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Natural Centaurea and Psephellus Taxa Distributed in Artvin (Türkiye) Province

Artvin (Türkiye) İli'nde Yayılış Gösteren Doğal Centaurea ve Psephellus Taksonları

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Abstract

This study was conducted to identify *Centaurea* and *Psephellus* taxa naturally distributed in Artvin (Türkiye). In this study, upon examining 370 plant specimens collected from Artvin province under a stereozoom microscope, 27 taxa of the genus *Centaurea* and 10 taxa of the genus *Psephellus* were identified. Threats and threat categories for 37 taxa naturally distributed in Artvin are presented. The distribution of identified taxa according to phytogeographic regions; 3 (11.1%) of the *Centaurea* taxa are from the Eur-Sib, 8 (29.6%) are from Irano-Turan, and 16 (59.3%) of which are distributed in more than one region. 6 (60%) of the *Psephellus* species are from the Euro-Siberian, 2 (20%), are from Irano-Turan and 2 (%20) of which are distributed in more than one region. Of the 27 taxa belonging to the genus *Centaurea*, 6 are endemic and 5 are non-endemic and rare taxa, and the endemism rate is 22.2%. Of the 10 species belonging to the genus *Psephellus*, 5 taxa are endemic and 3 are non-endemic and rare species, and the endemism rate is determined as 50%. The threat status of 37 endemic and non-endemic and rare taxa was assessed according to IUCN threat categories. A diagnostic key was created for the identified taxa, and information such as endemism status, phytogeographic region, flowering period, habitat, and elevation range in which it naturally spreads were provided for each taxon.

Öz

Bu çalışma, Artvin (Türkiye) ilinde doğal yayılış gösteren *Centaurea* ve *Psephellu*s taksonlarının tespiti amacıyla yapılmıştır. Bu çalışma kapsamında Artvin ilinden toplanan 370 bitki materyalinin stereozoom mikroskop altında incelenmesi sonucunda *Centaurea* cinsine ilişkin 27 takson ve *Psephellus* cinsine ait 10 takson teşhis edilmiştir. Fitocoğrafik bölgeler esas alınarak tespidi gerçekleştirilen taksonların dağılımlarında *Centaurea* taksonlarının 3 adeti (%11.1) Doğu Karadeniz, 8 adeti (%29.6) ve 16 adet (%59.3) İran- Turan ve birden fazla bölgede yayılış gösterenlerdir. *Psephellus* türlerinin 6 adeti (%60) Avrupa- Sibirya, 2 adeti (%20) İran-Turan ve birden fazla bölgede yayılış gösterenler 2 adet (%20)'dir. Araştırma alanında tespit edilen *Centaurea* cinsine ait 27 takson 5'i endemik, 4'ü endemik olamayan nadir takson olup endemizm oranı %22.2'dir. *Psephellus* cinsine ait 10 türden 5'i endemik, 3'ü endemik olmayan nadir tür olup endemizm oranı %50 olarak belirlenmiştir. IUCN'e göre endemik/endemik olmayan 37 adet taksonun tehlike durumu değerlendirilerek tespit edilen taksonlar için bir tanı anahtarı oluşturulmuştur. Ayrıca her bir takson için endemizm durumu, fitocoğrafik bölgesi, çiçeklenme dönemi, habitat ve doğal yayılış gösterdiği yükselti aralığı gibi bilgiler verilmiştir.

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INTRODUCTION

Türkiye's distinctive geographical location and ecological variability have made it a globally recognized center for plant diversity and endemism. Among the plant families in Türkiye, Asteraceae ranks as the most endemic-rich, comprising 572 taxa that are native only to this region (Muminjanov and Karagöz, 2018).

Türkiye stands out as a global center of *Centaurea* L. diversity, hosting approximately 220 species, of which nearly 60% are endemic. This remarkable richness is attributed to the country's unique biogeographical position at the intersection of the Mediterranean, Irano-Turanian, and Euro-Siberian phytogeographic zones. However, many Turkish *Centaurea* species face increasing threats from habitat loss, climate change, and anthropogenic pressures (Atasagun, 2022).

