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A New Record for The Flora of Türkiye: *Cousinia mazu-shirinensis* Rech.f.

Mehmet FİDAN[1], Süleyman Mesut PINAR[2]✉, Hüseyin EROĞLU[3], Metin ARMAĞAN[4]
[1]Department of Biology, Faculty of Art and Sciences, Siirt University, Kezer-Siirt, Türkiye, [2,3]Department of Biology, Faculty of Sciences, Yüzüncü Yıl University, Tuşba-Van, Türkiye, [4]Department of Field Crops, Eregli Faculty of Agriculture, Necmettin Erbakan University, Konya, Türkiye
[1]https://orcid.org/0000-0002-0255-9727, [2]https://orcid.org/0000-0002-1774-7704, [3]https://orcid.org/0000-0001-9171-5607
[4]https://orcid.org/0000-0002-3913-954X
✉: mesutpinar@hotmail.com.tr

ABSTRACT
Cousinia mazu-shirinensis taxon was recorded for the first time in the Flora of Türkiye from Şırnak province, located in the southeast of Türkiye. The morphological characteristics of the *C. mazu-shirinensis*, the map of the distribution area, and the photographs of its natural habitat are also presented in the study.

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ÖZET
Cousinia mazu-shirinensis taksonu Türkiye Florasına ilk kez Türkiye'nin güneydoğusunda yer alan Şırnak ilinden kaydedilmiştir. *C. mazu-shirinensis* taksonunun morfolojik özellikleri, yayılış alanını gösteren harita, ve doğal habitatında çekilmiş fotoğrafları da çalışmada sunulmuştur.

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INTRODUCTION
The genus *Cousinia* Cass. was described by the French botanist and naturalist Alexandre Henri Gabriel de Cassini (Cassini, 1827). According to APG IV, the genus *Cousinia* is in the subfamily of *Carduoideae* (Stevens, 2001; APG, 2016). According to the Compositae Global Database data, the genus is represented in the world by approximately 700 taxa (CWG, 2023). The *Cynaroideae* Bunge is the largest section of the genus *Cousinia* and represents 113 species (Restegar et al., 2018), and is distributed in Lebanon, Syria, Türkiye, the Caucasus, Iraq, Iran, Turkmenistan, Afghanistan, and Pakistan. This is characterized by the number of chromosomes as 2n = 24, ± spiny-winged leaves and appendaged phyllaries (Mehregan & Kadereit, 2008).

According to the latest revision study of *Cousinia*, the genus is represented by 39 species, one of which is a dubious record, in 6 sections in the Turkish flora, and 26 of these species are endemic (Tugay, 2012). Then, three new taxa were found in three separate studies; the first is hybrid, the second is a new species and the last one is a new record taxon published by Türkiye (İlçim et al., 2013; Fidan et al., 2019; Tugay et al., 2019). Nine of these 41 taxa are included in the *Cynaroideae* section (Huber-Morath, 1975; Tugay, 2012; Fidan et al.; 2019).

In 2015, during the field studies carried out around the Balveren town, Şırnak province, a population of the

genus *Cousinia*, which is interesting in terms of flower color, was encountered. In the field studies carried out in the same area in the following years, the same population could not be found anymore due to grass cutting. In 2018 and 2019, in the biodiversity study conducted in the province of Şırnak, another population consisting of the same specimens was found approximately 10 km east of the first region. Individuals from the population were photographed and collected in their natural habitats. Since the specimens could not be identified from the flora of Türkiye (Huber-Morath, 1975), they were identified from the Flora Iranica because they were close to the region. As a result of the diagnosis, it was concluded that the specimens belonged to the *Cousinia mazu-shirinensis* Rech.f. species, which has not been recorded before in the flora of Türkiye but is found in Iraq.

MATERIAL and METHODS

The material of the study consists of specimens of the genus *Cousinia* collected from the towns of Şenoba and Balveren, Şırnak province, Türkiye, in 2015, 2018 and 2019. The plant specimens were photographed in their natural habitat (Figure 1) collected from the field and dried. First of all, Flora of Turkey was consulted for the identification of the collected specimens (Huber-Morath, 1975). When the specimens could not be identified using the Flora of Turkey, the relevant volumes of the Flora Iranica were consulted and identified from there (Rechinger, 1972; 1979). Life span, stem and leaf characteristics, involucral (especially phyllary and appendage characters), and floral characteristics were used when identifying the taxon. Herbarium specimens found in international digital herbaria (E, K, and W) were compared with the collected specimens (Figure 2). Specimens deposited in Van Yüzüncü Yıl University Herbarium (VANF) and Siirt University Flora and Fauna Center Herbarium (SUFAF) (herbaria abbreviation follows Thiers, 2024). The detailed structures of the phyllaries and flowers of the specimens were examined under a Leica EZ4 brand/model stereo microscope (Figure 3).

