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Two new species of *Cirsium* (Asteraceae) and notes on allies from Turkey

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Abstract: In this study, 2 new species of *Cirsium* Mill. sect. *Epitrachys* DC., *Cirsium balikesirense* Yıldız, Arabacı & Dirmenci and *C. nerimaniae* Yıldız, Dirmenci & Arabacı from Turkey, are described and illustrated. The differences between the new species and their allies are discussed. Ecological habit, localities, key of allied species, and a distribution map of the species are given.

Key words: Compositae, *Epitrachys*, morphology, new species, revision

1. Introduction

The genus *Cirsium* Mill. (thistle) is one of the largest genera of Asteraceae, and it comprises more than 250 perennial, biennial, or rarely annual spiny species distributed in the northern hemisphere in Europe; North Africa; East, Central, and Southwest Asia; and North and Central America (Charadze, 1963; Davis and Parris, 1975a; Petrak, 1979; Kadereit and Jeffrey, 2007).

The most recent revisionary study on *Cirsium* species growing in Turkey was carried out approximately 40 years ago by Davis and Parris (1975a) for the *Flora of Turkey*. In that study, 52 species (65 taxa) were given under 3 sections. [sect. *Cirsium*, sect. *Epitrachys* DC., and sect. *Cephalonoplos* (Neck.) DC.]. Additional taxonomic treatments have dealt with the distribution of the genus in supplements and 5 new species (6 taxa) were given (Davis et al., 1988; Güner et al., 2000).

After the *Flora of Turkey* and supplements, a number of species belonging to different genera have been described from Turkey (Mutlu and Karakuş, 2012; Koç and Aksoy, 2013; Uzunhisarcıklı et al., 2013). Among these species, 2 new records [*Cirsium eriophorum* (L.) Scop. and *C. candelabrum* Griseb.] and 5 new species (*C. ekimianum* Yıldız & Dirmenci, *C. handaniae* Yıldız, Dirmenci & Arabacı, *C. peshmenianum* Yıldız, Dirmenci & Arabacı, *C. sivasicum* Yıldız, Arabacı & Dirmenci, and *C. yildizianum* Arabacı & Dirmenci) belonged to the genus *Cirsium* (Daşkın et al., 2006; Yıldız and Dirmenci, 2008; Yıldız et al., 2009a, 2009b, 2011; Arabacı and Dirmenci, 2011). The members of the genus were established as 64 species (76 taxa) according to the checklist of Turkish *Cirsium* species given by Yıldız (2012).

As a part of a revisionary study of Turkish *Cirsium* species, detailed field studies were performed and some specimens were collected from Balıkesir (Balya), Bursa (Uludağ), and Çanakkale (Gökçeada) provinces between the years 2007 and 2012. These specimens were examined, and some differences from other *Cirsium* species were noted (Figure 1). Specimens obtained from Balıkesir and Bursa were similar to *Cirsium byzantinum* Steud. and *C. bulgaricum* DC., whereas Gökçeada specimens were similar to *C. steirolepis* Petr. in terms of their habit. Furthermore, in this study, the distribution of *C. bulgaricum* DC. and *C. poluninii* P.H.Davis & Parris in Turkey are revised and are given in the Appendix.

2. Materials and methods

Specimens were identified and checked using the *Flora of Turkey* (Davis and Parris, 1975a) and supplements (Davis et al., 1988; Güner et al., 2000). In addition, relevant literature was checked (Candolle, 1838; Boissier, 1875; Petrak, 1910; Davis and Parris, 1975b; Özhatay et al., 2011) The specimens were also compared with *Cirsium* specimens found in ANK, B, BM, E, G, G-Boiss, G-DC, GAZI, HUB, K, LE, W, and WU herbaria. It was concluded that the 2 different specimens represent 2 new species. Furthermore, an identification key of the new species and related taxa was given, together with images and hand drawings of useful distinguishing characteristics and distribution maps. The specimens collected by the authors are deposited in the herbarium of Balıkesir University.

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3. Results and discussion

3.1. *Cirsium balikesirense* Yıldız, Arabacı & Dirmenci **sp. nova** (Figures 1–5) (*C.* sect. *Epitrachys* DC.)

Type: Turkey, B1 Balıkesir: 5 km from Balya to Yenice, in open scrubs, 350–400 m, 31.07.2007, *Yıldız* 16493 *&* *Dirmenci* (holotype: ISTE; isotypes: ANK, EGE, GAZI, HUB, INU).

Diagnosis: *Cirsium balikesirense* is related to *C. byzantinum* and *C. bulgaricum*. It differs from *C. byzantinum* in its phyllaries 5–7 seriate and median phyllaries 10–14 mm (not 6–9 seriate and 9–11 mm), corolla purple and 22–27 mm (not white and 17–19 mm), pappus 14–18 mm (not 12–14 mm). *Cirsium balikesirense* differs from *C. bulgaricum* in its smaller and narrowly ovoid to cylindrical involucre, 15–20 × 10–15 mm, (not ovoid-globose, 15–25 × 20–30 mm); phyllaries 5–7 seriate (not 8–9 seriate); outer and median phyllaries erect (not reflexed to recurved), linear-lanceolate, 10–14 mm (not lanceolate, 10–12 mm); and pappus 14–18 mm (not 19–23 mm).

