

HIRTELLINA KURDICA (ASTERACEAE); A SPECIES NEW TO THE FLORA OF TURKEY, WITH CONTRIBUTIONS TO ITS TAXONOMY

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Hirtellina kurdica (Merxm. & Rech. f.) Dittrich, (Asteraceae) is described as a new record for the Flora of Turkey (C9 Şırnak, Siirt). A detailed morphological description, photographs, distribution map, pollen and achen morphology of this new record are given.

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Key words: New record; *Hirtellina kurdica*; Şırnak; Siirt; Turkey

گونه *Hirtellina kurdica* از (تیره کاسنی)، گزارش جدیدی برای فلور ترکیه. با مروری بر تاکسونومی آن

مهمت فیرات: دپارتمان زیست‌شناسی، دانشکده آموزش و پرورش، دانشگاه یوزونکویل، ترکیه

Hirtellina kurdica (Merxm. & Rech.f.) Dittrich (Asteraceae). به عنوان گزارش جدیدی برای فلور ترکیه شرح داده می‌شود. شرح گونه به همراه تصاویر گیاه، اکن و دانه گرده و هم‌چنین نقشه پراکندگی جغرافیایی آن ارایه می‌گردد.

INTRODUCTION

Asteraceae comprises about 23000 species in 1535 genera in the world (Judd & al. 2007). This family is divided into 43 tribes (Funk & al. 2009). Tribe Cardueae is one of the largest tribes of the family with about 2500 species in 80 genera, mainly distributed in the Northern Hemisphere. Tribe Cardueae is classified into the subfamily Carduoideae. Tribe classification is rather difficult because of having great morphological varieties. Tribe also includes four sub-tribes Carduineae, Centaureinae, Carlininae and Echinopsidinae. Sub-tribe Carlininae and Echinopsidinae were not included in tribe Cardueae (Wagenitz 1976, Dittrich 1977, Bremer 1994) but recent studies show that these two taxa should be recognized as sub-tribes (Barres & al. 2013).

The genus *Staelina* L. is classified into the sub-tribe Carduineae. The genus *Staelina* and *Berardia* are extremely different genus of the sub-tribe Carduineae. Greuter (2003) made some treatment of Cardueae and made the genus *Staelina* L. as a synonym of *Hirtellina* Cass. Although Barres & al.

(2013) showed the monophyly of the genus of sub-tribe Carduineae, these two genera have not been solved (Barres & al. 2013). According to IPNI data base the genus *Hirtellina* Cass. has four species; *Hirtellina fruticosa* (L.) Dittrich, *Hirtellina kurdica* (Merxm. & Rech.f.) Dittrich, *Hirtellina lanceolata* Cass. and *Hirtellina lobelii* (DC.) Dittrich. Two species including *Hirtellina kurdica* (Merxm. & Rech.f.) Dittrich, and *H. lobelii* (DC.) Dittrich are distributed in Turkey.

MATERIALS AND METHODS

Hirtellina kurdica was collected Şırnak and Siirt (Fig. 1), in October 2013-2014. Cupicha (1982) and Güner (2000) did not record this species in Turkey. Thus this collection constitutes a new record for the Turkey flora (Rechinger 1979, Cupicha 1982, Güner & al. 2000, Ekim 2012, Firat 2013). *Hirtellina kurdica* was originally described from South Kurdistan region of Iraq. Collected materials were deposited at the Herbarium of Yüzüncü Yıl University Science Faculty (VANF).

Pollen slides were prepared according to

Wodehouse (1935) from mature flowers. At least 30 pollen grains for each species were examined in light microscope and micrographs were taken by Leica DM 750 digital imaging system. After the examination of each species, measurements were done for colpus length (Clg) and thickness (Clt), pore length (Plg) and thickness (Plt), pollen shape, exine thickness, intine

thickness, polar axis (P), equatorial axis (E) of pollen. In this study, Punt & al. (2007) were followed for terminology. For SEM, pollen grains were directly mounted on stubs and covered with gold and surface ornamentations of pollen grains were examined in detail with Jeol TESCAN MAIA3 XMU model electron microscope. Olympus sz 61.

