Flower colour	yellowish white	rose-purple
Marginal flowers	not radiating	radiating

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