Description: Biennial. Stem stout, 50–200 cm, single from the base, single or many branched above, unwinged, striate, arachnoid to tomentose. Leaves herbaceous, spinose-strigose above, setae erecto-patent, more than 5/2 mm^2, otherwise glabrous, arachnoid-tomentose below; basal leaves (15–)20–30 × 5–13 cm (including petiole), pinnatisect, lateral lobes to 11 pairs, linear-lanceolate, 2–7 × 0.6–1 cm, incl. 5–10 mm apical spine, acutish, margins spinulose-ciliate; median cauline leaves 10–18 × 6–13 cm including 3–10 mm spine, sessile, auriculate, oblong in outline, pinnatifid to pinnatisect; lobes 5–11 pairs, linear-lanceolate. Upper cauline leaves smaller, up to 10 × 5 cm. Involucral leaves 4–7, mostly longer than involucres, rarely equal or shorter, 5–40 mm. Involucres 15–20 × 10–15 mm, ovoid to cylindrical; phyllaries linear-lanceolate, sparsely arachnoid, imbricate, 5–7 seriate, median phyllaries 10–14 mm with 1–2 mm apical spine, erect, margins scabrid, less than 1 mm. Corollas purple, 22–27 mm, lobed to 1/3; style longer than corolla; filaments hairy at base of the anthers, anthers 7–8 mm. Ripe achenes 4–5 mm, slightly compressed, pale brown. Pappus 14–18 mm, dirty white.

Fl. and Fr. 7–9.

Habitat and ecology: *Cirsium balikesirense* grows in open places in *Quercus cerris* L., *Pinus brutia* Ten., *P. nigra* J.F.Arnold, and deciduous forests with *Clinopodium nepeta* (L.) Kuntze, *Mentha aquatica* L., *Eryngium campestre* L., *Sambucus ebulus* L., *Xanthium strumarium* L., *Althea* sp., *Rumex* sp., *Rubus* sp., and *Verbascum* sp. between 200 and 1000 m.

Etymology: The species epithet is derived from the name of the Balıkesir Province, where the type specimen was collected.

Paratypes: Turkey, A2 Bursa: Uludağ, 1200 m, *Pinus* L. forest, 20.07.1968, *Sorger* 68-52-3 (W); ibid., 1100 m, near forest, 08.08.1976, *Sorger* 76-37-1 (W); ibid., in olympo Bithyni, 07.1874, *Pichler s.n.* (W); Uludağ, road of Uludağ, 400 m, in open forest, 21.08.2007, *Yıldız* 16582 & *Arabacı* (Hb. Yıldız); ibid., 10.09.2009 *Yıldız* 17127 *&* 17128 (Hb. Yıldız); ibid., 28.08.2012, *Yıldız* & *Dirmenci* 3785 (Hb. Yıldız); Uludağ, road of Uludağ, 1000 m, 28.08.2012, *Yıldız* & *Dirmenci* 3786 (Hb. Yıldız); Yalova: Çınarcık, Üç Reisler, 10.07.1982, *E.Tuzlacı* (ISTE 49929).

Distribution and proposed conservation status: *Cirsium balikesirense* is endemic to Balıkesir, Bursa, and Yalova provinces in western Turkey (Figure 1). The species is well-adapted to its habit and occurs widely, and so populations are not threatened. Therefore, the

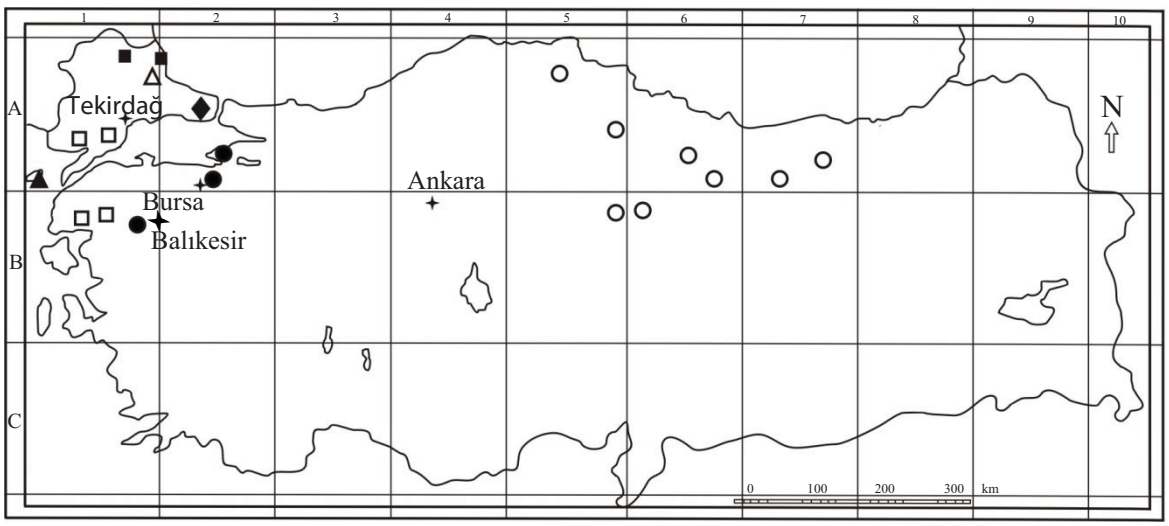

Figure 1. Distribution map of *Cirsium poluninii* (○), *C. baytopae* (Δ), *C. bulgaricum* (■), *C. balikesirense* (●), *C. byzantinum* (♦), *C. steirolepis* (□), and *C. nerimaniae* (▲) in Turkey.

