



## Flora of Davda Mountain (Karaman / Türkiye)

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## Davda Dağı Florası (Karaman / Türkiye)

**Abstract:** The research area in this study is Davda Mountain and its surroundings, located between Karaman and the volcanic Karadağ Mountain. Throughout the visits during the vegetation periods between 2013 and 2019 years, 332 taxa were identified belonging to 44 families and 202 genera. Fifty (15.4%) taxa are endemic among the identified plants. The order of the phytogeographic region elements are Iran-Turanian 70 (21.1%), Mediterranean 34 (10.2%) and Euro-Siberian 4 (1.1%). Also, the order of most common families are; *Asteraceae*, *Lamiaceae*, *Fabaceae*, *Poaceae*, *Brassicaceae*, *Boraginaceae*, *Apiaceae* and *Caryophyllaceae*. The genera with the most taxa are *Astragalus*, *Alyssum*, *Salvia*, *Centaurea*, *Galium*, *Valerianella*, *Verbascum* and *Euphorbia*. Similarities and differences were tried to be revealed with the studies in the nearby regions.

**Key words:** Endemic, flora, phytogeographic region, volcanic

**Özet:** Bu çalışmadaki araştırma alanı, Karaman ile volkanik Karadağ dağı arasında bulunan Davda Dağı ve çevresini oluşturmaktadır. 2013 - 2019 yılları arasında vejetasyon dönemlerinde belirli zamanlarda ziyaret edilerek 44 familya ve 202 cinste ait 332 takson tespit edilmiştir. Tanımlanan bitkilerden 50 (%15.4) taksonu endemiktir. Fitocoğrafik bölge elementleri, İran- Turan 70 (%21.1), Akdeniz 34 (%10.3) ve Avrupa-Sibirya 4 (%1.1) sıralamasıyla yer alır. En fazla rastlanılan familyaların sırası ise; *Asteraceae*, *Lamiaceae*, *Fabaceae*, *Poaceae*, *Brassicaceae*, *Boraginaceae*, *Apiaceae* ve *Caryophyllaceae* sırasını izler. En çok takson içeren cinsler ise *Astragalus*, *Alyssum*, *Salvia*, *Centaurea*, *Galium*, *Valerianella*, *Verbascum* ve *Euphorbia* şeklinde yer alır. Yakın bölgede yer alan çalışmalarla benzerlik ve farklılıkları ortaya çıkarılmaya çalışılmıştır.

**Anahtar Kelimeler:** Endemik, flora, fitocoğrafik bölge, volkanik

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### 1. Introduction

More than 374,000 plant species have been described worldwide, and 308.312 of these are known as vascular plants (Christenhusz and Byng, 2016). Also about 12.000 taxa were identified in Türkiye, and about 1/3 of them are endemic (Güner et al., 2012; Özhatay et al., 2022). Discovering, identifying and introducing plants species by registering literature is the basic step to benefit them as their natural resources. Registering the regional flora, as well as the country, is therefore of utmost importance in terms of determining the local values. Hence, the project of Illustrated Flora of Turkey was started and the 3rd volume was published (Güner and Ekim, 2014; Güner et al., 2018; Güner et al., 2022).

Similar to Anatolia, there is a significant biodiversity in the Karaman Province. The geomorphologic structure and related climatic factors of both Anatolia and Karaman Province enable the habitat of a rich plant diversity (Davis, 1965- 1985; Dönmez and Yerli, 2018; Noroozi et al., 2019; Güner et al., 2000; Maassoumi and Ashouri, 2022). Adequate research has been made to considering the plant diversity around the Karaman Province and Davda Mountain (Ünal, 1987; Ketenoğlu and Serin, 1988; Ünal and Ocakverdi, 1991; Akman et al., 1996; Serin, 1996; Bağcı et al., 1996; Koçak and Özhatay, 2000; Sağlam and Ünal, 2007; Ünal and Sağlam, 2008a,b; Geven et al., 2010; Özhatay and Koçak, 2010-2011; Yücel et al., 2011; Koçak and Özhatay, 2013; Geven et al. 2015; Akdağ and Doğu, 2016; Bağcı et al., 2016; Çeçen et al., 2018; Ertuğrul and

Tugay, 2018; Hamzaoğlu et al., 2022). In addition, new taxa have also been published from these locations in recent years (Aytaç et al., 2020; Celep et al., 2020; Çeçen et al., 2015, 2016; Dinç and Bağcı, 2018; Doğru – Koca et al., 2016; Eker and Tekşen, 2017; Ulukuş and Tugay, 2018; Şirin et al., 2019, 2020; Dinç and Doğu, 2020; Çeçen and Özcan, 2021; Eker and Sağiroğlu, 2021). According to Ertuğrul and Tugay (2018), 2145 taxa are distributed in the Karaman province, 543 are endemic and 2 of them rare taxa.

Literature research, records in the flora of Turkey and the geographical and biological richness of the area (Peşmen, 1972, Çeçen et al., 2018, 2019) were influential in the decision to study the Davda Mountain. The study area is located between volcanic Karadağ and Karaman city center, about 19 km north of Karaman, (Şenel, 1997). Local people know this area as Tilki Tepe or Tilki Kaya (Çeçen et al., 2019).