The genus *Psephellus* Cass is represented globally by approximately 75-100 taxa distributed across 12 sections, occurring in regions such as Western Siberia, the Caucasus, Iran, Ukraine, Crimea, and Türkiye (Wagenitz and Hellwig, 2000; Bozkurt et al., 2017). Within Türkiye, the genus comprises 34 taxa assigned to seven sections, including several recently described species. Of these, 28 taxa are endemic to the country and exhibit highly restricted distributions, resulting in an estimated endemism rate of about 82% (Ertuğrul and Uysal, 2013). Of the 844 global ecological regions in the world, 12 are in Türkiye and 3 of them (Euxine-Colchic broadleaf forests, Northern Anatolian conifer and deciduous forests, Caucasus mixed forests) are located within the borders of Artvin (URL-1).

Artvin is the richest province in Türkiye of vascular plant diversity, hosting a total of 2727 naturally occurring taxa belonging to 137 families and 761 genera. Of these, 198 are endemic and 302 are rare but not endemic, totaling 500 taxa considered to be under threat (Eminağaoğlu, 2015; Eminağaoğlu, 2023; Eminağaoğlu et al., 2024). Within this richness, as stated above, the genera of *Centaure* and *Psephellus* are very important elements of the flora of Türkiye, and particularly in the province of Artvin. In this context, the purpose of the study is to determine the native *Centaurea* and *Psephellus* taxa and their distribution in the province of Artvin (Türkiye).