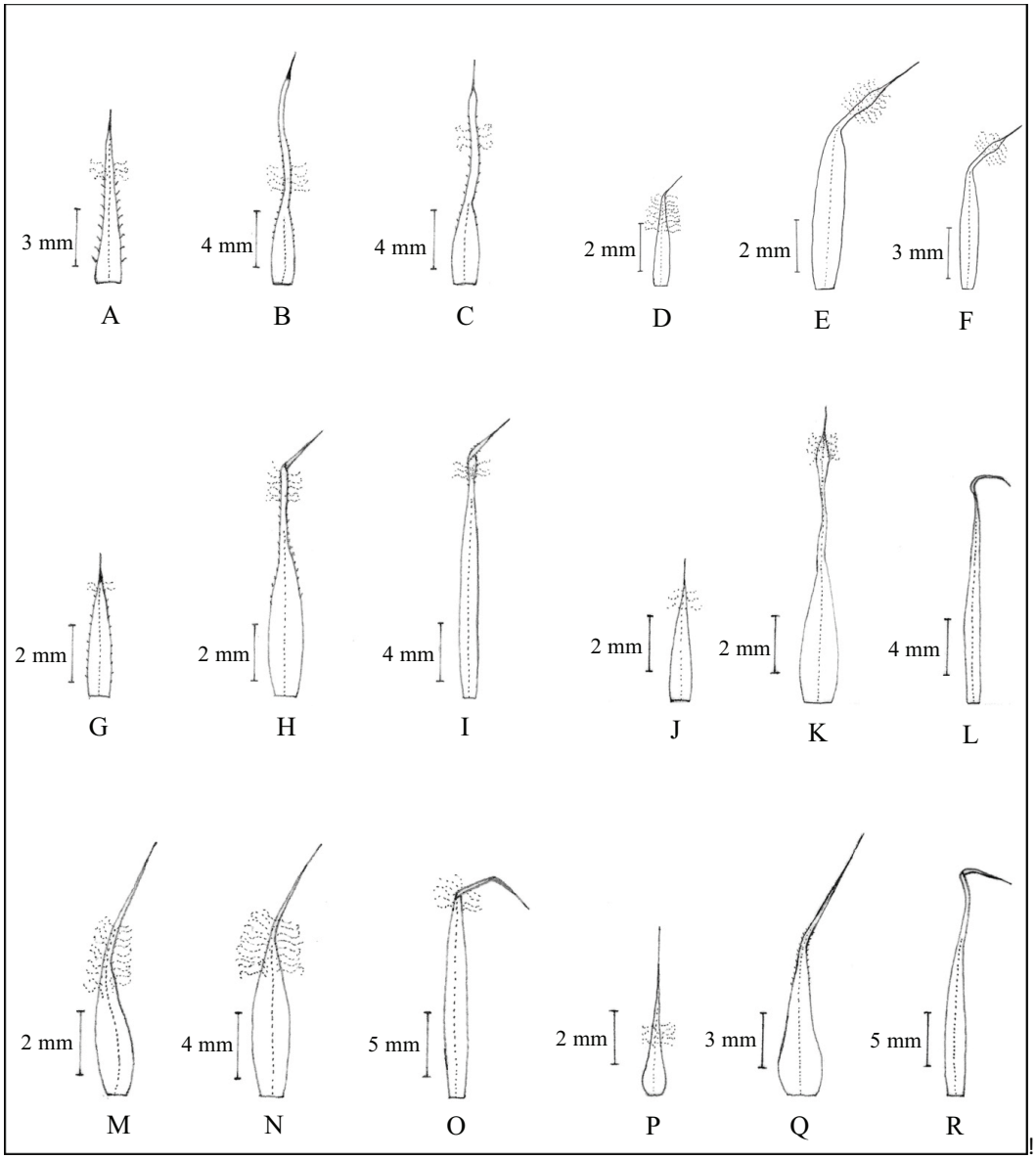

Figure 2. Phyllaries. *Cirsium poluninii* (*Yıldız* 17055): A- outer, B- median, C- inner. *C. baytopae* (*Yıldız* 16528): D- outer, E- median, F- inner. *C. bulgaricum* (*Dirmenci* 3670): G- outer, H- median, I- inner. *C. balikesirense* (*Yıldız* 16582): J- outer, K- median, L- inner. *C. steirolepis* (*Dirmenci* 3474): M- outer, N- median, O- inner. *C. nerimaniae* (*Yıldız* 16388): P- outer, Q- median, R- inner.

species should be regarded as being of Least Concern (LC) according to the World Conservation Union (IUCN) classification (IUCN, 2001).