While investigating the 2<sup>nd</sup> locality of the *Ferula parva* Feryn et Bornm., which was given as a suspicious taxon in the Flora of Turkey, it was revealed that some taxa (*Lepidium latifolium* L., *Dianthus cyri* Fisch & Mey., *Cicer arietinum* L. (cultivated plant), *Lythrum tribracteatum* Salzm. ex Spreng., *Glaucium corniculatum* (L.) Curtis, *Eryngium bithynicum* Boiss., *Galium verum* L., *Tripleurospermum decipiens* (Fisch. & C. A. Mey.) Bornm., *Malvella sherardiana* (L.) Jaub. & Spach, *Alhagi maurorum* Medik. var. *turcorum* (Boiss.) Meikle, *Centaurea kotschyi* (Boiss. & Heldr.) Hayek,

*Centaurea patula* DC., *Centaurea squarrosa* Roth, *Centaurea balsamita* Lam., *Centaurea solstitialis* L., *Carthamus dentatus* (Forsk.) Vahl., *Anchusa azurea* Mill. var. *macrocarpa* (Boiss.&Hohen.) D.F. Chamb., *Salvia sclarea* L., *Salvia virgata* Jacq., *Phlomis pungens* Willd. var. *pungens*, *Atriplex tatarica* L., *Polygonum arenarium* Waldst. & Kit., *Polygonum aviculare* L., *Euphorbia chamaesyce* L., *Euphorbia aleppica* L., *Euphorbia petiolata* Banks & Sol. *Allium leucanthum* K.Koch, *Crypsis alopecuroides* (Piller & Mitterp.) Schrad., *Aegilops caudata* L., *Plantago lanceolata* L., *Taraxacum syriacum* Boiss., *Ferula parva* Freyn & Bornm., *Morina persica* L., *Inula anatolica* Boiss. *Onopordum anatolicum* Boiss. *Crepis macropus* Boiss. & Heldr., *Salvia cyanescens* Boiss. & Balansa, *Phlomis nissolii* L., *Teucrium polium* L., *Statice echinus* L., *Krascheninnikovia ceratoides* (L.) Gueldenst. *Carex stenophylla* Wahlenb, *Bassia prostrata* (L.) Beck, *Noaea mucronata* (Forssk.) Asch. & Schweinf. subsp. *Mucronata* were recorded from Davda Mountain and its environs during the 1911 botanical trip of József Andrasovszky (Andrasovszky, 1912, 1914, 1917; Çeçen et al. 2019).

The lack of sufficient plant records from Davda Mountain except for *Astragalus unalii* Çeçen, Aytaç & Mısırdalı and Andrasovszky's records in studies on plant diversity around Karadağ, revealed the necessity of listing the plants of the region (Ünal, 1987; Ünal and Ocakverdi, 1991; Çeçen et al. 2019). The absence of a floristic study specific to region, was also an important factor in choosing Davda Mountain as research area.

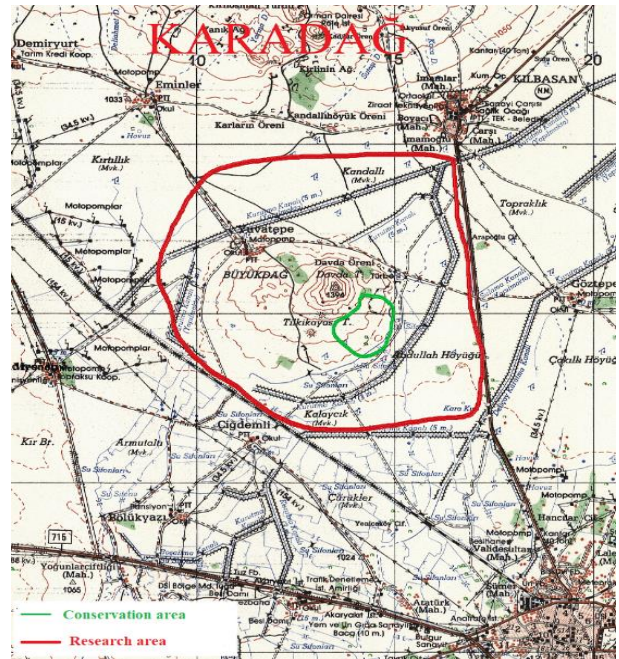
The study aims to determine the flora of Davda Mountain, which has not been studied before.

### 1.1. Geographical features of the research area

Davda mountain, is geographically located in the Central Anatolian Region, in the Karaman Basin to the southwest of the Greater Konya Basin, approximately 19 km northeast of Karaman city centre. The region is bordered by Çiğdemli Village to the south, Göztepe Village to the east, Yuvatepe Village to the northwest, Kilbasan Village to the northeast, Karadağ to the north and Karalgazi Village to the west. The research area is mainly consists of a hill in the plain area with an altitude between 1019 and 1385 m, and situated between 37°14'-37°18' north latitudes and 33°05'-33°12' east longitudes (Figure 1, red line zone ). Phytogeographically, it is located in the south of the Irano-Turanian Floristic Region, in the C4 square according to Davis (Davis, 1965-1985). According to Güner et al. (2012), the Central Anatolia Region falls under the Konya Section. A part of the research area has been protected with barbed wire for protection. The conservation area (Figure 1, green line zone) was registered as Davda General Hunting, and water fountains for wild animals (TOB, 2022-2023; Büyükşar et al., 1992).