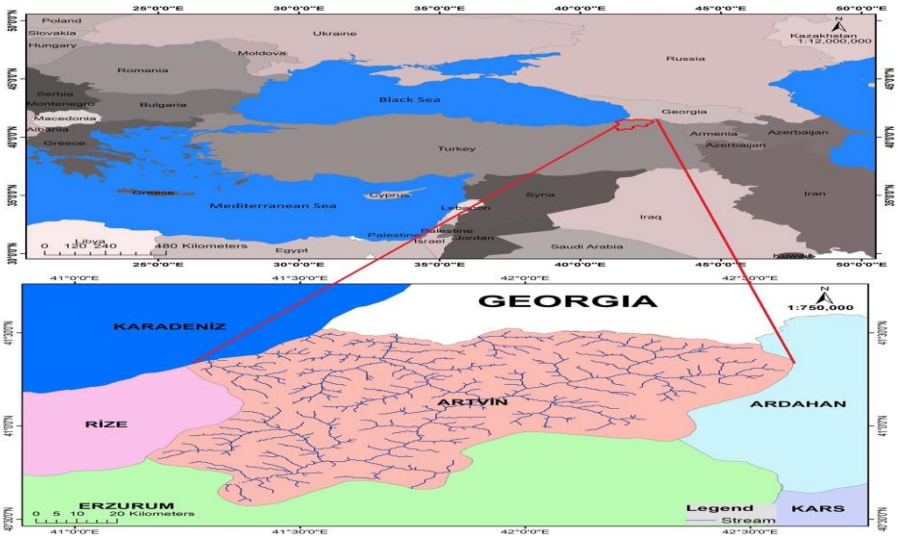


Figure 1. Geographic location of the study area

MATERIALS AND METHODS

The study site is situated within square A8 and A9 based on Davis's grid system and lies in the Colchic sub-section of the Euxine section, which belongs to the Euro-Siberian floral element of the Holarctic Region (Eminağaoğlu, 2015). We worked on the total 370 herbarium specimens storied in ARTH (Artvin Çoruh University Herbarium) collected by Özgür EMİNAĞAOĞLU and Canan AÇIKGÖZ HARŞIT. Within these 370 herbarium specimens, we focused on the genera *Centaurea* and *Psephellus* which are native to the province of Artvin. For this purpose, a key for the taxa was prepared to identify them. Furthermore, the endemism, their phytogeographic region, flowering period, altitude, and distribution of the taxa of the genera *Centaurea* and *Psephellus* in the province of Artvin were studied. The phytogeographic region was determined using literature (URL-2) and our observations. The current plant names were verified (Bakis et al., 2011; Banki et al., 2025; POWO, 2025; URL-2) herbarium record number the threat status of endemic and non-endemic rare taxa was assessed according to IUCN threat categories (Ekim et al., 2014; IUCN, 2025), plants with changed genus and species names, state of endemism and current names of *Centaurea* and *Psephellus* taxa naturally distributed in Artvin and found at the ARTH (Artvin Çoruh University Herbarium) are presented in Table 1. Characteristics of the collected plants, such as altitude, aspect, locality, collection date, and GPS (Global Position System) coordinates, were recorded. While naming the plant specimens, which were dried and converted into herbarium material, sources such as "Flora of Türkiye and the East Eagean Islands" (Davis, 1965-85; Davis, 1971; Davis et al., 1988; Güner et al., 2000), Flora USSR (Komarov, 1934-78), Flora Kavkaza (Grosheim, 1939-67), and various flora sources, illustrated plant atlases (Bonnier, 1912-34; Ekim et al., 2000; Özhatay et al. 2010; Eminağaoğlu, 2012; Eminağaoğlu, 2015), and the Artvin Çoruh University Herbarium (ARTH) were utilized. Many other sources were also used during the diagnosis (Gökmen, 1973; Eminağaoğlu and Anşin, 2003; Eminağaoğlu and Anşin, 2004; Eminağaoğlu et al., 2007; Eminağaoğlu et al.,2008; Eminagaoglu, 2014; Ozcan et al., 2014; Eminağaoğlu and Aksu, 2015; Ozcan, 2018; Eminağaoğlu et al., 2018a, Eminağaoğlu et al., 2018b; Ozcan and Akıncı, 2019; Eminağaoğlu et al., 2022; Ozcan and Demir, 2022; Yavuz and Eminağaoğlu, 2023).

RESULTS, DISCUSSION AND CONCLUSION

A total of 27 *Centaurea* taxa and 10 *Psephellus* taxa were determined in the province of Artvin.

Identification Key of Genera *Centaurea*

The following identification key for the native species determined from Artvin was prepared based on the features of the plants observed and taken from the related references (e.g. Davis, 1965-85; 1971; Davis et al., 1988; Ertuğrul and Uysal, 2013).

1. Median phyllaries of involucre without an appendage, or at most with a narrow border (without distinct teeth or cilia) or with a minute mucro (shorter than 2 mm)
- **2.** Capitula sessile or nearly sessile in a rosette of leaves — **1. *rhizocalathium***
- **2.** Capitula not sessile, stem well-developed — **2. *polypodifolia***

1. Median phyllaries with a distinct appendage
- **3.** Appendage a simple spine or spinule without lateral or basal cilia — **3. *leptophylla***
- **3.** Appendage not as above (although sometimes ending in a spine).

4. Appendage with entire, minutely denticulate or irregularly lacerate margin (and usually circular to oblong in outline)
5. Flowers yellow — **4. *macrocephala***
5. Flowers yellow — **5. *pulchella***
4. Appendage with distinctly ciliate or spinulose margin
6. Appendage ending in a conspicuous spine at least 6 mm long (and distinctly longer than lateral spinules or cilia)
7. Much-branched annuals or biennials with small capitula (involucre less than 15 mm broad)
8. Leaves decurrent — **6. *solstitialis***
8. Leaves not decurrent — **7. *iberica***
7. Perennials or if biennials then capitula few and large (involucre more than 20 mm broad)
9. Leaves lyrate; receptacular bristles 15-20 mm — **8. *urvillei***
9. Leaves pinnatisect; receptacular bristles 7-13 mm. — **9. *carduiformis***
6. Appendage not ending in a spine, sometimes with a short mucro or spinule (shorter than 6 mm)
10. Appendage not decurrent along margin of phyllary
11. Annuals or much-branched biennials
12. Leaves decurrent — **6. *solstitialis***
12. Leaves not decurrent — **7. *iberica***
11. Perennials (or biennials branched only in upper part, with large capitula)
13. Flowers yellow or whitish
14. Pappus absent or short (0.5-3 mm)
15. Involucre 20-30 mm broad — **10. *armena***
15. Involucre narrower. — **11. *rhizantha***
14. Pappus longer (5-15 mm) — **4. *macrocephala***
13. Flowers pink or purple — **12. *phrygia***
10. Appendage decurrent along margin of phyllary with a usually denticulate or ciliate border
16. Appendage with black or brown border decurrent to near base of phyllaries (never ending in spinule)
17. Annuals
18. Upper leaves linear, 1-2 mm broad; cilia of appendages 0.5-1 mm — **13. *cyanus***
18. Upper leaves oblong to lanceolate, broader; cilia 1.5-2 mm — **14. *depressa***
17. Perennials
19. Flowering stem lateral at base of a rosette (always curved at base) — **15. *cheiranthifolia***
19. Flowering stem terminal out of centre of rosette (dried up at flowering time), never arising from base of rosette
20. Border of appendage (incl. teeth) black or dark brown — **16. *nigrofimbria***
20. Border of appendage light to dark brown with whitish teeth or cilia or totally light brown
21. All flowers purple to blackish-violet, marginal with linear lobes; leaves pinnatilobate — **17. *woronowii***
21. Lower leaves with 1-3 pairs of distant lobes or teeth — **18. *triumfettii***
16. Appendage not widely decurrent with black or brown border (or ending in distinct spinule)
22. Capitula small, involucre up to 10 mm broad; stem often repeatedly branched below middle