Morphological examinations and measurements of the collected specimens were made. By combining these measurements with the description in the Flora Iranica, the description of the taxon was expanded.

The map showing the known distribution area of the taxon was prepared using Google Earth (Google Inc., 2024) (Figure 4).

RESULT and DISCUSSION

Cousinia *mazu-shirinensis* Rech.f., Fl. Iranica [Rechinger] 90: 226 (1972).

Typus: WHEELER-HAINES 2046, E (photo!)

Description: Biannual or perennial monocarpic herbs, 25–46 cm tall, usually branched from the base. Stems slender, cylindrical, densely arachnoid-tomentose in base, sparsely arachnoid-tomentose above. Leaves coriaceous-herbaceous, reticulate, dentate, decreasing from bottom to top, densely arachnoid-tomentose below, sparsely arachnoid pubescent above, with spines ca. 1–3 mm long; basal leaves elliptical, broadly oblong to oblanceolate, 15–30 × 4–7 cm, simple or 2–3 pinnatipartite, segments elliptically ovate, triangular or lanceolate, upper segment bigger than others, broadly ovate, rachis ca. 1–2 mm broad; stem leaves decurrent, pinnatisect at the lower part of the stem, simple at the upper part of the stem, decurrent into wings up to 4.5–10 mm (including spines); lower leaves elliptical, 5–10 × 2–3 cm, pinnatisect; middle stem leaves narrowly ovate, 2–5 × 1.5–3 cm, upper leaves ovate to linear-lanceolate, 0.8–3 × 0.5–1.5 cm, including spines. Capitula 6–12, single on the top of branches, 40–60 flowered, involucre ovoid-globose to subglobose, 20–35 × 20–55 mm including spines; phyllaries 40–90(-120), glabrous, densely imbricate, inner phyllaries linear, subulate, 19–30 × 1–3.5 mm, middle phyllaries narrowly oblong, 3–13.5 × 3–5.5 mm, outer phyllaries narrowly oblong, 1.5–3 × 2–5 mm, patent or recurved, broadly rhomboid to rhomboid-flabellate appendage; appendages 8–16.5 × 4–15 mm, carinate, sharply attenuate into a 1–3.5 mm long spine at apex, with 0.5–1.5 mm, up to 1–3 rows tiny spines on both sides, median vein of appendage prominent, outer surface glabrous, papillate, inner sparsely arachnoid-tomentose, enlarged middle part of appendage long beard like hairy; bristles of receptacle smooth, 9–16 mm long; flowers wine purple, 20–26 mm long; anther tubes wine purple, glabrous; bristles of pappus barbellate, 3.5–5.5 mm long; achenes black-brown, obovate, 4.5–5.5 × 2–3.5 mm.

Turkish name: The genus *Cousinia* is known as "Kızan" in Turkish (Tugay, 2012). The authors suggest the name of the species as "Erbilkızanı", as it was first described in Erbil province, Iraq according to Menemen et al. (2016).

Distribution: The taxon is distributed in the northern region of Iraq and southeast of Türkiye (Figure 4).

Habitat: The taxon is distributed in oak areas and steppes open to oaks.

Phenology: The flowering season of the taxon is mid-June and the fruiting season of the taxon is July.

Examined specimens: —TÜRKİYE. C9 Şırnak: Balveren Town, Cevizli Hamlet, Pişta Guva Bapire Miste district, oakyards, 37° 29' 31" N, 42° 39' 07" E, 14 July 2015, *M. Fidan* 1848 (VANF!, SUFAF!); Uludere, Şenoba Town, Şenoba to Uludere 1 km, oakyards, steppe, 950 m, 37° 27' 30" N, 42° 43' 55" E, 28 June 2019, *M. Fidan, M. Pınar, H. Eroglu,* MMH 1623 (VANF!, SUFAF!). —IRAK, Kurdistan, Arbil, Kani Mazu Shirin, 5000 ft., 20.6.1961, *Agnew,A.D.Q.*

& Hadač & Wheeler Haines, R., 2046 [E (E00383837) photo!; isotypes: K (K000778377) photo!, W (W19720001074) photo!].

