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

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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.
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 subses-silis), phyla exteriora 14–25 × 0.5–1.2 mm (non 20–45 × 1–2.5 mm), plerunque 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

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 7–12 × 0.2–6 mm; upper cauline leaves to 10 × 6 cm, narrowly ovate, 2–3 lobed, lobes triangular, with 10–14 × 0.5–0.8 mm stout apical spine. Involutional 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–)30–40 × (20–)30–45 mm, peduncle (1–)3–8(–10) cm; involucres 20–30 × 30–35 mm, ovoid to globose; phyllaries 8–11 seriate, adpressed, glabrous below, arachnoid only at apex, yellowish; outer 14–25 × 0.5–1.2 mm, subulate, including erecto-patent to reflexed 2–8 × 0.1–0.2 mm apical spine, sometimes spinulose below apical spine; median 14–16 × 1.4–1.6 mm, oblong-lanceolate, abruptly narrowed in to proliferation, including recurved 1.5–2.5 × 0.1–0.2 mm apical spine; inner 18–24 × 1–1.2 mm, linear, including recurved 1–2 × 0.1–0.2 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, exserted to 5 mm, shortly bilobed; filaments 5 mm, hairy, anthers 8–13 mm, acuminate. Achenes 6–6.5 × 2–2.2 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, Petruk 1979, Ghahremaninejad et al. 2005), whereas *C. yildizianum* is so far only recorded from E Anatolia in Turkey.

The specimen 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 Dirimenci 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.*

<table>
<thead>
<tr>
<th>Species</th>
<th><em>C. yildizianum</em></th>
<th><em>C. macrobotrys</em></th>
<th><em>C. turkestanicum s. lato</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Habit</td>
<td>biennial</td>
<td>biennial or shortly perennial, monocarpic</td>
<td>shortly perennial, monocarpic</td>
</tr>
<tr>
<td>Stem</td>
<td>stem 70–250 cm, capitulate from middle to apex</td>
<td>stem 30–200(–300) cm, capitulate at apex</td>
<td>stem 40–100 cm, capitulate at apex</td>
</tr>
<tr>
<td>Inflorescence</td>
<td>raceme or shortly paniculate</td>
<td>spike or short-racemose (3–)5–12 subsessile</td>
<td>short-racemose 3–4(–7) sessile or very shortly pedunculate</td>
</tr>
<tr>
<td>Capitula</td>
<td>15–30 (1–)3–8(–10) cm</td>
<td>exceeding medians, subulate, apical spine 5–10 mm</td>
<td>not exceeding medians, lanceolate, apical spine 2–4 mm</td>
</tr>
<tr>
<td>Peduncle</td>
<td>generally not exceeding medians, subulate, apical spine 2–8 mm</td>
<td>14–16 mm, oblong-lanceolate, abruptly narrowed into prolongation</td>
<td>oblong, suddenly attenuate</td>
</tr>
<tr>
<td>Outer phyllary</td>
<td>14–16 mm, oblong-lanceolate, abruptly narrowed into prolongation</td>
<td>13–19 mm, ovate, abruptly narrowed into prolongation</td>
<td></td>
</tr>
<tr>
<td>Median phyllary</td>
<td>apical spine</td>
<td>apical spine</td>
<td>apical spine</td>
</tr>
<tr>
<td>Inner phyllary</td>
<td>1–2 × 0.1–0.2 mm</td>
<td>2–3 × 0.1–0.2 mm</td>
<td>1–2 × 0.1–0.2 mm</td>
</tr>
<tr>
<td>Pappus</td>
<td>18–20 mm</td>
<td>22–24 mm</td>
<td>21–25 mm</td>
</tr>
</tbody>
</table>
2150 m, in pasture, 1966 Davis 47412 (E, K); 32 km from Çat to Erzurum, 39\°47\’77\”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 & Firat; 18 km from Şemdinli to Yüksekova, ca. 1700 m, Dirmenci 3580 & Firat. — C. macrobotrys.

Turkey. A7 Gümüşhane: Between Şiran and Aluera, Yıldız 16380 & Dirmenci; A8 Erzurum/Rize: Between İspir and Rize, Yıldız 16356 & Dirmenci; A9 Kars: Yaşmurlu 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. Afghani-

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