### 1.2. Geology, soil and climate characteristics of the research area

The volcanism in Karadağ region, located in the north of Karaman province, is divided into Pliocene and Pliocene-Quatern. Pliocene aged Mercik andesite is a neoautochthonous cover rock. The oldest volcanics (3.2 million years) in the Karadağ region are the Mercik andesites in the south. There is a volcanic eruption center at



**Figure 1.** Simplified topographic map of the research area.

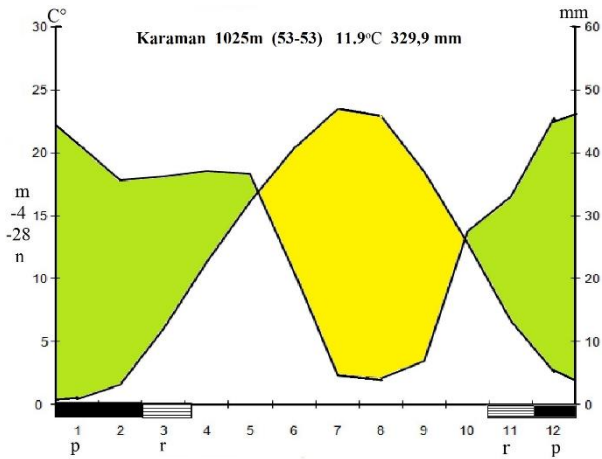
Büyükdağ Tilkikayası hill. The old andesites around the hill were separated by a younger side chimney. Mercik andesites mostly consist of lava flows and pyroclastics (Gül et al., 1984; Ulu and Balcı, 2009). The large soil group of the research area consists of brown, colluvial, volcanic and salty sodic (barren) soils (Büyükşar et al. 1992).

According to the nearest observation stations (Karaman), the research area is located in the bioclimatic layer of "Arid, sub-tropical Mediterranean climate" (Akman, 1999). Decreased precipitation amounts according to the seasons are listed as Karaman KISY. Within the framework of this information, Karaman is included in the 1st type of the Eastern Mediterranean precipitation regime. The total annual precipitation is 329.9 mm. Ombro-thermic (rainfall-temperature) diagram of the research area (Figure 2) was drawn by calculating the average temperatures and monthly average precipitation amounts (Çeçen et al., 2018).

## 2. Materials and Method

Information related to geology and the soil structure of the research area were obtained from Büyükşar et al. (1992), Ulu and Balcı (2009) and Bilgiç (2009). Topographic map (Figure 1), which was prepared by Şenel (1997) was obtained from the State Hydraulic Works (DSI) Konya Regional Directorate. Meteorological data about the climate of the research area were obtained from the Ministry of Forestry and Water Affairs, Konya Meteorology 8<sup>th</sup> Regional Directorate (Çeçen et al., 2018). The climate diagram of the Karaman station near the research area were drawn according to the Gausson method, the annual drought index of the study area was calculated according to De Mortenne and Gottman method, and the climate type and bioclimatic layer were calculated according to the Emberger method (Akman, 1999).

The research material include vascular plant species collected from and the near environ of Davda Mountain, during field trips between 2013-2019. Field records were prepared according to herbarium techniques,



**Figure 2.** Climate diagram of Karaman province

Abbreviations Used; a: Meteorology Station, b: Meteorology Station Altitude (m.), c: Temperature and precipitation observation year, d: Average annual temperature (C°), e: Average annual precipitation (mm.), m: Lowest of the coldest month mean temperature (C°), n: Absolute minimum temperature (C°), p: Absolute frost months, r: Possible frost months, KISY: Winter, Spring, Autumn, Summer, cm: Centimeters, °C: Degrees Celsius, m: Meters mm: Millimeters

and plant samples were numbered and pressed in accordance with the relevant literature (Saya and Mısırdalı, 1982; Seçmen et al., 2008).

Flora of Turkey (Davis, 1965-1985; Davis et al., 1988; Güner et al., 2000, 2012, 2014, 2022) was the main source for the identification of the specimens. In cases where it was insufficient, Flora of Europe, Iraq, Iran, Russia, Palestine (Tutin et al. 1964-1981; Townsend and Guest, 1966-1985; Rechinger, 1965-1977; Zohary, 1966-1986; Komarov et al., 1934-1964) were also used. The samples are kept at Karamanaoğlu Mehmetbey University Biodiversity Application and Research Center Herbarium (KMUB).

The list of diagnosed plants is given in alphabetical order and according to the APG III (Angiosperm Phylogeny Group [Angiospermi Phylogeny Group]) system of the Turkish Plants List (Vineary Plants) considering APG IV (Reveal & Chase, 2011; Güner et al., 2012). In the list, current names of the taxa were given without any synonyms, and the current names and status changes of the taxa are in accordance with Plants of the World Online (POWO, 2023) and International Plant Name Index (IPNI, 2023) web pages, and Güner et al. (2012).