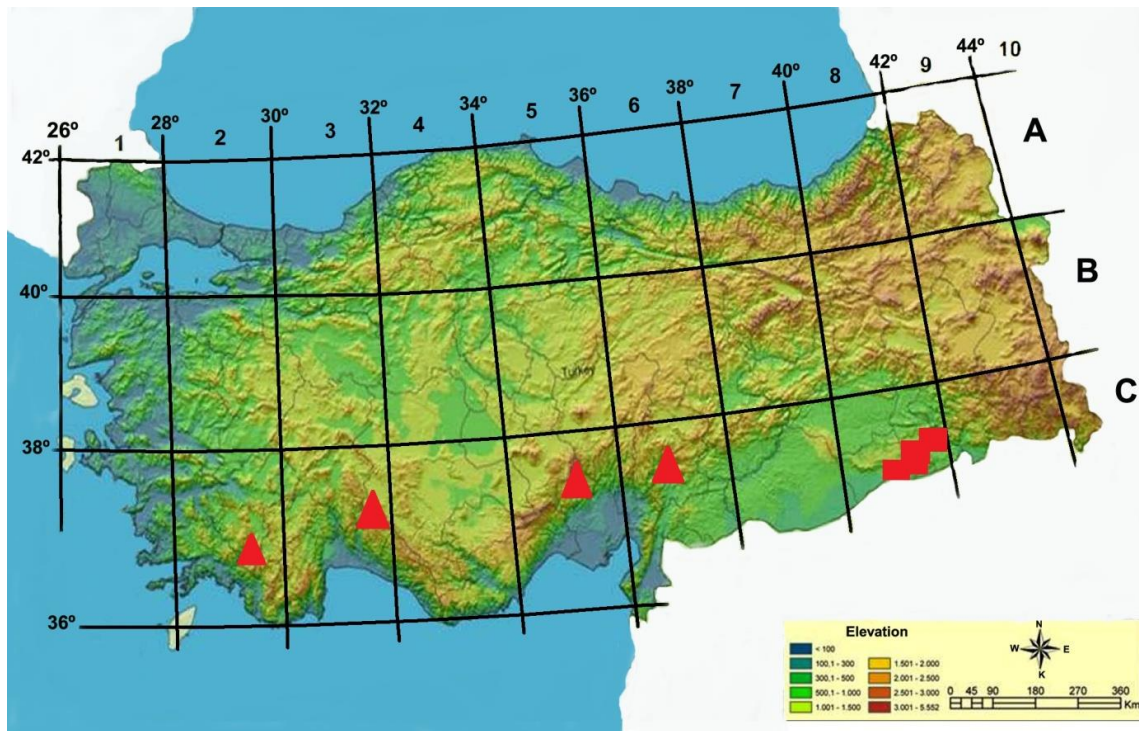


Fig. 1. Geographical distribution of *Hirtellina lobelii* (▲) and *Hirtellina kurdica* (■) in Turkey.

Microscopy

Achenes were observed and photographed with Olympus SZ 61 stereomicroscope. For scanning electron microscopy (SEM), seeds were directly mounted on stubs and covered with gold and images were taken by using the model of Jeol TESCAN MAIA3 XMU scanning electron microscope.

RESULTS

Hirtellina kurdica (Merxm. & Rech. f.) Dittrich, Boissiera 51: 75 (1996). Fig 2,

Syn. *Staelina kurdica* Merxm. & Rech. f., Ber. Deutsch. Bot. Ges. lxxii. 282 (1959).

Type: IRAQ. Kurd. Mosul: Inter Hora et Baibu in distr. Raikan, Thesiger 1237.

Subshrub, many stems, finely papillose-scabrous, or glabrous. Flowering stem 25-70 cm long, densely leafy. Leaves 20-45 x 8-21 mm, linear-lanceolate, finely coriaceous, minutely glandular-punctate, closely

nerved, remotely glandular-dentate, basal rounded or attenuate sessile, apex acute, becoming gradually much smaller above, somewhat squamiform. Peduncle 2-5 mm, straight. Inflorescence straight corymbose-raceme, capitula solitary or in few-headed. Involucre 11-16 mm long, 5-7 mm wide, basal attenuate, phyllaries 7-9 seriate, regularly close imbricate, entire, narrowly marginate, firstly rotundate, then mucronulate, margin curled papillose, others glabrous, laevigate. Flowers dirty white, becoming pale when dry, disc floret 8-11 mm long, tube 6-8 mm, glabrous, lobes 2-3 mm long, linear, acute, anthers 4-5 mm, filaments 2-3 mm long glabrous and blow polose hairs; Ovarium ovate 0.5-1 mm, glabrous, styles 9-12 mm long, glabrous; bifurcate, branches 0.4-0.6 mm long. Mature achenes linear to oblong, isodiametric, greyish or brown, 2-3 x 5-7 mm, feather surface pilose. Pappus 8-10 mm, retrorse scabrous, light brown.



Fig. 2. *Hirtellina kurdica*: A-B, flowers; C, leaves; D-E, habit and habitat.

