

## *Cirsium yildizianum* (Asteraceae: Cynareae), a new species from East Anatolia, Turkey

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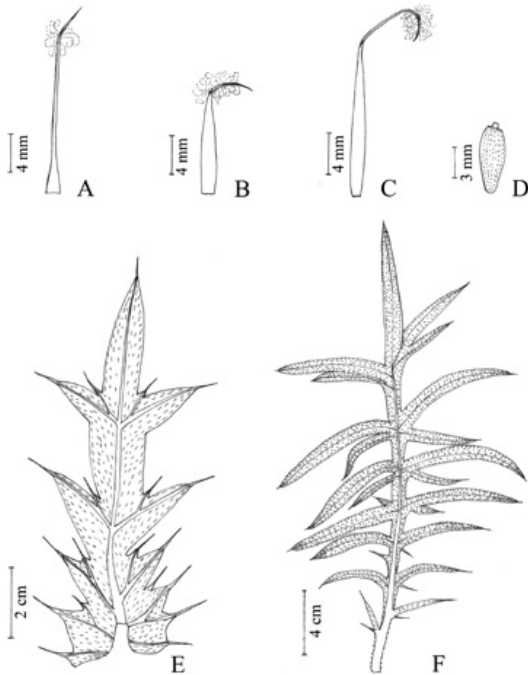
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*Cirsium yildizianum* Arabacı & Dirmenci *sp. nova* (Asteraceae: Cynareae) is described from East Anatolia, Turkey. It belongs to the section *Epitrachys* and is morphologically close to *C. macrobotrys* and *C. turkestanicum s. lato*. It differs from them mainly in its habit, distinctly pedunculate inflorescence, capitula number and the features of the phyllaries.

*Cirsium* is one of the largest genera within the family Asteraceae (Carduoideae: Cynareae/Cardueae) and comprises approximately 250 species, distributed in Eurasia, North America, northern and eastern Africa, and growing mainly in wet wastelands and steppes (Boissier 1875, Davis & Parris 1975, Charadze 1976, Werner 1976, Petrak 1979, Kadereit & Jeffrey 2007). In Turkey, *Cirsium* is represented by 61 species (75 taxa), of which 20 (25 taxa) are endemic. Endemic and non-endemic species are mainly distributed in the E and NE Anatolia. The Turkish *Cirsium* species are classified in three sections: sect. *Epitrachys* (43 species), sect. *Cirsium* (17 species) and sect. *Cephalonoplos* (one species) (Davis & Parris 1975, Davis *et al.* 1988, Güner *et al.* 2000, Daşkın *et al.* 2006, Yıldız & Dirmenci 2008, Yıldız *et al.* 2009a, 2009b).

When the *Cirsium* species growing in Turkey were revised for the *Flora of Turkey*, some purple-flowered specimens (*Sintenis* 1890:3293,

*Davis* 24779 & 47412, *Rechinger* 15134) collected from the B7 and B8 squares were wrongly included in *C. macrobotrys* by Davis and Parris (1975). Our studies showed that these specimens are different from *C. macrobotrys*. In addition, during our revisionary studies of *Cirsium* in Turkey, in 2007–2008 we collected some material from the same squares and other parts of E Anatolia. These specimens were checked against the relevant literature (Boissier 1875, Davis & Parris 1975, Charadze 1976, Petrak 1979, Huber-Morath 1980, 1982, Sorger & Buchner 1983a, 1983b, Davis *et al.* 1988, Güner *et al.* 2000, Özhatay *et al.* 2009). Related specimens deposited in the herbaria ANK, BM, E, G, GAZI, HUB, ISTE, ISTF, ISTO, K, W and WU were also examined. It was concluded that the specimens collected from E Anatolia were representatives of a previously undescribed species in *Cirsium* sect. *Epitrachys* with affinities to *C. macrobotrys* and *C. turkestanicum s. lato*.