Taxa are presented together with the author name, locality number, collection date, voucher number, endemism status, IUCN red data category, phytogeographical region, and life form. Endemism status of the taxa are given in accordance with the "The Red Book of Plants of Turkey" considering the recent changes made (Ekim et al., 2000; Güner et al., 2012; Çeçen et al., 2016; Sağıroğlu et al., 2006).

### 2.1. Plant collection stations

- 1- C4-Karaman-Davda Mountain: Büyükdag Hill, volcanic rocky slopes, 1100-1230 m,
- 2- C4-Karaman-Davda Mountain: Davda Ruins Hill, volcanic rocky slopes, 1100-1385m,
- 3- C4-Karaman-Davda Mountain: Davda Tomb, volcanic rocky slopes, 1045-1230 m

- 4- C4-Karaman-Davda Mountain: Tilki Kaya Hill, volcanic rocky slopes rocky slopes, 1100-1280 m
- 5- C4-Karaman-Davda Mountain: Conservation Area, volcanic rocky slopes rocky slopes, 1035-1170 m,
- 6- C4-Karaman- Around Yuvatepe Village, steppe, 1019-1120 m,
- 7- C4-Karaman- From Davda Mountain to Çiğdemli Village, steppe, 1100-1230 m,
- 8- C4-Karaman-Davda Mountain: Abdullah Mound, volcanic rocky slopes rocky slopes, 1100-1230 m
- 9- C4-Karaman-Davda Mountain: Kandallı locality, steppe, 1100-1230 m
- 10- C4-Karaman-Davda Mountain: Kalaycık locality, steppe, 1100-1230 m
- 11- C4-Karaman- From Davda Mountain to Eminler Village, steppe, 1010-1055 m
- 12- C4-Karaman- From Abdullah Höyük to Kılbasan village, steppe, 1030-1100 m

### 2.2. List of the nearest researches used for comparison

1. Flora of Davda Mountain (Karaman) Florası (Çeçen, 2023).
2. Plants of Karadağ (Karaman) Bitkileri (Ünal and Ocakverdi, 1991).
3. Flora of Çakırdağı (Karaman) Florası (Çeçen et al., 2018).
4. Contributions to the flora of Vegetation of Hacıbaba (Karaman- Kazımkarabekir) Mountain (Serin, 1996).
5. Flora and Vegetation of Konya-Karapınar Region (Bağcı, 1996).
6. Flora of The Region Between Ayrancı Dam, Karakükürtlü Mountain, Alahan and Karaman 1,2 (Ünal and Sağlam, 2008).
7. Flora of Büyükeğri Mountain (Mut, İçel) and Its Surroundings (Şirin and Ertuğrul, 2015).

### 3. Results

#### Aspleniaceae

1. *Asplenium ceterach* L., 2, 30.06.2017, ÖÇ 2315, Geophyte.

#### Ephedraceae

2. *Ephedra foeminea* Forssk., 1, 10.06.2017, ÖÇ 2220, Kamephyte.

#### Amaranthaceae

3. *Atriplex tatarica* L. var. *tatarica* 6, 12.06.2019, ÖÇ 2366, Kamephyte.
4. *Bassia prostrata* (L.) Beck., 12, 10.06.2017, ÖÇ 2377, Kamephyte.
5. *Chenopodium album* L. subsp. *album* var. *album*, 6, 16.08.2019, ÖÇ 5595, Therophyte.
6. *Cyathobasis fruticulosa* (Bunge) Aellen, 2, 16.09.2019, ÖÇ 4678, Endemic (VU), Irano-Turanian, Kamephyte,
7. *Krascheninnikovia ceratoides* (L.) Gueldenst., 3, 19.05.2017, ÖÇ 2376, Kamephyte.