23. Basal leaves lyrate; appendage ending in very short mucro (0.5-1 mm)	**19. *aggregata***
23. Basal leaves pinnatisect to 2-pinnatisect; appendage usually with longer mucro (1-2.5 mm), mostly recurved	**20. *virgata***
22. Capitula larger, involucre more than 10 mm broad; stem usually with few branches in upper part or simple	**21. *pseudoscabiosa***

The flowering time, habitat and altitude of the 27 identified *Centaurea* taxa were given below:

1. *C. Rhizocalathium* (K. Koch) Tchihat.:
Flowering*:* 6-9.
Habitat: Dry slopes.
Altitude: 1370-1830 m.

2. *C. polypodifolia* Boiss*.:*
Flowering: 6-8.
Habitat: Rocky slopes, steppe, fallow fields.
Altitude: 800-2500 m.

3. C. leptophylla* (C. Koch) Tchihat*.:
Flowering*:* 6-8.

4. *C. macrocephala* Muss. Puschk. ex Willd.:
Flowering: 7-8.
Habitat: Subalpine meadows.
Altitude: 2000-2300 m.

5. *C. pulchella* Ledeb.:
Flowering: 5-7.
Habitat: Steppe, fallow fields.
Altitude: 900-1900 m.

6. *C. solstitialis* L.:
Flowering: 6-8.
Habitat: Pinus forests, dry slopes, fallow fields, waste places.
Altitude: s.l.-1900 m.

7. *C. iberica* Trev. ex Sprengel:
Flowering: Fl. 6-8.
Habitat: Fields, roadsides, waste land.
Altitude: s.l.-2300 m.

8. *C. urvillei* DC*:*
Flowering: Fl. 6-7.
Habitat: Rocky slopes, macchie, open Pinus forests.
Altitude: nr s.1.-2000 m.

9. *C. carduiformis* DC*.:*
Flowering: Fl. 6-7.
Habitat: Steppe, fallow fields.
Altitude: 500-2200 m.

***C. carduiformis* subsp. *orientalis* Wagenitz:**

Flowering: Fl. 6-7.
Habitat: Steppe.
Altitude: (1000-) 1500-2300 m.

10. *C. armena* Boiss.:

Flowering: Fl. 6-7.
Habitat: Mountain slopes.
Altitude: 1950-2600 m.

11. *C. rhizantha* C.A.Mey.:

Flowering: Fl. 6-7.
Habitat: Rocky slopes and screes.
Altitude: 900-3600 m.

12. *C. phrygia* L.:

Flowering: Fl. 7-8.
Habitat: Meadows.

***C. phrygia* subsp. a*bbreviata* (K. Koch) Dostál:**

Habitat: Alt.
Altitude:1100-2450 m

***C. phrygia* subsp. *salicifolia* (M. Bieb. ex Willd.) Mikheev:**

Habitat: Alt.
Altitude: nr s.l.-1200 m.

13. *C. cyanus* L.:

Flowering: Fl. 4-6.
Habitat: Pinus forest, rocky slopes, fields and roadsides.
Altitude: s.l.-1500 m.