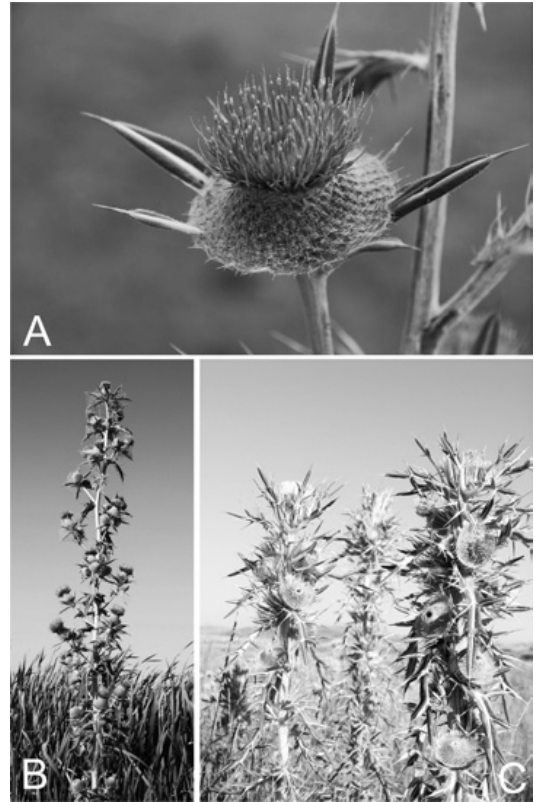


**Fig. 1.** *Cirsium yildizianum* (from the holotype). — **A:** Outer phyllary. — **B:** Median phyllary. — **C:** Inner phyllary. — **D:** Achene. — **E:** Median cauline leaf. — **F:** Basal leaf.

***Cirsium yildizianum*** Arabacı & Dirmenci, *sp. nova* (Figs. 1 and 2A–B)

*Affinis* *C. macrobotryi* Boiss. & *C. turkestanici* Petr. *s. lato*; *ab* *C. macrobotryi* *capitulis* 15–30 *in medium usque ad apici caulis*, (*non* 3–12 *in apici caulis*), *inflorescentia racemosa vel breviter paniculata* (*non spica vel breviter racemosa*), *pedunculis* (1–)3–8(–10) *cm longis* (*non subsessilis*), *phyla exteriora* 14–25 × 0.5–1.2 *mm* (*non* 20–45 × 1–2.5 *mm*), *plerumque non excedens media* (*excedens media*), *phyllariis medianis oblongis ad lanceolatis* (*non ovatis*) *differt*. *Ab* *C. turkestanici* *s. lato* *biennis* (*non perennis*), *caulis* 70–250 *cm altus* (*non* 40–100 *cm*), *capitulis* 15–30 *in medium usque ad apici caulis*, (*non* 3–7 *in apici caulis*), *inflorescentia racemosa vel breviter paniculata* (*non breviter racemosa*), *pedunculis* (1–)3–8(–10) *cm longis* (*non sessilia vel brevissime pedunculata*), *phyllariis exterioris subulatis* (*non lanceolatis*) *differt*.

TYPE: Turkey. B8 Muş: 4 km from Muş to Bingöl, 1380 m, wet places near field borders, 13.VIII.2007



**Fig. 2.** **A–B:** *Cirsium yildizianum* (type material). — **A:** Capitulum. — **B:** Inflorescence. — **C:** Inflorescence of *C. macrobotrys*.

*Dirmenci* 3567 & *Arabacı* (holotype INU; isotypes GAZI, HUB, ISTE).

ETYMOLOGY: The species is named after Prof. Dr. Bayram Yıldız, a well-known plant taxonomist in Turkey and also our Ph.D. supervisor.