8. *Noaea mucronata* (Forssk.) Asch. & Schweinf. subsp. *mucronata*, 2, 16.08.2019, ÖÇ 5589, Kamephyte.
9. *Salsola tragus* L. subsp. *ragus*, 12, 16.08.2019, ÖÇ 5554, Kamephyte.
10. *Sueda altissima* Pall. 12, 30.07.2018, ÖÇ 4664, Kamephyte.
- Amaryllidaceae**
11. *Allium flavum* L. subsp. *tauricum* (Basser ex Reichb.) Stearn. var. *tauricum*., 2, 5, 30.05.2019, ÖÇ 5139, Mediterranean, Geophyte.
12. *Allium lycaonicum* Siehe ex Hayek., 6, 19.05.2017, ÖÇ 2176, Geophyte.
13. *Allium proponticum* Stearn & Özhatay subsp. *proponticum*, 2, 30.06.2017, ÖÇ 2269, Endemic (LC), Geophyte.
14. *Allium scabriflorum* Boiss., 5, 10.06.2017, ÖÇ 2298, Endemic (LC), Irano-Turanian, Geophyte.
- Anacardiaceae**
15. *Pistacia palaestina* Boiss., 10, 13.05.2017, ÖÇ 2312, 2, 16.08.2019, ÖÇ 5567, Mediterranean, Fanerophyte.
- Apiaceae**
16. *Bupleurum lycaonicum* Snogerup, 2, 10.06.2017, ÖÇ 2223, Endemic (NT), Mediterranean, Therophyte.
17. *Bupleurum sulphureum* Boiss. & Balansa, 3, 30.06.2017, ÖÇ 2291, Endemic (LC), Irano-Turanian, Therophyte.
18. *Bupleurum turcicum* Snogerup, 2, 10.06.2017, ÖÇ 2250, Endemic (NT), Mediterranean, Therophyte.
19. *Coriandrum sativum* L. 12, 10.06. 2017, ÖÇ 2093, Therophyte.
20. *Daucus carota* L., 12, 16.08.2019, ÖÇ 2321, Hemicryptophyte.
21. *Echinophora tournefortii* Jaub. & Spach, 2, 16.08.2019, ÖÇ 5598, Irano-Turanian, Hemicryptophyte.
22. *Eryngium bithynicum* Boiss. 6, 24.06.2015, ÖÇ 2079, Endemic (LC), Irano-Turanian, Hemicryptophyte.
23. *Eryngium campestre* L. subsp. *campestre* var. *virens* Link, 1, 30.06.2017, ÖÇ 4665, Hemicryptophyte.
24. *Falcaria vulgaris* Bernh., 12, 03.05.2017. ÖÇ 1961, Hemicryptophyte.
25. *Ferula parva* Boiss. & Heldr., 2, 30.06.2017, ÖÇ 2282, Endemic (VU), Irano-Turanian, Geophyte.
26. *Hohenackeria exscapa* (Steven) Grande, 2, 09.04.2017, ÖÇ 2031, Irano-Turanian, Therophyte.
27. *Johrenia dichotoma* DC., 4, 30.06.2017, ÖÇ 2303, Irano-Turanian, Hemicryptophyte.
28. *Malabaila secacul* Banks & Sol. subsp. *secacul*, 5, 03.05.2013, ÖÇ 1953; 2, 30.06.2017, ÖÇ 2316., Hemicryptophyte.
29. *Opopanax hispidus* (Friv.) Griseb., 1, 03.05.2013, ÖÇ 1955, Hemicryptophyte.
30. *Scandix stellata* Banks & Sol., 4, 30.04.2017, ÖÇ 2086, 4, 13.05.2017, ÖÇ 2154, Therophyte.
31. *Scandix iberica* M.Bieb., 5, 03.05.2013, ÖÇ 1954, Therophyte.
32. *Torilis leptophylla* (L.) Rchb., 2, 08.05.2015, ÖÇ 2225, Hemicryptophyte.
33. *Torilis ucranica* Spreng., 2, 08.05.2015, ÖÇ 2178, 1, 24.06.2015, ÖÇ 2260, Hemicryptophyte.
34. *Zosima absinthifolia* (Vent.) Link., 10, 13.05.2017, ÖÇ 2080, Hemicryptophyte.
- Apocynaceae**
35. *Cynanhum acutum* L. subsp. *acutum*, 7, 30.07.2018, ÖÇ 4674, Hemicryptophyte.
36. *Vinca herbacea* Waldst. & Kit., 7, 30.04.2017, ÖÇ 2084, Geophyte.
37. *Vincetoxicum canescens* (Willd.) Decne. subsp. *canescens*, 3, 10.06.2017, ÖÇ 2131, Hemicryptophyte.
- Asparagaceae**
38. *Leopoldia comosa* (L.) Parl., 3, 19.05.2017, ÖÇ 2142, Mediterranean, Geophyte.
39. *Muscari neglectum* Guss., 4, 24.06.2015, ÖÇ 2076, Geophyte.
40. *Muscari tenuiflorum* Tausch., 10, 13.05.2017, ÖÇ 2110, Geophyte.
41. *Ornithogalum fimbriatum* Willd., 1, 19.05.2017, ÖÇ 2108, Mediterranean, Geophyte.
42. *Ornithogalum narbonense* L. 1, 19.05.2017, ÖÇ 2119, Mediterranean, Geophyte.
43. *Ornithogalum neurostegium* Boiss. & C.I. Blanche ex Boiss., 10, 13.05.2017, ÖÇ 2053, Geophyte.
- Asteraceae**
44. *Achillea aleppica* DC. subsp. *zederbaueri* (Hayek) Hub.-Mor., 2, 30.06.2017, ÖÇ 2333, Endemic (LC), Irano-Turanian, Hemicryptophyte.
45. *Achillea lycaonica* Boiss. & Heldr., 2, 30.06.2017, ÖÇ 2251, Endemic (LC), Irano-Turanian, Hemicryptophyte.
46. *Achillea santolinoides* Lag. subsp. *wilhelmsii* (K.Koch) Grcute, 6, 24.06.2015, ÖÇ 2231; 2, 30.06.2017, ÖÇ 2332, Irano-Turanian, Hemicryptophyte.
47. *Anthemis cretica* L. subsp. *anatolica* (Boiss.) Grierson, 2, 24.06.2015, ÖÇ 2190, Hemicryptophyte.
48. *Anthemis fimbriata* Boiss., 4, 13.05.2017, ÖÇ 2101, Endemic (VU), Mediterranean, Therophyte.
49. *Artemisia absinthum* L. 12, 30.06.2017, ÖÇ 2322, Hemicryptophyte.
50. *Artemisia santonicum* L. subsp. *santonicum*, 3, 30.06.2017, ÖÇ 2382, Kamephyte.
51. *Carduus nutans* L. subsp. *nutans* sensu lato, 4, 30.06.2017, ÖÇ 2379, Hemicryptophyte.
52. *Carlina oligocephala* Boiss. & Kotschy subsp. *oligocephala*, 2, 30.06.2017, ÖÇ 2296, Therophyte.
53. *Carthamus dentatus* (Forsk.) Vahl., 11, 16.08.2019, ÖÇ 5553, Hemicryptophyte.
54. *Centaurea balsamita* Lam., 8, 25.06.2019, ÖÇ 4449, Irano-Turanian, Hemicryptophyte.
55. *Centaurea kotschyi* (Boiss. & Heldr.) Hayek var. *persica* (Boiss.) Wagenitz, 1, 30.06.2017, ÖÇ 2317; 12, 30.07.2018, ÖÇ 4668, Irano-Turanian, Hemicryptophyte.
56. *Centaurea patula* L. 1, 16.09.2019, ÖÇ 5588, Therophyte.