14. *C. depressa* M. Bieb.:

Flowering: Fl. 5-7.
Habitat: Fields and roadsides.
Altitude: s.l.-1800(-2300) m.

15. *C. cheiranthifolia Willd.:*

Flowering: Fl. 6-7 (-8).
Habitat: Igneous rocky or grassy slopes, open Pinus sylvestris and Betula forests.
Altitude: 1900-2750 m.

***C. cheiranthifolia* var *purpurascens* (A.DC.) Wagenitz:**

Flowering: Fl. 7-8.

16. *C. nigrofimbria* Sosn.:

Flowering: Fl. 7-8.
Habitat: Subalpine and alpine meadows and pastures, grassy scree and rocky slopes.
Altitude: 1525-3100 m.

17. *C. woronowii* Bornm. ex Sosn.:

Flowering: Fl. 4-7.
Habitat: Stony slopes, rocks.
Altitude: 700-1500 m.

18. *C. triumfettii* All:

Flowering: Fl. 5-7{-8).

19. *C. virgata* Lam.:

Flowering: Fl. 6-9.
Habitat: Dry hills, steppe, dry waste ground.
Altitude: 100-2000 m.

20*. C. aggregata* Fisch. & Mey. ex DC.:
Flowering: Fl. 7-8.
Habitat: Dry rocky slopes, forests.
Altitude:700-1800(-2000) m.

21. *C. pseudoscabiosa* Boiss. & Buhse:
Flowering: Fl. 6-7.
Habitat: Steppe, rocky slopes.
Altitute: 1500-1500-2900) m.

***C. pseudoscabiosa* subsp. *araratica* (Azn.) Wagenitz**:
Flowering: Fl. 7-8.
Habitat: Steppe, fields.
Altitude: 1400-2800 m.

Identification Key of *Genera Psephellus* Cass.

The following identification key for the native species determined from Artvin was prepared based on the features of the plants observed.

1. Pappus plumose or barbellate	
2. Pappus plumose, flower yellowish or cream.	***1. appendicigerus***
2. Pappus barbellate, flower purple.	***2. pulcherrimus***
1. Pappus scabrous or deciduous	
3. Leaves distinctly bicolored; sparsely hairy and green above, gray-tomentose beneath.	
4. Appendage margins denticulate, toothed or irregularly lacerate.	
5. Appendages quite broad, completely covering the phyllary bases.	***3. simplicicaulis***
5. Appendages narrow, not completely covering the phyllary bases, almost as wide as the phyllaries.	***4. adjaricus***
4. Appendage margins distinctly ciliated	
6. Pappus rather short, 1-2 mm, leaves not leathery	
7. Appendages lanceolate-triangular, center 1-2 mm wide	***5. hypoleucus***
7. Appendages ovate-orbicular, center 3-4 mm wide	
8. Plant erect-askending, pappus no more than 0.5 mm.	***6. dealbatus***
8. Plant decumbent, pappus no more than 1-1.5 mm.	***7. taochius***
6. Pappus longer, more than 5 mm, leaves leathery.	***8. pecho***
3. Appendage margins distinctly ciliated	
9. Marginal flowers weakly radiant	***9. straminicephalus***
9. Marginal flowers distinctly radiant	***10. yusufeliensis***

The flowering time, habitat and altitude of the 10 identified *Psephellus* taxa were given below:

1. P. apendicigerus* (Willd.) K. Koch (Syn: *Centaurea appendicigera)
Flowering: 7-8.
Habitat: Alpine steppe, serpentine areas with moving rocks.
Altitude: 2750-3300 m.

2. P. pulcherrimus* (Willd.) Wagenitz (Syn: *Centaurea pulcherrima)
Flowering: 7-8.
Habitat: Alpine meadows, rocky areas, granite lands, steppes, volcanic tuff.

3. P. simplicicaulis (Boiss. & A. Huet) Wagenitz (Centaurea simplicicaulis Boiss. & A. Huet)
Flowering: 5-6.
Habitat: Stony slopes and cliffs.
Altitude: 400-2600m.