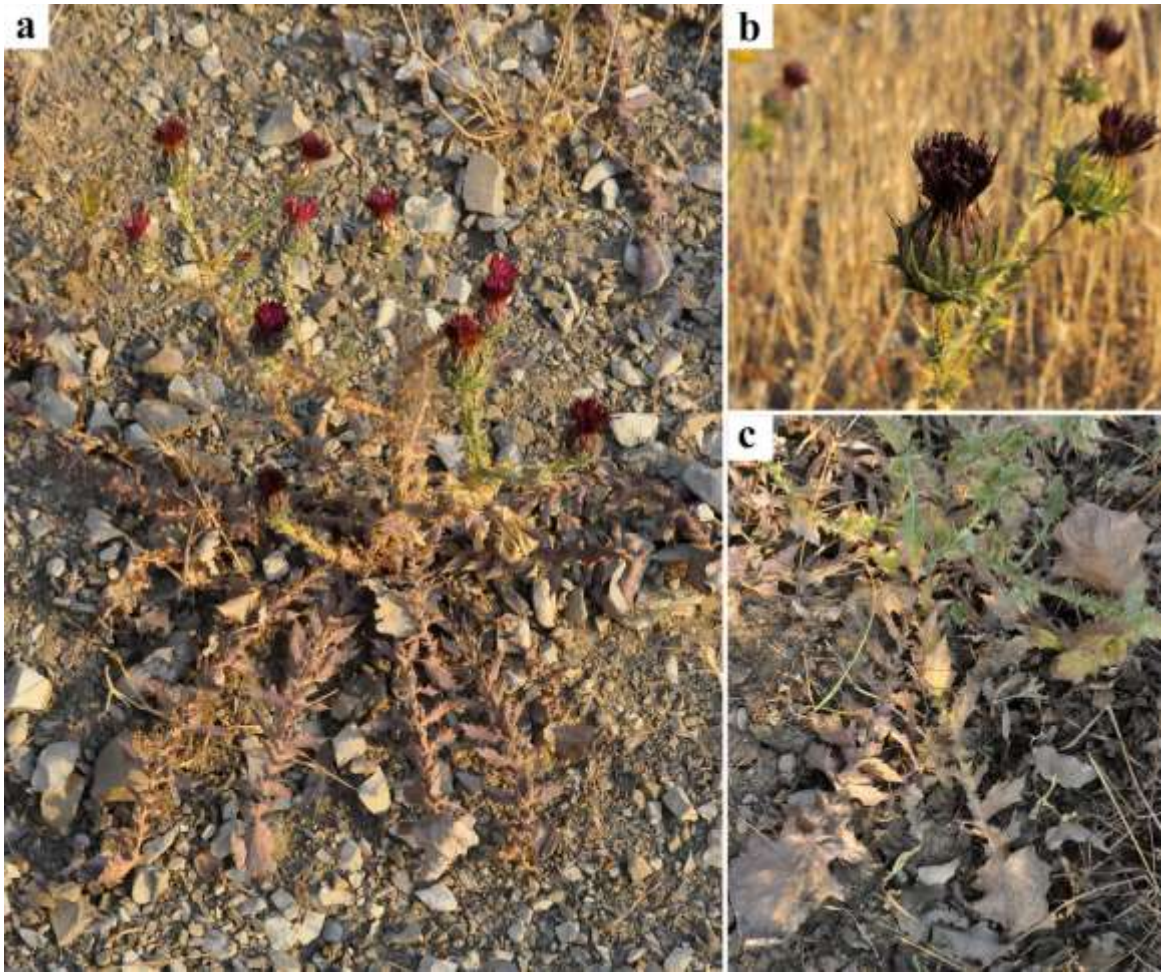

Figure 1. *Cousinia mazu-shirinensis* a. habit, b. capitula, c. basal, and stem leaves
Şekil 1. Cousinia mazu-shirinensis a. genel görünüş, b. kapitula, c. gövde ve taban yaprakları

Cousinia mazu-shirinensis species was considered a synonym of the *Cousinia odontolepis* DC. subsp *odontolepis* taxon with the studies carried out after the writing of the Flora Iranica. With this study, the number of taxa in the *Cynaroidae* section was sharply (110 to 31) reduced (Mehregan & Kadereit, 2008). This study is mostly based on examining the morphological characteristics of materials in herbaria. According to this study, not only *C. mazu-shirinensis* but also many taxa previously recorded in Turkey have become synonymous with other taxa. However, in subsequent studies, this concept was not widely accepted because involucral characters were ignored and sufficient population observations were not made (Attar & Djavadi, 2010; Tugay, 2012; Restegar et al., 2018).