Cirsium balikesirense shows similarities to *C. byzantinum* (syn.: *Cirsium polycephalum*) in terms of some characteristics such as habit, leaves, capitula, and phyllaries. However, it differs from *C. byzantinum* by its 5–7 seriate phyllaries and 10–14 mm median phyllaries (not 6–9 seriate and 9–11 mm), 22–27 mm long and purple corolla (not white and 17–19 mm long), and pappus 14–18 mm (not 12–14 mm).

Cirsium balikesirense is similar to *C. bulgaricum* in habit, leaves, and corolla color, but it differs from *C. bulgaricum* by its smaller and narrowly ovoid to cylindrical involucre, 15–20 × 10–15 mm (not globose, 15–25 × 20–30 mm), phyllaries 5–7 seriate (not 8–9 seriate), erect outer and median phyllaries (not reflexed to recurved), linear-lanceolate, 10–14 mm with 1–2 mm apical spine (not lanceolate, 10–12 mm with 1–2.5 mm apical spine), and 14–18 mm pappus (not 19–23 mm) (Figures 2–4).

In the *Flora of Turkey*, a specimen collected from Uludağ (Bursa) by Sorger (68-52-3) was wrongly

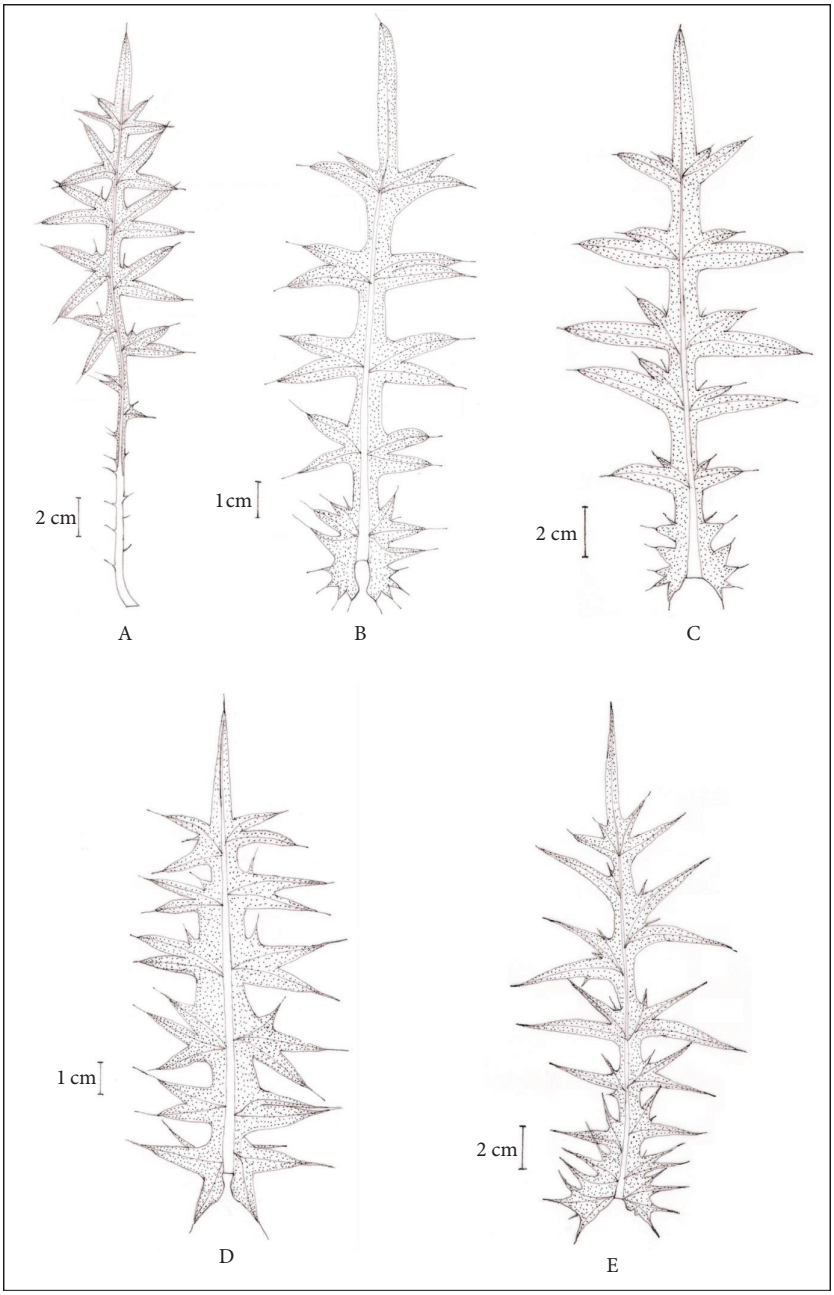

Figure 3. *Cirsium balikesirense*: A- basal leaf. Median cauline leaves: B- *C. balikesirense*, C- *C. bulgaricum*, D- *C. nerimaniae*, E- *C. steirolepis*.

identified as *Cirsium poluninii* (Davis and Parris, 1975a). After studies on this specimen at W herbarium, we have concluded that this specimen should be reclassified as *C. balikesirense*.