Biennial. Stem 70–250 cm, capitulate from middle to apex, erect, stout, unwinged, longitudinally striate, pannose. Basal leaves 15–35 × 5–20 cm (except 3–10 cm petiole), oblong, pinnatisect, spinose-strigose above, setae 1–2.5 × 0.1–0.2 mm, adpressed, 5 or more per 2 mm square, otherwise glabrous; pannose beneath; lateral lobes 4–5 paired, 2–8 × 0.5–1 cm, lanceolate, acute to acuminate, apical spine 8–12 × 0.3–0.6 mm, moderately stout; stem leaves diminishing from base to inflorescence, median cauline leaves 7–12 × 4–6 cm, oblong to ovate, semiamplexicaul, pinnatisect to 1/4–1/5, 3–5 lobed, spinose-strigose above, setae 1–2.5 × 0.1–0.2 mm, 5 or more per 2 mm square, otherwise glabrous; pannose beneath;

lateral and terminal lobes ovate-triangular to lanceolate, acute, with apical spine  $7\text{--}12 \times 0.2\text{--}6$  mm; upper cauline leaves to  $10 \times 6$  cm, narrowly ovate, 2–3 lobed, lobes triangular, with  $10\text{--}14 \times 0.5\text{--}0.8$  mm stout apical spine. Involucral leaves 8–15, 6–10 cm, linear-lanceolate, as long as or longer than involucre. Inflorescence raceme or shortly paniculate; capitula 15–30, erect, 1(–3) on each branch,  $(20\text{--})30\text{--}40 \times (20\text{--})30\text{--}45$  mm, peduncle  $(1\text{--})3\text{--}8(–10)$  cm; involucre 20–30  $\times$  30–35 mm, ovoid to globose; phyllaries 8–11 seriate, adpressed, glabrous below, arachnoid only at apex, yellowish; outer  $14\text{--}25 \times 0.5\text{--}1.2$  mm, subulate, including erecto-patent to reflexed  $2\text{--}8 \times 0.1\text{--}0.2$  mm apical spine, sometimes spinulose below apical spine; median  $14\text{--}16 \times 1.4\text{--}1.6$  mm, oblong-lanceolate, abruptly narrowed in to prolongation, including recurved  $1.5\text{--}2.5 \times 0.1\text{--}0.2$  mm apical spine; inner  $18\text{--}24 \times 1\text{--}1.2$  mm, linear, including recurved  $1\text{--}2 \times 0.1\text{--}0.2$  mm apical spine. Corolla purple, rarely ochroleucous, 18–25 mm, unequally 5 lobed to 1/6–1/4, shorter lobes 3–4 mm, longer lobes 5–6 mm; style 10–15 mm, exerted to 5 mm, shortly bilobed; filaments 5 mm, hairy, anthers 8–13 mm, acuminate. Achenes  $6\text{--}6.5 \times 2\text{--}2.2$  mm, oblong, yellowish-brown, slightly asymmetric, compressed, umbo ca. 0.4 mm, ring yellow, narrow. Pappus long plumose, 18–20 mm, stramineous. Flowering and fruiting from July to September.

*Cirsium yildizianum* appears to be endemic to E Anatolia and is an Irano-Turanian taxon. It grows in wet places near field borders, deep soiled areas, *Quercus* scrub openings and steppes at altitudes between 1380 and 2150 m.

*Cirsium yildizianum* is related to *C. macrobotrys* and *C. turkestanicum s. lato* in the foliar characteristics, but it can be easily distinguished from both of them by its stem, which capitulates from the middle to the apex, and by the racemose or shortly paniculate inflorescence, whereas *C. macrobotrys* and *C. turkestanicum* capitulate only at the apex of stem and the inflorescence is a spike or short-racemose (Table 1 and Fig. 2). In addition, *C. yildizianum* and *C. turkestanicum* are geographically isolated. The latter is distributed mainly in central Asia, from Tian-Shan to Pamir Mountains, Afghanistan, Turkmenistan, and NE Iran (Charadze 1976, Petrak 1979, Ghahremaninejad *et al.* 2005), whereas *C. yildizianum* is so far only recorded from E Anatolia in Turkey.