When the distribution of *Cousinia mazu-shirinensis* taxon is screened in preliminary studies, it is seen that it is distributed in the southeast of the Bitlis-Zagros suture zone (Rechinger, 1979; Hüsing et al., 2009; Yeşilova & Helvaci 2012) (Figure 4). *Cousinina mazu-shirinensis* was described from a region very close to the Turkish border. In other words, it is inevitable that this taxon exists in Türkiye. The authors predict that the taxon will probably be found in the south of Hakkari province, Türkiye, in future studies.

Cousinia mazu-shirinensis can be easily distinguished from other *Cousinia* taxa distributed in the region, especially by its wine-purple flower color (Figure 1). This was the most distinctive feature that attracted the authors' attention in the field.

With this study, the number of taxa of the genus *Cousinia* in Türkiye increased to 42 one of which is a dubious record, 28 of those are endemic.

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field studies within the scope of the terrestrial and inland water ecosystems biodiversity inventory and monitoring project of Şırnak Province, and the Şırnak Provincial Directorate of Nature Conservation and National Parks and its employees, who assisted in the field studies.

Figure 2. Isotype specimen of *Cousinina mazu-shirinensis* in the Wienn Herbarium (W19720001074).
Şekil 2. Cousinina mazu-shirinensis'in Wienn Herbaryumunda yer alan isotip örneği (W19720001074).

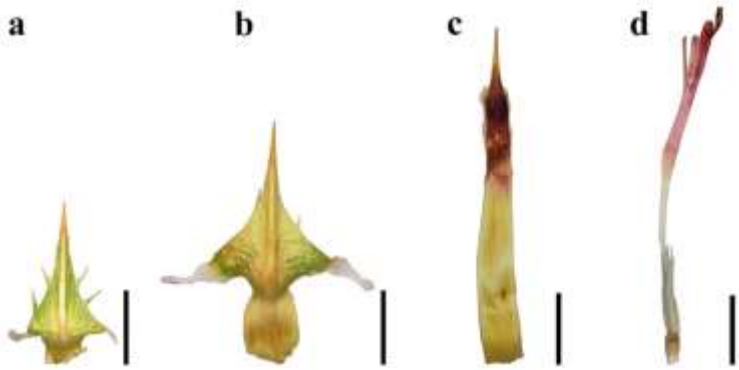

Figure 3. Phyllaries and flower images of *Cousinia mazu-shirinensis* a. outer phyllary b. middle phyllary, c. inner phyllary d. flower (bars 5 mm).

Şekil 3. Cousinia mazu-shirinensis'in fillari ve çiçek görüntüleri a. dış fillariler b. orta fillariler, c. iç fillariler d. çiçek (barlar 5 mm).

Figure 4. Map showing the distribution area of *Cousinina mazu-shirinensis.* Red square: the region where the species was first recorded in Türkiye; Blue circles: literature records showing the species' previous distribution area (Rechinger, 1972) (Map taken from Google Earth software).

Figure 4. Cousinina mazu-shirinensis'in dağılım alanını gösteren harita. Kırmızı kare: türün Türkiye'de ilk kaydedildiği bölge; Mavi daireler: türün önceki dağılım alanını gösteren literatür kayıtları (Rechinger, 1972) (Harita Google Earth yazılımından alınmıştır).

Researchers' Contribution Rate Declaration Summary

The authors declare that they have contributed equally to the article.

Conflict of Interest Declaration

The authors of the article declare that they do not have any conflict of interest.

REFERENCES

APG IV (2016). An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. *Botanical Journal of the Linnean Society 181*, 1-20.

Attar, F., & Djavadi, S.B. (2010). A taxonomic revision of *Cousinia*, sect. *Cynaroides* (Asteraceae, Cardueae) in the flora of Iran. *Iranian Journal of Botany 16* (1), 130-184.

Cassini, A.H.G. (1827), *Saussurée*, *Saussurea*. In: Cuvier, F. (Ed.) *Dictionnaire des sciences naturelles*, *vol. 47*. F.G.Levrault, Strasbourg, etc., pp. 498–513.