Furthermore, some misidentified specimens were recognized during revisionary studies of *C. bulgaricum* in the *Flora of Turkey*. As a result, it was concluded that *C. bulgaricum* is represented in Turkey only by the type specimen collected from the European part of Turkey (Thrace). Another 4 of the 5 specimens recorded in *Flora of Turkey* from Amasya (*Bornm. 1890:1614*, K, BM), Gümüşhane (*Sint. 1894:7440*, G), Yozgat (*Lamond 5055*, K), and Sivas (*Rechinger 44435*, W) belong to *C. poluninii*, and the specimen from Bursa (*Aucher 3381*, K, W) is similar to *C. eriophorum*. Finally, it was established that none of the specimens cited under *C. bulgaricum*, except the type specimen, belong to it. It was therefore concluded that *C. bulgaricum* occurs only within a limited area of Thrace

Figure 4. Capitula of A- *Cirsium poluninii*, B- *C. baytopae*, C- *C. bulgaricum*, D- *C. balikesirense*, E- *C. steirolepis*, F- *C. nerimaniae*, G- *C. byzantinum*.

Figure 5. Habit of *Cirsium balikesirense*.

Figure 6. Habit of *Cirsium nerimaniae*.

(Istranca Mountain, Kırklareli), and the distribution of *C. poluninii* in Turkey is redetermined as squares A5, A6, A7, B5, and B6 according to the grid system adopted by Davis and Parris (1975a) (Figure 1). Therefore, the distributions of *C. bulgaricum* and *C. poluninii* in Turkey are revised, as shown in the Appendix.

3.2. *Cirsium nerimaniae* Yıldız, Dirmenci & Arabacı **sp. nova** (Figures 1–4 and 6) (*C.* sect. *Epitrachys* DC.)

Type: Turkey, A1 Çanakkale: Gökçeada, east of Gökçeada, in phrygana, 100–150 m, 08.09.2008, *Yıldız* 16988 (holotype: ISTE; isotypes: GAZI, HUB, INU).

Diagnosis: *Cirsium nerimaniae* is similar to *C. steirolepis*, but it is easily distinguished from *C. steirolepis* by its median cauline leaves coriaceous (not herbaceous), lateral lobes triangular, up to 1.5 cm (not linear-lanceolate, to 7.5 cm); involucral leaves 3–7 and mostly longer than involucre (not 1–3 and shorter than involucre), involucres ovoid to cylindrical and 20–25 × 15–20 mm (not ovoid-globose and 25–35 × 25–40 mm), phyllaries 7–9 seriate (not 10–12 seriate), median phyllaries 13–17 mm with 4–6 mm apical spine (not 11–13 mm with 3–6 mm apical spine).

Description: Biennial. Stem stout, 100–200 cm, branched above, unwinged, striate, always single at base, sparsely arachnoid; basal leaves unknown. Leaves coriaceous, diminishing from base to inflorescence, spinose-strigose above, setae more than 5/2 mm^2, erecto-patent, otherwise glabrous, arachnoid-tomentose below; median cauline leaves 10–20 × 4–7 cm (incl. 5–12 mm apical spine), sessile, auriculate, oblong in outline, pinnatisect; lobes 5–7 pairs, lobes bifid, triangular-lanceolate, with 5–10 mm apical spine, spine very stout, margins spinulose-ciliate. Involucral leaves 3–7, 25–50 mm, mostly longer than involucres, rarely shorter. Involucres 20–25 × 15–20 mm, ovoid to cylindrical; phyllaries ovate-lanceolate, glabrous to very sparsely arachnoid, imbricate, 7–9 seriate, median 13–17 mm with 4–6 mm apical spine, erect, margins scabrid, shorter than 1 mm. Corollas purple, 22–27 mm, lobed to 1/3; filaments hairy at base the anthers, anthers 7–8 mm. Ripe achenes 4–5 mm, slightly compressed, dirty white. Pappus 18–21 mm, dirty white.

Fl. and Fr. 7–9.

Habitat and ecology: *Cirsium nerimaniae* grows in phrygana between 100 and 150 m together with *Sarcopoterium spinosum* Spach, *Thymbra spicata* L., *Quercus coccifera* L., *Satureja icarica* P.H.Davis, *Olea europaea* L., and *Phyllaria laitfolia* L.

Etymology: *Cirsium nerimaniae* is dedicated to Prof Dr Neriman Özhatay, a well-known Turkish taxonomist.

Distribution and proposed conservation status: *Cirsium nerimaniae* is endemic to Gökçeada, western Turkey, and the East Mediterranean element (Figure 1). The new species is known from only Gökçeada, where its distribution area is less than 100 km^2 and the total number of individuals is approximately 1000–2000 (B1 abi,ii,iii). In addition, these areas of phrygana vegetation regularly experience natural fires, which may reduce the number of individuals. Therefore, the species should be classified under the Critically Endangered (CR) threat category according to the World Conservation Union framework (IUCN, 2001).

