

Two new species of *Echinops* sect. *Ritropsis* (Asteraceae) from Turkey

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Echinops antalyensis C. Vural and *Echinops borae* C. Vural (both in sect. *Ritropsis*) are described as new species from South Anatolia, Turkey. A revised diagnostic key of the species of *Echinops* sect. *Ritropsis* in Turkey is given. The morphological differences from the closely related species are discussed. An IUCN threat category for the two new species is proposed and observations on the ecology of the populations are provided. The geographical distributions of the new species are preseted.

The genus *Echinops* is represented by 18 species, two subspecies and three varieties in Turkey (Hedge 1975, Gemici & Leblebici 1992, Vural *et al.* 2010). Ten of the species are endemic and the present study raises this number to 12. The Turkish *Echinops* species are recognized as belonging to three sections — sect. *Echinops* (13 spp.), sect. *Ritropsis* (2 spp.) and sect. *Oligolepis* (3 spp.) — based on the number of phyllaries per capitula and the degree of adherence of the inner phyllaries (Hedge 1975). Although the genus is widespread throughout Turkey, specimens are scarce in herbaria. Botanists dislike collecting *Echinops* as they are prickly and it is difficult to preserve collected specimens as mature inflorescences tend to break into pieces when dried (Mozaffarian & Ghahreman 2002).

Recently, numerous collections of *Echinops* have been made in Turkey. During the process of determining of this new material two new species belonging to sect. *Ritropsis* were discovered. In the description of the species, the term ‘heads (pseudocephalia)’ is used to describe the sec-

ondary inflorescences. Capitula are single-flowered and congested into globose heads (pseudocephalia) subtended by small bracts (phyllaries).

Echinops antalyensis C. Vural, *sp. nova* (Fig. 1)

HOLOTYPE: Turkey. Antalya Province, Antalya-Kemer, Konyaaltı, 36°52.768'N, 30°39.671'E, 15–30 m, in maquis, 20 August 2008, Servet Özcan & C. Vural 4599 (holotype Herbarium of Erciyes University; isotypes ANK, GAZI).

ETYMOLOGY: The specific epithet is derived from the name of the Antalya, which is a port city in southwestern Turkey.

Perennial herbs. Stems several, sturdy, up to 1.5 m, branched above, several-headed, ridged, greenish, sulcate-striate, below covered with lanate indumentums and stipitate-glandular hairs, above arachnoid and with stipitate-glandular hairs. Leaves oblanceolate to oblong-lanceolate outline, subentire to pinnatisect with triangular segments, margins revolute spines sturdy,