57. *Centaurea solstitialis* L. subsp. *solstitialis*, 8, 25.06.2019, ÖÇ 4453, Therophyte.
58. *Centaurea virgata* Lam., 2, 30.06.2017, ÖÇ 2238, Irano-Turanian, Hemicryptophyte.
59. *Chardinia orientalis* (L.) Kuntze, 2, 24.06.2015, ÖÇ 2285, Irano-Turanian, Hemicryptophyte.
60. *Cichorium intybus* L., 6, 30.06.2017, ÖÇ 2334, Hemicryptophyte.
61. *Cnicus benedictus* L., 4, 03.05.2013, ÖÇ 1945, Therophyte.
62. *Condrilla juncea* L., 11, 30.06.2017, ÖÇ 2369, Hemicryptophyte.
63. *Cota austriaca* (Jacq.) Sch. Bip., 5, 13.05.2017, ÖÇ 2127, Hemicryptophyte.
64. *Cousinia iconica* Hub.-Mor., 2, 30.06.2017, ÖÇ 2236, Endemic (NT), Irano-Turanian, Hemicryptophyte.
65. *Crepis macropus* Boiss. & Heldr., 2, 16.08.2019, ÖÇ 5573, Endemic (LC), Irano-Turanian, Hemicryptophyte.
66. *Crepis sancta* (L.) Bornm. subsp. *obovata* (Boiss.&Noö)Babc., 2, 30.06.2017, ÖÇ 2265, Therophyte.
67. *Cyanus depressus* (M. Bieb.) Sojak, 12, 10.06.2017, ÖÇ 2378, Therophyte.
68. *Cyanus pichleri* (Boiss.) Holub. subsp. *extrarosularis* (Hayek & Siehe) Wagenitz & Greuter, 10, 12.05.2017, ÖÇ 2055, Endemic (LC), Hemicryptophyte.
69. *Echinops spinosissimus* Turra subsp. *spinosissimus*, 3, 30.06.2017, ÖÇ 2287, Mediterranean, Hemicryptophyte.
70. *Filago pyramidata* L., 4, 10.06.2017, ÖÇ 2252, Therophyte.
71. *Inula anatolica* Boiss., 12, 30.07.2018, ÖÇ 4676, Hemicryptophyte.
72. *Koelpina linearis* Pall. 3, 19.05.2017, ÖÇ 2062, Irano-Turanian, Hemicryptophyte.
73. *Lactuca orientalis* (Boiss.) Boiss. 2, 30.06.2017, ÖÇ 2295, Irano-Turanian, Hemicryptophyte.
74. *Lactuca serriola* L., 3, 30.07.2018, ÖÇ 2301. 2, 16.08.2019, ÖÇ 5572, Hemicryptophyte.
75. *Lactuca viminea* (L.) J.Presl & C.Presl, 2, 30.06.2017, ÖÇ 2263, Hemicryptophyte.
76. *Leontodon asperrimus* (Willd.) Endl., 3, 10.06.2017, ÖÇ 2195, Irano-Turanian, Hemicryptophyte.
77. *Onopordum bracteatum* Boiss. & Heldr. subsp. *bracteatum*, 2, 30.06.2017, ÖÇ 2352, Mediterranean, Hemicryptophyte.
78. *Picnomon acarna* (L.) Cass., 12, 30.07.2018, ÖÇ 4672, Therophyte.
79. *Picris strigosa* M. Bieb. subsp. *strigosa*, 1, 03.05.2013, ÖÇ 1949, Irano-Turanian, Hemicryptophyte.
80. *Rhaponicum repens* (L.) Hidalgo, 2, 16.08.2019, ÖÇ 5586, Irano-Turanian, Hemicryptophyte.
81. *Scolymus hispanicus* L. subsp. *hispanicus*, 26, 16.09.2018, ÖÇ 2284, Mediterranean, Hemicryptophyte.
82. *Scorzonera cana* (C.A.Mey.) Griseb. var. *jacquiniana* (W. Koch) D.Chamb., 4, 13.05.2017, ÖÇ 2136, Hemicryptophyte.