Cirsium nerimaniae is similar to *C. steirolepis*, but it is easily distinguished from *C. steirolepis* by its median cauline leaves coriaceous (not herbaceous), lateral lobes triangular, up to 1.5 cm (not linear-lanceolate, to 7.5 cm); involucral leaves 3–7 and mostly longer than involucre (not 1–3 and shorter than involucre), capitula ovoid to cylindrical and 20–25 × 15–20 mm (not ovoid-globose and 25–35 × 25–40 mm), phyllaries 7–9 seriate (not 10–12 seriate) and median phyllaries 13–17 mm with 4–6 mm apical spine (not 11–13 mm with 3–6 mm apical spine) (Figures 2–4).

Cirsium steirolepis was known only from the type locality from Kazdağı (Ida Mountain), in Balıkesir Province. Our studies showed that the distribution of *C. steirolepis* is wider than previously known. Additionally, *Cirsium laniflorum* (M.Bieb.) Fisch. was recorded only from Yenice-Tekirdağ in the *Flora of Turkey* with the specimens *E.Anglia Exped. F 29* (BM) and *F 30* (E). These specimens were examined in herbaria BM and E, and they were checked with type specimens of *C. steirolepis* and *C. laniflorum* in the BM, E, K, and LE herbaria. After comparing all specimens, we concluded that this meager sample (*E.Anglia Exped. F 29* and *F 30*) is *C. steirolepis*. Despite detailed field studies between the years 2007 and 2009 in Thrace, the distribution of *C. laniflorum* in Turkey could not be confirmed. Therefore, the distribution of *C. steirolepis* is expanded from Kazdağı (Balıkesir) to Ganos Mountain (Tekirdağ) (Figure 1).

Cirsium balikesirense and *C. nerimaniae* are similar to each other in terms of habits, leaves and involucres, phyllaries, corollas, and achene size. However, *C. balikesirense* differs from *C. nerimaniae* in terms of leaves herbaceous (versus coriaceous), phyllaries 5–7 seriate (versus 7–9 seriate), apical spine of median phyllaries 1–2 mm (versus 4–6 mm), and pappus 14–18 mm (versus 18–21 mm).

Additional morphological differences between the 2 new species and their allies are given in the key and the Table.

An identification key for new species and related taxa

1. Apical spine of median phyllaries more than 3 mm
  2. Involucral leaves 3–7, longer than involucre; involucres narrowly ovoid to cylindrical; phyllaries 7–9 series, median phyllaries 13–17 mm with 4–6 mm apical spines ..... **nerimaniae**
  2. Involucral leaves 1–3, shorter than involucre; involucres ovoid to globose; phyllaries 10–12 series, median phyllaries 11–13 mm with 3–6 mm apical spines ..... **steirolepis**
1. Apical spine of median phyllaries up to 2.5 mm
  3. Involucres mostly congested to spicate at top of the stem; corolla white ..... **byzantinum**
  3. Involucres raceme or panicle; corolla purple
    4. Involucral leaves equal or longer than involucres
      5. Involucres globose, 15–30 × 15–30 mm; phyllaries 7–9 seriate, median phyllaries ovate-lanceolate, 12–20 mm (Central and North Anatolia) ..... **poluninii**
      5. Involucres ovoid to cylindrical, 15–20 × 10–15; phyllaries 5–7 seriate, median phyllaries linear-lanceolate, 10–14 mm (West Anatolia) ..... **balikesirense**
    4. Involucral leaves clearly shorter than involucres
      6. Involucres ovoid to globose; phyllaries more than 7 seriate, outer and median phyllaries reflexed to recurved, median phyllaries lanceolate
        7. Involucres 15–25 × 20–30 mm; phyllaries 8–9 seriate, sparsely arachnoid; outer and median phyllaries reflexed to recurved; corolla 20–30 mm; pappus 19–23 mm ..... **bulgaricum**
        7. Involucres 15–20 × 15–20 mm; phyllaries 10–11 seriate, densely arachnoid; outer and median phyllaries recurved; corolla 17–23 mm; pappus 9–14 mm ..... **baytopae**
      6. Involucres ovoid to cylindrical; phyllaries 5–7 seriate, outer and median phyllaries erect, median phyllaries linear-lanceolate ..... **balikesirense**

Table. Comparison of diagnostic characters used to distinguish 2 new species of *Cirsium* and closely related species.