***4. P. adjaricus* (Albov) Mikheev (Syn: *Centaurea adjarica* Albov)**
Flowering: 5-6.
Habitat: Stony slopes and cliffs.
Altitude: 400-2600m.

***5. P. hypoleucus* Boiss. (Syn: *Centaurea hypoleuca*)**
Flowering: 5-6.
Habitat: Forest clearings, rock crevices, alpine meadows.
Altitude: 600-2600 m.

***6. P. dealbatus* (Willd.) K. Koch (Syn: *Centaurea dealbata*)**
Flowering: 6.
Habitat: Moist meadows.
Altitude: 620-2500 m.

***7. P. taochius* Sosn. (*Centaurea hedgei* Wagenitz)**
Flowering: 6.
Habitat: Clay hills, oak groves, meadows.
Altitude: 450-1920 m.

***8. P. pecho* (Albov) Wagenitz (Syn: *Centaurea pecho* Albov)**
Flowering: 6-7.
Habitat: Rocky areas, steep rocky slopes.
Altitude: 200-850 m.

***9. P. straminicephalus* (Hub.-Mor.) Wagenitz (Syn: *Centaurea straminicephala* Hub.-Mor.)**
Flowering: 6-7.
Habitat: Sedimentary rocks, limestone cliffs, steppe, erosional hills.
Altitude: 600-1150 m.

***10. P. yusufeliensis:* Tugay & Uysal (Syn: *Psephellus coruhensis* A. Duran & M. Öztürk)**
Flowering: 5-6.
Habitat: Limestone rock intervals.
Altitude: 675-1000 m.

Distribution and Threat Status of the Identified Species

Distribution of taxa defined according to phytogeographic regions; 3 (11.1%) of the *Centaurea* taxa are from the Eur-Sib, 8 (29.6%) are from Irano-Turan, and 16 (59.3%) of which are distributed in more than one region. 6 (60%) of the *Psephellus* species are from the Euro-Siberian, 2 (20%), are from Irano-Turan and 2 (%20) of which are distributed in more than one region (Table 1, Figure 2).

The threat status of 37 endemic and non-endemic rare and non-endemic taxa was assessed according to IUCN threat categories (Ekim et al., 2014; IUCN, 2025) (Table 1).

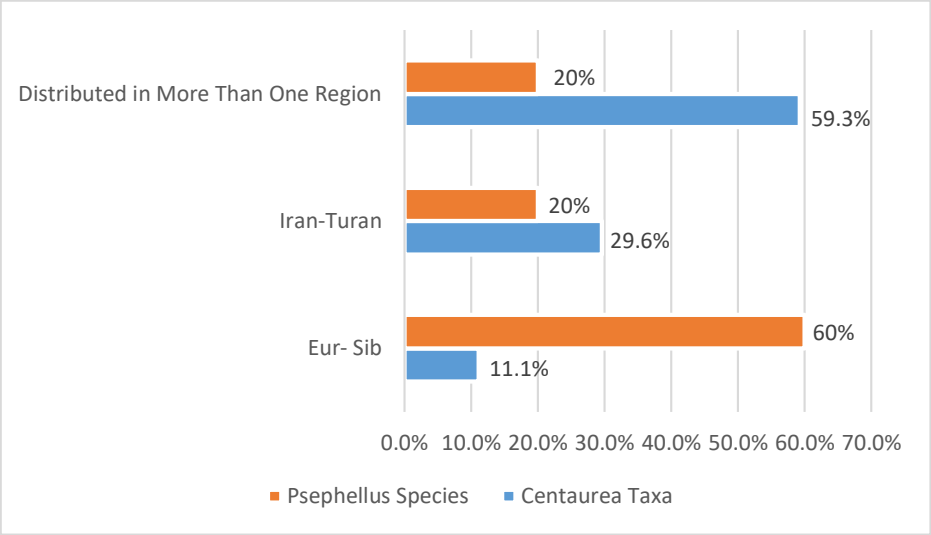


Figure 2. Distribution of *Centaurea* taxa and *Psephellus* species according to phytogeographic regions

The IUCN threat category EN for *P. yusufeliensis* and *C. urvillei* subsp. *stepposa* taxa was determined for the first time in this study. Based on recent evaluations, a status update from Data Deficient (DD) to Near Threatened (NT) is recommended for the taxa *Centaurea cheiranthifolia* var. *purpurascens.*