83. *Scorzonera mollis* M. Biebsubsp. *szowitzii* (DC.) Chamb. 2, 30.04.2017, ÖÇ 2030, Irano-Turanian, Geophyte.
84. *Scorzonera pseudolanata* Grossh., 10, 24.06.2015, ÖÇ 2211, Irano-Turanian, Geophyte.
85. *Senecio vernalis* Waldst. & Kit., 4, 03.05.2013, ÖÇ 2003, Therophyte.
86. *Taraxacum leucochlorum* Soest. 2, 13.05.2017, ÖÇ 2038, Endemic (CR), Irano-Turanian, Geophyte.
87. *Taraxacum oliganthum* Schott. & Kotschy ex Hand. Mazz. 2, 19.05.2017, ÖÇ 2017, Irano-Turanian, Hemicryptophyte.
88. *Taraxacum syriacum* Boiss., 1, 30.06.2017, ÖÇ 2308, Hemicryptophyte
89. *Tragopogon bupthalmoides* (DC.) Boiss. var. *latifolius* Boiss., 6, 30.06.2017, ÖÇ 3248, Hemicryptophyte.
90. *Tragopogon latifolius* Boiss. var. *angustifolius* Boiss., 5, 13.05.2017, ÖÇ 2104, Hemicryptophyte.
91. *Tragopogon porrifolius* L. subsp. *longirostris* (Sch.Bip.) Greuter, 4, 13.05.2017, ÖÇ 2102, Hemicryptophyte.
92. *Tripleurospermum decipiens* (Fisch. & C.A.Mey.) Bornm., 2, 03.05.2013, ÖÇ 2156, Hemicryptophyte.
93. *Xanthium spinosum* L., 12, 30.06.2017, ÖÇ 2280, Hemicryptophyte.
94. *Xeranthemum annuum* L., 8, 25.06.2019, ÖÇ 4458, Therophyte.
- Boraginaceae**
95. *Alkanna pseudotinctoria* Hub. - Mor. 1, 06.2015, ÖÇ 2240, Endemic (LC), Irano-Turanian, Hemicryptophyte.
96. *Alkanna orientalis* (L.) Boiss. var. *orientalis*, 1, 03.05.2013, ÖÇ 2025, Hemicryptophyte.
97. *Anchusa leptophylla* Roem. & Schult. subsp. *leptophylla*, 2, 16.08.2019, ÖÇ 5584, Hemicryptophyte.
98. *Anchusa hybrida* Ten., 5, 10.06.2017, ÖÇ 2215, Mediterranean, Hemicryptophyte.
99. *Asperugo procumbens* L., 4, 03.05.2015, ÖÇ 2005, Euro-Siberian, Therophyte.
100. *Buglossoides arvensis* (L.) I. M. Johnst. subsp. *sibthorpiana* (Griseb.) R. Fren., 5, 30.04.2017, ÖÇ 2041, Therophyte.
101. *Echium italicum* L., 6, 30.06.2017, ÖÇ 2323, Mediterranean, Hemicryptophyte.
102. *Heliotropium europaeum* L., 12, 30.06.2017, ÖÇ 2327, Irano-Turanian, Therophyte.
103. *Moltkia coerulea* (Willd.) Lehm., 10, 13.05.2017, ÖÇ 2061, Irano-Turanian, Hemicryptophyte.
104. *Myosotis lithospermifolia* Hornem. 10, 13.05.2017, ÖÇ 2089, Therophyte.
105. *Myosotis stricta* Link ex Roemer & Schultes, 6, 10.06.2017, ÖÇ 2188, Mediterranean, Therophyte.
106. *Nonea melanocarpa* Boiss., 7, 30.04.2017, ÖÇ 2068. 10, 13.05.2017, ÖÇ 2135, Irano-Turanian, Therophyte.
107. *Onosma stenoloba* Hausskn. ex Riedl, 4, 13.05.2017, ÖÇ 2087. 2, 16.08.2019, ÖÇ 5594, Endemic (LC), Irano-Turanian, Hemicryptophyte.