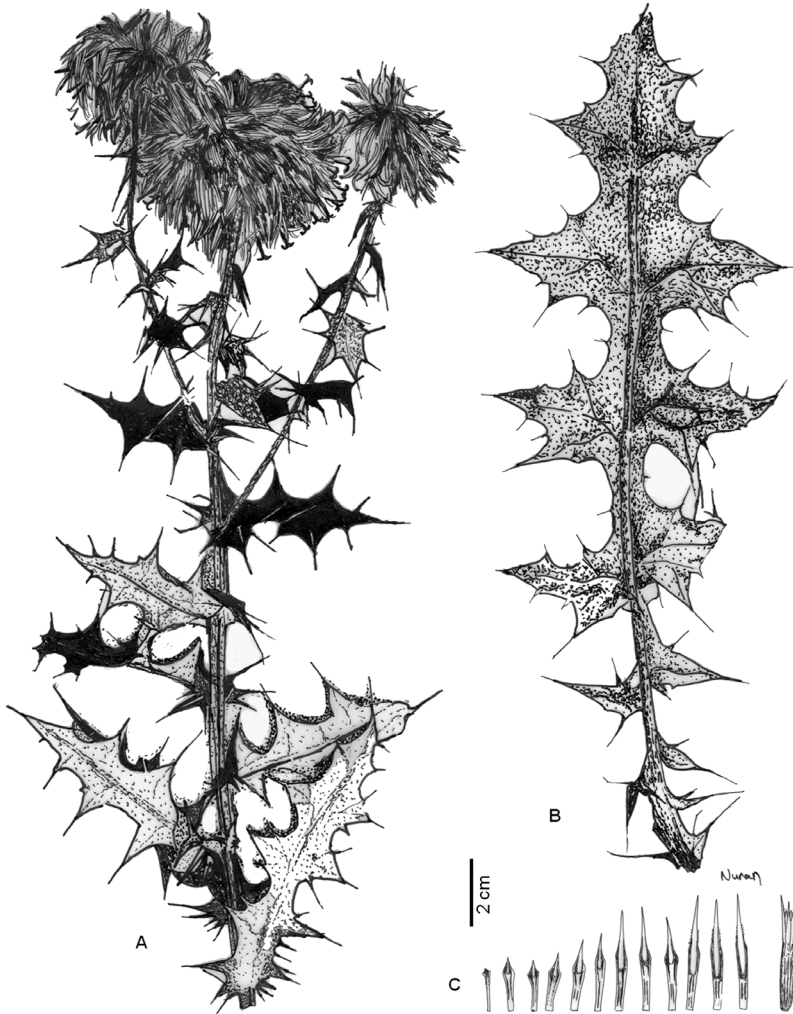


Fig. 1. *Echinops antalyensis* (from the holotype). — **A:** Upper part of the plant with heads. — **B:** Lower cauline leaf. — **C:** Phyllaries (from outer to inner, left to right).

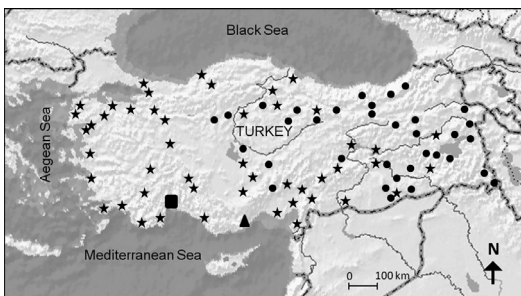


Fig. 2. Geographical distributions of the four Turkish species of *Echinops* sect. *Ritropsis*. (■) *E. antalyensis*, (▲) *E. borae*, (★) *E. spinosissimus* and (●) *E. orientalis*.

up to 1 cm; green with glandular-setose above, white lanate below with stipitate glands on veins. Basal leaves petiolate up to 6 cm, lamina 22–34 × 5–10 cm, cauline amplexicaul and simple.

Heads 5–8 cm diameter, borne at ends of stems and branches, greenish to bluish. Capitula up to 30 mm long, brush equal to longer than outer phyllaries, 6–12 mm long; phyllaries 17–21, other 6–10 mm, glandular spathulate-deltoid, margins serrate, median 14–20 mm, without long spines, lanceolate, margins serrate, innermost connate to about 1/2 their length. Corollas pale blue or whitish; tube 8–10 mm long, glandular, lobes 7–8 mm; anther bases tailed and fimbriate. Achenes 10–11 mm long, densely covered with yellow twin-hairs; pappus bristles 1.5–2 mm long, connate at basal half. Flowers and fruits between July and October.

Echinops antalyensis occurs in an area west of the Antalya city centre, (South Anatolia, Antalya province) near the sea level (Fig. 2). It

grows on calcareous rocky slopes near the seashore in maquis between 51–30 m.

Echinops antalyensis is distinct in having pinnatifid rather than bipinnatisect lower cauline leaves. The morphologically closest species to *E. antalyensis* is *E. spinosissimus* but there are a number of differences (see the key below and Table 1).

CONSERVATIONAL STATUS: *Echinops antalyensis* is only known from one locality. The population is under threat due to the construction of roads and buildings. The area it occupies is smaller than 10 km². Based on the data gathered in the field the “Critically Endangered” status is proposed for the species (IUCN 2001).

***Echinops bora* C. Vural, sp. nova (Fig. 3)**

HOLOTYPE: Turkey, Mersin (İçel) province, Erdemli-Silifke, Ayaş, near Paşasuyu stream, 36°28.643'N, 34°10.294'E, 1–20 m, road side, in maquis, 24 July 2009, *Bora Vural & C. Vural 4749* (holotype Herbarium of Erciyes University; isotypes ANK, GAZI).

ETYMOLOGY: The specific epithet honours Mr. Bora Vural who is one of the collectors of the new species and a son of the author.