Examined materials: Turkey. C9 Şırnak, Cudi Mountains, Göndek region, Rocky slopes, 969 m, 38°25'11" N, 42°38'57" E, 15.10.2013, *M. Firat* 30474 VANF!; C9 Şırnak, Silopi, Cudi Mountain, Hessena region, rock crevices, 870 m, 37°20'56" N, 42°25'38" E, 18.10.2013, *M. Firat* 30484, C9 Siirt; From Siirt to Eruh 10. km, Dry limestone bushy slopes, 974 m, 37°44'25" N, 42°13'13" E, 20.10.2013, *M. Firat* 30490.; C9 Şırnak; Cizre, Gabar Mountain, Dry limestone bushy slopes, 1343 m, 37°33'48" N, 42°12'21" E, 06.10.2014, *M. Firat* 31701, **Iraq:** Kurd.: Mosul: Jabal Khantur prope Sharanish N Zakho, 1200 m, Rech. 10781, Inter Dihok et Amadiyah, in fissuris rupium faucium supra Sirsang, 1200 m, Rech. 11905, Sirsang, in praeruptis calc., 1200 m, Haines 1242!, Agnew in Haines s.n.

Habitat: Rocky slopes and dry limestone bushy slopes, 850-1350 m.

Phenology: Flowering from October to November

Distribution in Turkey: Şırnak and Siirt province

General distribution: Kurdistan region of Iraq, Turkey

Associated with: *Spirea* sp., *Satureja avromanica* Maroofi, *Pentapleura subulifera* Hand.-Mazz., *Cyclotrichium stamineum* (Boiss. & Hohen) Manden & Scheng., *Origanum vulgare* L. subsp. *gracile* (K.Koch) Ietsw., *Dipsacus* sp.

Vernacular name: *Hirtellina kurdica* is called as "Tehnovik" by the local people of the Şırnak province

Pollen

The pollen grains are tectate, radially symmetric, isopolar, tricolporate, prolate-esferoidal and circular in polar view. Polar axis 33.5 µm and equatorial axis 36.5 µm. P/E= 1-1.14 µm. Exine ornamentation is echinate with mikroperforations between spines. The exine is 1.9 µm thick. The intine is 0.7 µm thick. Spine length is 3.35 µm and spine base 7.5 µm. The distance between two spin 7.2 µm. The pores are circular in white distinct margin Plg 9.7 µm, Plt 8.2 µm. Colpi wide or slender at the equator, pointed, tapered or blunt towards the ends; Clg 21.5 µm, Clt 12 µm. (figs. 3,4).

Fruit characters

Achenes are linear to oblong, isodiametric, greyish or brown, 2-3 x 5-7 mm. Feather surface pilose. Pappus 8-10 mm, light brown. Hilum obovate, 0.09-0.14 mm. Ornamentation of achene surface finely and irregularly striate. (figs. 5 & 6). Epidermal cells are irregularly penta-hexagonal and without thickened walls. Anticlinal walls are flat or slightly sinuous, and periclinal walls are flat to convex.

Key to closely related *Hirtellina* species in Turkey

- 1. Leaves linear-lanceolate, 15-30 x 1,5-4 mm, smooth *H. lobelii*
- Leaves ovate-lanceolate, 20-45 x 8-21 mm, finely dentate..... *H. kurdica*



Fig. 3. Light microscope micrographs of pollen grains of *Hirtellina kurdica*: a, equatorial view 100X; b, equatorial pore view 100X; c, polar view 100X.

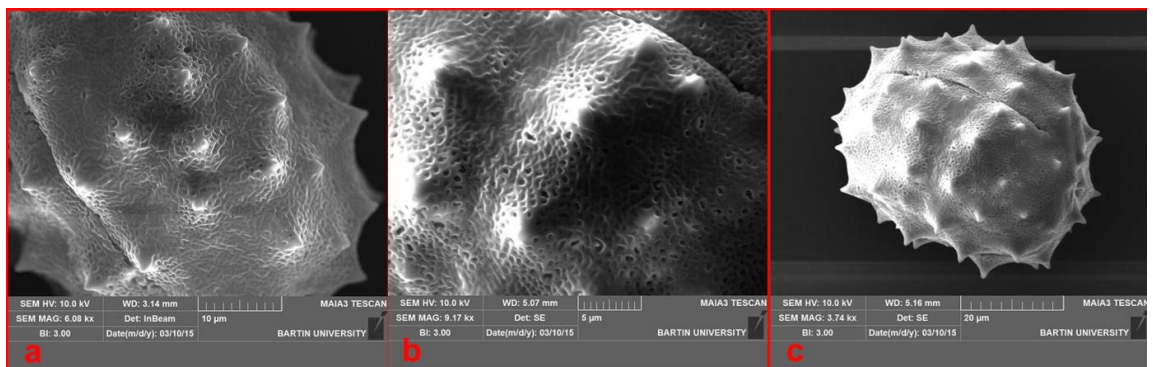


Fig. 4. SEM micrographs of pollen. a, equatorial view; b, microperforations ornamentation; c, general view of pollen.