ADDITIONAL SPECIMENS EXAMINED: — *Cirsium yildizianum* (paratypes). **Turkey.** B7 Elazığ: Sivrice, between Gözeli and Kamışlık, 1500 m, deep soiled area, 2008 *B. Yıldız 16964 & Arabacı*; 38 km from Elazığ to Bingöl, 1700 m, *Quercus* scrub openings, 2007 *Dirmenci 3508 & Arabacı*; Erzincan: Sipikör, *Sintenis (1890:3293)* (G); B8 Erzincan: 85 km WSW Erzurum towards Tercan, 1956 *Rechinger, 15134* (W); Palandöken Mount, 30–40 km from Çat to Erzurum, 2000–

**Table 1.** Morphological comparison of *Cirsium yildizianum*, *C. macrobotrys* and *C. turkestanicum s. lato*.

Species	<i>C. yildizianum</i>	<i>C. macrobotrys</i>	<i>C. turkestanicum s. lato</i>
Habit	biennial	biennial or shortly perennial, monocarpic	shortly perennial, monocarpic
Stem	stem 70–250 cm, capitulate from middle to apex	stem 30–200(–300) cm, capitulate at apex	stem 40–100 cm, capitulate at apex
Inflorescence	raceme or shortly paniculate	spike or short-racemose	short-racemose
Capitula	15–30	(3–)5–12	3–4(–7)
Peduncle	(1–)3–8(–10) cm	sessile	sessile or very shortly pedunculate
Outer phyllary	generally not exceeding medians, subulate, apical spine 2–8 mm	exceeding medians, subulate, apical spine 5–10 mm	not exceeding medians, lanceolate, apical spine 2–4 mm
Median phyllary	14–16 mm, oblong-lanceolate, abruptly narrowed into prolongation	13–19 mm, ovate, abruptly narrowed into prolongation	oblong, suddenly attenuate
Inner phyllary	apical spine 1–2 $\times$ 0.1–0.2 mm	apical spine 2–3 $\times$ 0.1–0.2 mm	apical spine 1–2 $\times$ 0.1–0.2 mm
Pappus	18–20 mm	22–24 mm	21–25 mm

2150 m, in pasture, 1966 *Davis 47412* (E, K); 32 km from Çat to Erzurum, 39°47'78"N, 41°05'00"E, 2150 m, 2007 *Dirmenci 3529 & Arabacı*; Bingöl: 15 km from Karlıova to Bingöl, 1950 m, steppe, 2007 *Dirmenci 3516 & Arabacı*; Muş: 24 km E of Muş, *Davis 24779* (BM, E); C9 Hakkari: 15 km from Yüksekova to Hakkari, 1700–1800 m, 2007 *Dirmenci 3571 & Fırat*; 18 km from Şemdinli to Yüksekova, ca. 1700 m, *Dirmenci 3580 & Fırat*. — *C. macrobotrys*. **Turkey.** A7 Gümüşhane: Between Şiran and Alucra, *Yıldız 16380 & Dirmenci*; A8 Erzurum/Rize: Between İspir and Rize, *Yıldız 16356 & Dirmenci*; A9 Kars: Yağmurlu Mountain, *Davis 32610 & Hedge* (K, BM); B7 Sivas: 5 km west of İmranlı, *Yıldız 16237 & Dirmenci*; B8 Bayburt: Kop Mountain, *Yıldız 16259 & Dirmenci*; Erzurum: Kop Dağ pass, *Furse 3835* (K); Palandöken Mountain, *Yıldız 16272 & Dirmenci*. — *C. turkestanicum* var. *turkestanicum*. **Afghanistan.** Sangcharak: Sufedsang, *Koelz 13985* (W 1956: 594); Kabul: Paghmantales towards Kotal-i-Kotandar, *A.Gilli 4158* (W 1963: 7419; type of *C. afghanicum*); in declivibus orientilibus jugi Unai, *Podlech 12593* (W 1967: 18475).