Compositae Working Group (CWG) (2024). *Global Compositae Database*. Accessed at http://www.compositae.org https://doi.org/10.14284/411 (accessed 16 January 2024).

Fidan, M., Pınar, S.M., & Eroğlu, H. (2019) *Cousinia gigantosphaera* Rech, f. (Asteraceae-Compositae); A New Plant Species Record from the Southeastern Anatolia Region of Turkey. *Turkish Journal of Agricultural Research 6* (3), 308-311.

Google Inc. (2024). Google Earth (Version 7.3.6.9345) [Software]. http://www.google.com/earth/index.html.

Huber-Morath, A. (1975). *Cousinia* Cass. In: Davis, P.H. (Ed.) *Flora of Turkey and the East Aegean Islands*, *vol. 5*. Ediburgh University Press, pp. 329-353.

Hüsing, S.K., Zachariasse, W.J., Van Hinsbergen, D.J.J., Krijgsman, W., Inceöz, M., Harzhauser, M., Oleg, M., & Kroh, A. (2009). Oligocene–Miocene basin evolution in SE Anatolia, Turkey: constraints on the closure of the eastern Tethys gateway. *Geological Society, London, Special Publications 311* (1), 107-132.

İlçim, A., Özçelik H., & Çenet, M. (2013). A new natural hybrid of *Cousinia* Cass. (Asteraceae) from Türkiye. *BioDiCon 6* (1), 71-75.

Mehregan, I., & Kadereit, J.W. (2008). Taxonomic revision of *Cousinia* sect. *Cynaroideae* (Asteraceae,Cardueae). *Willdenowia 38*, 293-362. https://doi.org/10.3372/wi.38.38201

Menemen, Y., Aytaç, Z. & Kandemir, A. (2016). Türkçe Bilimsel Bitki Adlandırma Yönergesi. *Bağbahçe Bilim Dergisi 3*(3), 1-3.

Natural History Museum, Vienna-Herbarium W. (2024). Occurrence dataset https://doi.org/10.15468/5sl7sh accessed via GBIF.org (accessed 16 January 2024).

Rechinger, K.H. (1972). *Compositae-Cynareae I: Cousinia*. In: Rechinger, K.H. (Ed.) *Flora Iranica*, *vol. 90*. Akademische Druck- und Verlagsanstalt, Graz, pp. 1-329.

Rechinger, K.H. (1979). *Compositae-Cynareae III: Cousinia*. In: Rechinger, K.H. (Ed.) *Flora Iranica*, *vol. 139A*. Akademische Druckund Verlagsanstalt, Graz, pp. 108-153.

Rastegar, A., Attar, F., & Mirtadzadini, M. (2018). Novelties in Iranian *Cousinia* sect. *Cynaroideae* (Asteraceae, Cardueae): new taxa and taxonomic notes. *Phytotaxa 343* (3), 227-239.

Royal Botanic Garden Edinburgh (2024). Holotype specimen of *Cousinia mazu-shirinensis* (holo: E https://data.rbge.org.uk/herb/E00383837) (accessed 16 January 2024).

Stevens, P.F. (2001 onwards) Angiosperm Phylogeny Website. Version 14, July 2017 [and more or less continuously updated since].

The Herbarium Catalogue, Royal Botanic Gardens, Kew (2024). http://www.kew.org/herbcat (accessed 16 January 2024).

Thiers, B. (2024 [continuously updated]). Index Herbariorum: A global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. Available from: http://sweetgum.nybg.org/science/ih/ (accessed 16 January 2024).

Tugay, O. (2012). *Cousinia* Cass. In: Güner, A., Özhatay, N., Ekim, T. ve Başer, K.H.C. (eds.). *Türkiye Bitkileri Listesi (Damarlı Bitkiler)*. Flora Araştırmaları Derneği ve Nezahat Gökyiğit Botanik Bahçesi Yayını, İstanbul. pp. 148-150.

Tugay, O., Ulukuş, D., Ertuğrul, K., Uysal, T., Demirelma, H., & Dural, H. (2019). A new species of *Cousinia* (sect. Cousinia, Asteraceae) from the Ağrı Mountain (eastern Turkey): evidence from morphology, karyology and anatomy. *Phytotaxa 427* (4), 259-269. https://doi.org/10.11646/phytotaxa.427.4.4

Yeşilova, Ç., & Helvaci, C. (2012). Stratigraphy and Sedimentology North of Batman and Siirt, Turkey. *Tapg Bulletin 23* (2), 7-49.