Fig. 5. Stereo microscope micrographs of achen. a, hilum ornamentation; b & c, lateral view of achen of *Hirtellina kurdica*.

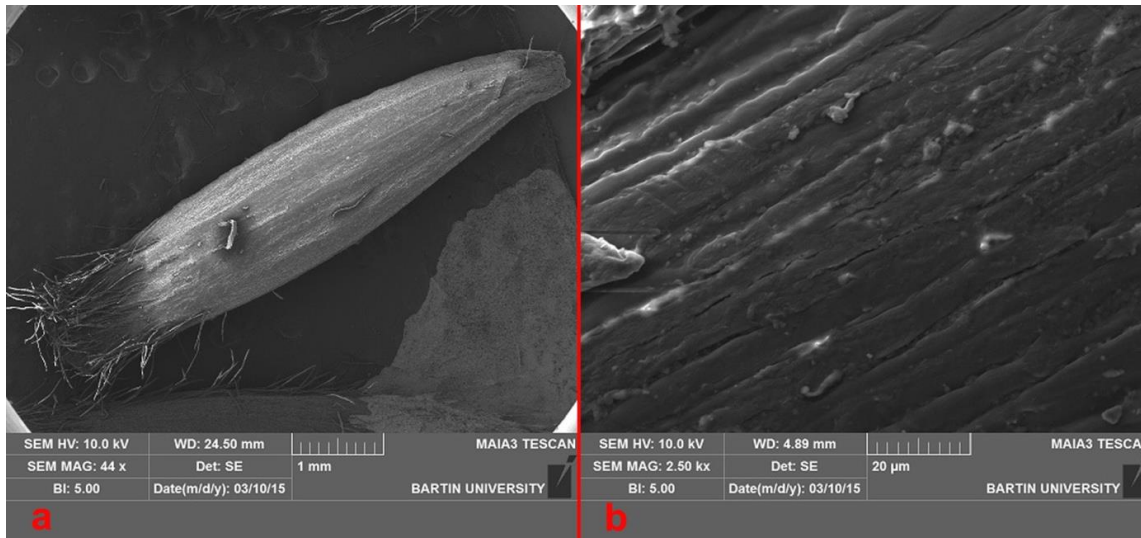


Fig. 6. Electron microscope micrographs of achen. a, general view of achen; b, surface ornamentation.

Table 1. A comparison of selected morphological characters of *Hirtellina kurdica* between descriptions given in the type specimen, in the present study and *H. Lobelii*.

Morphological characters	<i>H. kurdica</i> (new collection)	<i>H. kurdica</i> (Type specimen)	<i>H. lobelii</i>
Stems	flowering stem 25-70 cm long	flowering stem at least 45 cm long	flowering stem 22-60 cm long
Leaves	Laeves 20-45 x 8-21 mm, finely coriaceous, minutely glandular-punctate, remotely glandular-dentate, somewhat squamiform	Laeaf 40 x 15 mm, finely coriaceous, minutely glandular – punctate, remotely glandular-dentate, somewhat squamiform	Leaves 15-30 x 1,5-4 mm, scabrous, with stalked and punctate glands
Involucre	11-16 mm long, 5-7 mm wide	(12-)15 mm long, 6-7 mm wide	10-13 mm long x 4-5 mm wide
Phyllary	7-9 seriata, regularly close imbricate, entire, narrowly marginate, firstly rotundate laterly mucronulate, margin curled papillose, others glabrosus, laevigate, greenish at flower, brownish at fruit.	(5-)7(-8)-seriata, regularly close imbricate, entire, narrowly marginate, firstly rotundate laterly mucronulate, margin.	ovate-mucronate, sparsely villous, green to brown

Table 1. Continued.

Disc floret	disc floret 13-18 mm long, tube 6-8 mm, glabrous, lobes 2-3 mm long, linear, acute, anthers 4-5 mm, filaments 2-3 mm long glabrous and blow pilose hairs	corolla \pm 20 mm long, lacinia \pm 2,5 mm long, acute	Disc floret 10-12 mm, tube 6-7 mm, lobes 4-5 mm
Ovary and styles	ovarium ovate 0.5-1 mm, glabrous, styles 11-12 mm long, glabrous; bifurcate, branches 0.4-0.6 mm long.	unknown	unknown
Achene	mature achenes linear to oblong, isodiametric, greyish or brown, 2-3 x 5-7 mm, feather surface pilose.	immature achenes basal asymmetric	achenes 3-6 mm
Pappus	pappus 7-10 mm, retrose \pm scabrous light brown.	pappus soiled, \pm retrose scabrous	pappus 8-10 mm

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