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## References

- Boissier, E. 1875: *Flora Orientalis*, 3: 523–553. — Genevae et Basileae.
- Charadze, A. L. 1976: *Cirsium* Mill. — In: Bobrov, E. G. & Cherepanov, S. K. (eds.), *Flora of the U.S.S.R.*, 28: 63–270. Israel Program for Scientific Translations, Jerusalem.
- Daşkın, R., Yılmaz, Ö. & Kaynak, G. 2006: Presence of *Cirsium eriophorum* (L.) Scop. (Asteraceae) in Turkey. — *Turkish J. Bot.* 30: 1–5.
- Davis, P. H. & Parris, S. B. 1975: *Cirsium* Mill. — In: Davis, P. H. (ed.), *Flora of Turkey and the East Aegean Islands*, vol. 5: 370–412. Edinburgh Univ. Press, Edinburgh.
- Davis, P. H., Tan, K. & Mill, R. R. (eds.) 1988: *Flora of Turkey and the East Aegean Islands*, Suppl. 1, 10: 164–165. — Edinburgh Univ. Press, Edinburgh.
- Ghahremaninejad, F., Joharchi, M. & Vitek, E. 2005: New plant records for Khorassan province, Iran. — *Ann. Naturhist. Mus. Wien* 106: 255–293.
- Güner, A., Özhatay, N., Ekim, T. & Başer, K. H. C. (eds.) 2000: *Flora of Turkey and the East Aegean Islands*, Suppl. 2, 11: 161–163. — Edinburgh Univ. Press, Edinburgh.
- Huber-Morath, A. 1980: Ergänzungen zu PH. Davis' Flora of Turkey and the East Aegean Islands 1–6. — *Candollea* 35: 569–608.
- Huber-Morath, A. 1982: Ergänzungen zu PH. Davis' Flora of Turkey and the East Aegean Islands. — *Candollea* 39: 323–344.
- Kadereit, J. W. & Jeffrey, C. (eds.) 2007: Flowering plants. Eudicots: Asterales. — In: Kubitzki, K. (ed.), *The families and genera of vascular plants*, vol. 8: 132. Springer-Verlag, Berlin–Heidelberg.
- Özhatay, N., Kültür, Ş. & Aslan, S. 2009: Check-list of additional taxa to the supplement flora of Turkey IV. — *Turkish J. Bot.* 33: 191–226.
- Petrak, F. 1979: *Cirsium* Mill. — In: Rechinger, K. H. (ed.), *Flora Iranica* vol 139a: *Compositae III — Cynareae*: 231–280. Akademische Druck- und Verlagsanstalt, Graz, Austria.
- Sorger, F. & Buchner, P. 1983a: Beiträge zur Flora der Türkei III. — *Phyton* 23: 221–245.
- Sorger, F. & Buchner, P. 1983b: Beiträge zur flora der Türkei III. — *Linzer Biol. Beiträge* 14: 157–208.
- Werner, K. 1976: *Cirsium* Mill. — In: Tutin, T. G., Heywood, V. H., Burges, N. A., Moore, D. M., Valentine, D. H., Walters, S. M. & Webb, D. A. (eds.), *Flora Europaea*, vol. 4: 232–242. Cambridge Univ. Press, Cambridge.
- Yıldız, B. & Dirmenci, T. 2008: A new species of *Cirsium* section *Epitrachys* (Asteraceae: Cardueae) from Turkey. — *Bot. J. Linn. Soc.* 158: 669–673.
- Yıldız, B., Dirmenci, T. & Arabacı, T. 2009a: *Cirsium handaniae* (Asteraceae), a new species from Turkey. — *Annales Botanici Fennici* 46: 239–243.
- Yıldız, B., Dirmenci, T. & Arabacı, T. 2009b: A new record for the flora of Turkey: *Cirsium candelabrum* Griseb. (*Cirsium* Sect. *Cirsium*, Asteraceae, Cynareae). — *Turkish J. Bot.* 33: 47–51.