Characters/ Species	*C. poluninii*	*C. baytopae*	*C. bulgaricum*	*C. balikesirense*	*C. byzantinum*	*C. steirolepis*	*C. nerimaniae*
Leaves	herbaceous	herbaceous	herbaceous	herbaceous	herbaceous	herbaceous	coriaceous
Involucral leaves	2–5, equal to longer than involucre	1–3, shorter than involucre	2–5, shorter than involucre	4–7, mostly longer than involucre	3–7, mostly longer than involucre, sometimes shorter or equal	1–3, shorter than involucre	3–7, mostly longer than involucre
Involucre	globose, 15–30 × 15–30 mm	ovoid to globose, 15–20 × 15–20 mm	ovoid to globose, 15–25 × 20–30 mm	ovoid-cylindrical, 15–20 × 10–15 mm	cylindrical, 15–20 × 10–15	ovoid to globose, 25–35 × 25–40 mm	ovoid-cylindrical, 20–25 × 15–20 mm
Phyllaries	7–9 seriate, sparsely to densely arachnoid	10–11 seriate, densely arachnoid	8–9 seriate, sparsely arachnoid	5–7 seriate, sparsely arachnoid	6–9 seriate, sparsely arachnoid	10–12 seriate, sparsely arachnoid	7–9 seriate, glabrous to sparsely arachnoid
Median phyllaries	ovate-lanceolate, 12–20 mm with 1.5–2.5 mm apical spine, reflexed to recurved	lanceolate, 11–14 mm with 1.5–2 mm apical spine, recurved	lanceolate, 10–12 mm with 1–2.5 mm apical spine, reflexed to recurved	linear-lanceolate, 10–14 mm with 1–2 mm apical spine, erect	linear, 9–11 mm with 1–1.5 mm apical spine, erect	11–13 mm with 3–6 mm apical spine, erect	13–17 mm with 4–6 mm apical spine, erect
Corolla	purple, 16–25 mm	purple, 17–23 mm	purple, 20–30 mm	purple, 22–27 mm	white, 17–19 mm	purple, 25–30 mm	purple, 22–27 mm
Pappus	13–20 mm	9–14 mm	19–23 mm	14–18 mm	12–14 mm	17–20 mm	18–21 mm
Achenes	5–6 mm, grayish with black striate	5–5.5 mm, pale brown	4.5–5.5 mm, pale brown	4–5 mm, pale brown	4.5–5 mm, gray	c. 6 mm, grayish	4–5 mm, dirty white