As a result of the study, there are taxa known to naturally spread in Artvin, but whose genus names have changed. According to these data, the current name of *Centaurea dubia* S.G. Gmel. ex Steud. is *Xeranthemum annuum* L., the current name of *Centaurea lanata* (L.) Lam. & DC.) is *Phonus lanatus* (L.) Hill, the current name of *Centaurea moschus* is Jurinea moschus, and the current name of *Centaurea nitens (*M. Bieb. ex Willd.) is *Callicephalus nitens (*M. Bieb. ex Willd.) C.A.Mey. (POWO, 2025).

The province of Artvin, with its diverse habitats, an elevation range of nearly 4000 meters, the influence of three distinct climate types (Mediterranean, Continental, and Oceanic), abundant water resources, and significant geological and geomorphological variation, offers favorable conditions for the growth of a wide variety of plant species.

This use of plant species registered in IUCN categories CR, VU, EN is extremely critical for their conservation in the Ali Nihat Gökyiğit Botanical Garden (ANGBB) to protect the breeding center from extinction temperature, considering the increasing threats emanating from climate area and habitat loss, climate and anthropogenic pressures (Eminağaoğlu and Eminağaoğlu, 2018; Eminağaoğlu and Eminağaoğlu, 2024).

Any operational interventions proposed within the native ranges of flora classified as Critically Endangered (CR) (*C. leptophylla*) or Endangered (EN) (*C. rhizocalathium, C. woronowii, P. appendicigerus, P. pecho, P. straminicephalus*) and Vulnarable (VU) (*P. pulcherrimus, P. adjaricus*) by the IUCN necessitate a rigorous impact assessment to ensure the in situ conservation of these high-risk populations.

By transferring these species, many of which are under threat, to the ANGBB, it will provide a local and national benefit in terms of protecting genetic resources and maintaining biodiversity, and will become an ex-situ conservation area for endemic, rare and threatened species (Eminağaoğlu and Tilki, 2015).

The majority of taxa belonging to the genus *Psephellus* and *Centaurea* have the potential to be used as a natural antioxidant, antimicrobial and enzyme inhibitör and valuable in landscape design because they combine ornamental appeal with ecological benefits such as drought resistance, pollinator support, and soil stabilization (Şen et al., 2013; Eminağaoğlu, 2015; 2023; Kazimova et al., 2025).

With this study, a total of 27 *Centaurea* taxa and 10 *Psephellus* taxa were determined in the province of Artvin. All previous studies and the results from this study showed that Artvin region has a very rich endemic plant species distibution and have to protected in-situ. Together with the in-situ protection, ANGBB which is the most important protection area may be a center to protect these identified endemic and rare plants in ex-situ conditions.

The identification keys for the genera *Centaurea* and *Psephellus* may be widened with new regional studies there therefore, both endemic and rare plant species may be protected in their natural habitats and grow in the ANGBB.

Developing 'honey forests' in Artvin is essential to leverage the province's high apicultural potential and preserve its diverse vegetation, particularly the *Centaurea* genus. Since pollinators are fundamental to global biodiversity and food systems, such conservation strategies are critical for ensuring the longevity of bee colonies and maintaining ecological balance (Beğen et al., 2025).