Perennial herbs. Stems solitary or several, sturdy, up to 1.7 m, branched above, several-headed, green, densely stipitate-glandular. Leaves lanceolate to elliptic outline, 2–3 pinnatisect, green with glandular-setose above,

white lanate below with stipitate glands on veins, spines numerous variable in size. Basal leaves petiolate up to 45 × 15 cm, cauline amplexicaule or simple. Heads 6–8 cm diameter, borne at ends of stems and branches, greenish to bluish. Capitula up to 35 mm long, brush equal to longer than outer phyllaries, 9–15 mm long; phyllaries 15–20; outer 9–14 mm, densely glandular spatulate-deltoid, margins serrate, median 25–30 mm, without long spines, lanceolate, margins serrate, innermost connate to about 1/2 their length. Corollas pale blue or whitish; tube 13–14 mm long, glandular, lobes 10–12 mm; anther bases tailed and fimbriate. Achenes 12–15 mm, densely covered with yellow twin-hairs; pappus bristles 1.5–2 mm long, connate at basal half. Flowers and fruits between July and September.

Echinops bora is known only from Erdemli (South Anatolia, Mersin Province in Turkey) near the sea level (Fig. 2). It grows on dry calcareous rocky slopes near the seashore among mostly scrubby plant species between 1–20 m.

Echinops bora is similar to *E. orientalis* in having 2–3 pinnatisect cauline leaves with glandular upper surface, but there are a number of differences (see the key below and Table 1).

CONSERVATIONAL STATUS: *Echinops bora* is known only from the type locality in Mersin provinces in Turkey. The population is under threat from recreational activities and the construction of roads and summer houses. The area it occupies is smaller than 10 km². Based on the

Table 1. Table of comparison between the four Turkish species of *Echinops* sect. *Ritropsis*.

Taxa	<i>orientalis</i>	<i>spinosissimus</i>	<i>antalyensis</i>	<i>bora</i>
Stem indumentum	covered with very short capitate glandular hairs	lanate with dark purple multi-cellular hairs	lanate or arachnoid with spreading capitate and multicellular glandular hairs	covered with short and long, multicellular glandular hairs
Stem color	brownish	white or purplish	greenish	green or greenish
Leaf division	2–3 pinnatifid or pinnatisect	2–3 pinnatisect	subentire to pinnatifid	2–3 pinnatisect
Phyllary number	20–25	18–24	17–20	15–20
Length (mm)				
Outer phyllary	8–12	12–15	6–10	9–14
Median phyllary	15–20	14–20, to 35 including spine	10–14	25–30
Corolla tube	12–15	10–18	8–10	13–14
Corolla lobe	8–12	10–14	7–8	10–12
Achene	11–13	7–9	10–11	12–15



Fig. 3. *Echinops borae* (from the holotype). — **A:** Upper part of the plant with heads. — **B:** Lower cauline leaf. — **C:** Phyllaries (from outer to inner, left to right).

data gathered in the field the “Critically Endangered” status is proposed for the species (IUCN 2001).

Key to the species of *Echinops* sect. *Ritropsis* in Turkey

1. Stems lanate with long multicellular purplish glandular seta; stems white or purplish *E. spinosissimus*
1. Stems with a dense indumentum of short or long glandular hairs; stems brownish or greenish 2
2. Leaves subentire to pinnatifid; median phyllaries 10–14 mm long; corolla tube 8–10 mm long *E. antalyensis*
2. Leaves 2–3 pinnatisect or 2–3 pinnatifid; median phyllaries 15–30 mm long; corolla tube 12–15 mm long ... 3
3. Median phyllaries 25–30 mm; stems greenish; phyllaries 15–20 *E. borae*
3. Median phyllaries 15–20 mm; stems brownish; phyllaries 20–25 *E. orientalis*

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References

- Gemici, Y. & Leblebici, E. 1992: A new species of *Echinops* (Asteraceae) from South Anatolia (Turkey). — *Candollea* 47: 597–599.
- Hedge, I. C. 1975: *Echinops* L. — In: Davis, P. H. (ed.), *Flora of Turkey and the East Aegean Islands*, vol. 5: 609–622. Edinburgh University Press, Edinburgh.
- IUCN 2001: *IUCN red list categories and criteria*, version 3.1. — IUCN Species Survival Commission, Gland & Cambridge.
- Mozaffarian, V. & Ghahreman, A. 2002: Three new species of *Echinops* (Compositae, Cynareae) from Iran. — *Botanical Journal of the Linnean Society* 140: 181–186.
- Vural, C., Biter, M. K. & Dadandı, M. Y. 2010: A new species of *Echinops* (Asteraceae) from Turkey. — *Turkish Journal of Botany* 34: 513–519.