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Appendix
Additional specimens examined. – **Cirsium bulgaricum:** Turkey, A2(E) Kırklareli: in silvis Bulgaricae copiosissime ad pagum Ineada (İğneada), *d'Urville* (type G-DC); A1(E) Kırklareli: 1.5 km from Kırklareli to Dereköy, environs of Valiçeşme, 480 m, 29.08.1995, *N. & E.Özhatay,* (ISTE 70959); Kırklareli: 3 km from Dereköy to Bulgaria border, 530 m, 29.08.2985, *N. & E.Özhatay* (ISTE 70975); Kırklareli: 6–7 km from Dereköy to Bulgaria border, 550 m, 02.08.2007, *Yıldız* 16519 *& Dirmenci* (Hb. Yıldız); ibid., *Yıldız* 16520 *& Dirmenci* (Hb. Yıldız); Kırklareli: 1–2 km from Limanköy to İğneada, 77 m, 28.07.2008, *Dirmenci* 3670 (Hb. Yıldız). – **Cirsium poluninii:** Turkey, A6 Tokat: Niksar to Karakuş, 1100 m, bank by road, 05.09.1954, *P.H.Davis* 24925 *& O.Polunin* (holotype K, photo E); A5 Sinop: 50 km from Sinop to Boyabat, 1300 m, open places in *Abies* forest, 05.08.2007, *Yıldız* 16568 *& Dirmenci* (Hb. Yıldız); ibid., 40 km, 05.08.2007, *Yıldız* 16570 *& Dirmenci* (stems green) (Hb. Yıldız); ibid., *Yıldız* 16573 *& Dirmenci* (corolla white) (Hb. Yıldız); Amasya: in regione alpinus Ak Dagh, 23.08.1890, *Bornmüller* 1614 (BM, K); A6 Ordu: between Ünye and Akkuş, 600 m, 22.08.2006, *Yıldız* 16395 *& Dirmenci* (Hb. Yıldız); 3 km from Akkuş to Niksar, 1350 m, 22.08.2006, *Yıldız* 16398 *& Dirmenci* (Hb. Yıldız); between Niksar and Akkuş, environs of Tifi village, 1050 m, *Yıldız* 16401 *& Dirmenci* (Hb. Yıldız); Sivas: Hafik, between Pusat and Ekingölü villages, 1400 m, 21.07.2009, *Yıldız* 17053 *& A.Akpulat* (Hb. Yıldız); Şerefiye, between Çamlıkale village and Köse Mount, steppe, 1600–1700 m, 11.08.1984, *Yıldız* 4817 *& N.Çelik* (Hb. Yıldız); between Zara and Şerefiye, north of Arapça village, Kurbağalıdere, 1400 m, *Quercus* L. scrub openings, 25.08.2009, *Yıldız* 17100 *& N.Çelik* (Hb. Yıldız); Zara, Geminbeli pass, 1900–2000 m, 21.07.2009, *Yıldız* 17055 *& A.Akpulat* (Hb. Yıldız); Doğanşar, Kurucaova pass, 1600 m, steppe, 26.08.2009, *Yıldız* 17112 *& N.Çelik* (Hb. Yıldız); A7 Giresun: 2 km west of Alucra, road side, 1700 m, 22.08.2006, *Yıldız* 16383 *& Dirmenci* (Hb. Yıldız); between Tamdere and Karınca, 1600 m, 22.08.2006, *Yıldız* 16391 *& Dirmenci* (Hb. Yıldız); Tamdere, south of Eğribel pass, 2000 m, 22.08.2006, *Yıldız* 16388 *& Dirmenci* (Hb. Yıldız); Gümüşhane: Tempede, *Sintenis* 1894:7440 (G); Zigana pass, 4–5 km south of pass, 1750 m, *Pinus-Carpinus* forest opening, 19.08.2006, *Yıldız* 16374 *& Dirmenci* (Hb. Yıldız); B6 Sivas: between Yıldızeli and Akdağmadeni, 1400 m, *Rechinger* 44435 (W); 45–50 km from Yıldızeli to Akdağmadeni, *Quercus* scrub openings, 1300 m, 11.08.2006, *Yıldız* 16234 *& Dirmenci* (Hb. Yıldız). – **Cirsium baytopae:** Turkey, Tekirdağ: Güngörmez village, near Saray, under *Quercus*, 15.07.1973, *A.Baytop* (holotype E, isotype ISTE 26339); A1(E) Kırklareli: 19 km from Pınarhisar to Vize, 200 m, 27.10.1980, *A.Baytop* & *A.Meriçli* (ISTE 45959); Vize, on the road of Kıyıköy, *Quercus* openings, 380 m, 22.07.1977, *A.Baytop* (ISTE 38134); Tekirdağ: Güngörmez village, near Saray, under *Quercus,* behind the cemetery, 200 m, 30.06.1993, *N. & E.Özhatay* (ISTE 69898); ibid., 22.07.1977, *A.Baytop et al.* (ISTE 38108); ibid., 22.07.1977, *A.Baytop et al.* (ISTE 38096); ibid., around cemetery, 27.10.1980, *A.Baytop* (ISTE 45957); ibid., 06.1993, *N & E.Özhatay* (ISTE 69898); ibid., *Quercus-Carpinus*, forest openings, 100 m, 02.08.2007, *Yıldız* 16528 *& Dirmenci* (Hb. Yıldız); A2(E) İstanbul: between Saray and Sinekli, 38 km to Sinekli, 22.07.1977, *A.Baytop et al.* (ISTE 38139). – **Cirsium byzantinum:** Turkey, İstanbul: circa Constantinopolim, 1837, *Aucher 3392* (holotype G-DC.); A2(E) Tekirdağ: Saray, 3–4 km from Beyceler and Sinekli, *Quercus* scrubs openings, 170 m, 02.08.2007, *Yıldız* 16530 *& Dirmenci* (Hb. Yıldız); İstanbul: Constantinopolitani in ruderals 10.07.1844, *Noe* 227 (G); Kilyos, 10.08.1965, *Rechinger* 32977 (G); S. of Kilyos, *A.Baytop* (ISTE 18543); Büyükçekmece, 50 m, *Davis* 39227 (E); Fistiksuyu to Hünkarsuyu, *Aznavour* (G); Silivri, 10 m, 05.1956, *K. Alpınar* (ISTE 57251); between Çatalca and Subaşı, Gökçeali village, 20 m, 27.10.1980, *A.Baytop & A.Meriçli* (ISTE 45951); Kilyos, stream banks, 10.10.1970, *A.Baytop* (ISTE 18543); Çatalca, between Dursunköy and Boyalık villages, 90 m, 15.08.2002, *İ.Genç* (ISTE 82265). – **Cirsium steirolepis:** Turkey, B1 Balıkesir: Mt. Ida (Kaz Mountain), in sylvis prope Kareikos, 31.06.1883, *Sintenis* 616 (isotypes BM, E, K); A1(E) Edirne: between Keşan and Gelibolu, *Pinus brutia* forest openings, 300 m, *Yıldız* 16499 *& Dirmenci* (Hb. Yıldız); Tekirdağ: İnecik, between Ormanlı and Güzelköy, in *Quercus* scrubs, 500–600 m, 01.08.2007, *Yıldız* 16507 *& Dirmenci* (Hb. Yıldız); 10 km from Şarköy to Malkara, *Quercus* scrub, 200 m, 28.07.2007, *Dirmenci* 3682 (Hb. Yıldız); Malkara, Şarköy road, south of İsaklı village, *Quercus* scrub, 150 m, 01.08.2007, *Yıldız* 16505 *& Dirmenci* (Hb. Yıldız); B1 Çanakkale: between Bayramiç

and Yenice, pine forest openings, 350 m, 31.07.2007, *Yıldız* 16496 *& Dirmenci* (Hb. Yıldız); 10 km east of Yenice, *Pinus brutia* forest, 250 m, 10.09.2009, *Yıldız* 17132 (Hb. Yıldız); Kazdağı, 1000 m, 16.08.1988, *K.Alpınar* (ISTE 59613); Balıkesir: Edremit, Kazdağı, between Kapıkule and Tozluyayla, 1350 m, 28.07.2007, *Dirmenci* 3474 & *E.Akçiçek* (Hb. Yıldız); Marmara Island, Büyükçayır, 420 m, 24.08.1979, *E.Tuzlaca* (ISTE 43500).

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