Table 1. List of *Centaurea* taxa distributed in Artvin

TAXA Name	Local Name	Herbarium No	Red List Assessment	Endemic	Non Endemic Rare	Phytogeographic Region
Centaurea aggregata	Küme Düğme	ARTH-17336! ARTH-005984! ARTH-005708! ARTH-17337! ARTH-005875!	DD- *NT	x		
Centaurea armena	Yer Sarıbaşı	ARTH-17338!		x		Iran-Turan Element
Centaurea carduiformis	Kavgalaz	ARTH-17339!				
Centaurea carduiformis subsp *orientalis*	Pala Kavgalaz	ARTH-17340! ARTH-000155!				Iran-Turan Element
Centaurea cheiranthifolia	Perpatikan	ARTH-17341! ARTH-006330!	NE		x	Eur-Sib Element
Centaurea cheiranthifolia var *purpurascens*		ARTH-17342! ARTH-002552!	DD-*NT		x	
Centaurea cyanus	Gelintacı	ARTH-17343! ARTH-006539!				
Centaurea depressa	Gökbaş	ARTH-17344!				
Centaurea iberica	Deligözdikeni	ARTH-17345! ARTH-005835!				
Centaurea leptophylla	Yeşilbaş	ARTH-17346!	CRB1ab (i, ii, iii, iv, v) C2a (i)	x		
Centaurea macrocephala	Sarıbaş	ARTH-17347!	NE		x	
Centaurea nigrofimbria	Tay Boncuğu	ARTH-17348! ARTH-000157!	LC		x	Eur-Sib Element
Centaurea phrygia subsp. *abbreviata*	Ordu Serçebaşı	ARTH-173489! ARTH-000146!				
Centaurea phrygia subsp. *salicifolia*	Rize Serçebaşı	ARTH-17350! ARTH-015160! ARTH-006630!				Eur-Sib Element
Centaurea polypodiifolia	Akbehmen	ARTH-17351!				
Centaurea pseudoscabiosa	Yaman Kavgalaz	ARTH-17352! ARTH-005849!				
Centaurea pseudoscabiosa subsp. *araratica*	Engin Kavgalaz	ARTH-17353!				Iran-Turan Element
Centaurea pulchella	Gümüşsüpürge	ARTH-17354! ARTH-14918!,				Iran-Turan Element
Centaurea rhizantha	Timur Dikeni	ARTH-17355!				Iran-Turan Element

Centaurea solstitialis	Çakırdikeni	ARTH-17356! ARTH-005636!				
Centaurea rhizocalathium	Engindikeni	ARTH-17357!	EN B2ab (i, ii, iii, v)	x		Iran-Turan Element
Centaurea triumfettii	Deli Kapele	ARTH-17358! ARTH-000159! ARTH-006593!				
Centaurea urvillei subsp. *stepposa*	Yer Kötürüm	ARTH-17359!		x		
Centaurea virgata	Acı Süpürge	ARTH-17360! ARTH-005737!				Iran-Turan Element
Centaurea woronowii	Mor Kapele	ARTH-17361! ARTH-000160!	EN B1ab (iii)+2ab (iii)	x		Iran-Turan Element
Psephellus adjaricus		ARTH-17362!	VU D2		x	Eur-Sib Element
Psephellus appendicigerus	Ovit Tülübaşı	ARTH-17363! ARTH-002551! ARTH-015148!	EN B1ab (i, ii, iii) + 2ab (iii)	x		Eur-Sib Element
Psephellus dealbatus	Mor Tülübaş	ARTH-17364! ARTH-005295! ARTH-005868!	NE		x	
Psephellus hypoleucus	Boz Tülübaş	ARTH-17366! ARTH-005584! ARTH-005298!				Eur-Sib Element
Psephellus pecho	Yar Tülübaşı	ARTH-17367! ARTH-000151! ARTH-003924!	EN B1ab (i, ii, iii, iv) + 2ab (i, ii, iii, iv)	x		Eur-Sib Element
Psephellus pulcherrimus	Zarif Tülübaş	ARTH-17368! ARTH-000152! ARTH-006405!	VU B1ab(iii) + 2ab(iii)		x	
Psephellus simplicicaulis	Hemşin Tülübaşı	ARTH-17369! ARTH-000149! ARTH-005657!	LC		x	Eur-Sib Element
Psephellus straminicephalus	Tortum Tülübaşı	ARTH-17370!	EN B1ab (i, ii, iii, v) + 2ab (i, ii, iii, v); C2a (i)	x		Iran-Turan Element
Psephellus taochius	Sarı Tülübaş	ARTH-17365! ARTH-003122! ARTH-006275! ARTH-005590!	EN B2ab (iii, v)	x		Iran-Turan Element
Psephellus yusufeliensis	Çoruh Tülübaşı	ARTH-17371!		x		Eur-Sib Element

DD: Data Deficient, NT: Near Threatened, LC: Least Concern, VU: Vulnarable, EN: Endangered, CR: Critically Endangered. *: The category proposed in this study

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