108. *Rochelia disperma* (L. fil.) C. Koch var. *microcalycina* (Bornm.) Edmondson, 6, 03.05.2015, ÖÇ 2148, Endemic (LC), Irano-Turanian, Therophyte.

**Brassicaceae**

109. *Aethionema arabicum* (L.) Andr. ex DC., 1, 03.05.2013, ÖÇ 1948; 5, 19.05.2017, ÖÇ 2120, Therophyte.

110. *Alyssum contemptum* Schott & Kotschy, 4, 13.05.2017, ÖÇ 2039, Irano-Turanian, Therophyte.

111. *Alyssum dasycarpum* Stephex Willd., 7, 30.04.2015, ÖÇ 2088, Therophyte.

112. *Alyssum desertorum* Stapf., 7, 30.05.2015, ÖÇ 2146, Therophyte.

113. *Alyssum hirsutum* M.Bieb. subsp. *hirsutum*, 2, 10.06.2017, ÖÇ 2133, Therophyte.

114. *Alyssum linifolium* Stephan ex Willd. var. *linifolium*, 3, 30.04.2017, ÖÇ 2106, Therophyte.

115. *Alyssum mouradicum* Boiss. & Balansa, 1, 08.05.2015, ÖÇ 2091, Kamephyte.

116. *Alyssum murale* Waldst. & Kit. subsp. *murale* var. *murale*, 4, 13.05.2017, ÖÇ 2020, Hemicryptophyte.

117. *Aubrieta canescens* (Boiss.) Bornm. subsp. *canescens*, 4, 30.04.2017, ÖÇ 2010, Endemic (LC), Hemicryptophyte.

118. *Boreava orientalis* Jaub. & Spach., 2, 03.05.2015, ÖÇ 2015, Therophyte.

119. *Brassica elongata* Ehrh & Beitr., 10, 13.05.2017, ÖÇ 2009, Hemicryptophyte.

120. *Clypeola jonthlaspi* L., 7, 30.04.2017, ÖÇ 2017; 4, 13.05.2017, ÖÇ 2105, Therophyte.

121. *Conringia clavata* Boiss., 7, 30.04.2017, ÖÇ 2006, Therophyte.

122. *Crambe tatarica* Sebeök var. *tatarica*, 10, 13.05.2017, ÖÇ 2111, Hemicryptophyte.

123. *Descurainia sophia* (L.) Webb ex Prantl. subsp. *sophia*, 7, 30.04.2017, ÖÇ 2004, Therophyte.

124. *Draba verna* L., 14, 09.04.2015, ÖÇ 2008, Therophyte.

125. *Erysimum crassipes* Fisch. & Mey., 6, 30.06.2017, ÖÇ 2247; 2, 16.08.2019, ÖÇ 5578, Hemicryptophyte.

126. *Isatis glauca* Aucher ex Boiss. subsp. *iconia* (Boiss. & Heldr.) P. H. Davis, 10, 13.05.2017, ÖÇ 2213, Endemic (LC), Irano-Turanian. Hemicryptophyte.

127. *Isatis tinctoria* L. subsp. *tomentella* (Boiss.) P.H. Davis., 7, 10.06.2017, ÖÇ 3257, Hemicryptophyte.

128. *Lepidium draba* L. 2, 30.06.2017, ÖÇ 2331, Therophyte.

129. *Lepidium latifolium* L., 2, 30.06.2017, ÖÇ 4659, Hemicryptophyte.

130. *Mathiola longipetala* (Vent.) DC. subsp. *bicornis* (Sibth. & Smith) P. W. Ball., 4, 24.06.2015, ÖÇ 2227, Therophyte.

131. *Microthlaspi perfoliatum* (L.) F.K. Mey, 5, 19.05.2015, ÖÇ 2002, Therophyte.

132. *Neslia paniculata* (L.) Desv. subsp. *thracica* (Velen) Bornm., 1, 03.05.2013, ÖÇ 1957, Therophyte.

133. *Rapistrum rugosum* (L.) All., 4, 03.05.2015, ÖÇ 2129, Therophyte.

134. *Sisymbrium altissimum* L., 12, 30.06.2017, ÖÇ 2325, Therophyte.

135. *Strigosella africana* (L.) Botsch., 1, 08.05.2015, ÖÇ 2234, Therophyte.

**Campanulaceae**

136. *Asyneuma virgatum* (Labill.) Bornm. subsp. *virgatum*, 1, 24.06.2015, ÖÇ 2226; 2, 10, 30.06.2017, ÖÇ 2264, Hemicryptophyte.

**Cannabaceae**

137. *Celtis tournefortii* Lam., 4, 16.08.2019, ÖÇ 5569, Fanerophyte.

**Caprifoliaceae**

138. *Cephalaria syriaca* (L.) Schrad., 12, 30.06.2017, ÖÇ 2281, Hemicryptophyte.

139. *Dipsacus laciniatus* L. 7, 30.06.2017, ÖÇ 2224, Hemicryptophyte.

140. *Morina persica* L. var. *persica*, 4, 30.05.2019, ÖÇ 5148, Irano-Turanian, Hemicryptophyte.

141. *Scabiosa argentea* L., 1, 4, 30.06.2017, ÖÇ 2157; 2, 16.08.2019, ÖÇ 5599, Hemicryptophyte.

142. *Scabiosa rotata* M.Bieb, 7, 30.06.2017, ÖÇ 2328, Irano-Turanian, Hemicryptophyte.

143. *Valerianella carinata* Lois., 1, 13.05.2017, ÖÇ 2198, Therophyte.

144. *Valerianella coronata* (L.) DC., 4, 13.05.2017, ÖÇ 2206, Therophyte.

145. *Valerianella lasiocarpa* L., 2, 14.05.2015, ÖÇ 2092, Irano-Turanian, Therophyte.

146. *Valerianella pumila* (L.) DC., 4, 19.05.2017, ÖÇ 2144, Therophyte.

147. *Valerianella vesicaria* (L.) Moench, 4, 13.05.2017, ÖÇ 2107, Therophyte.

**Caryophyllaceae**

148. *Bolanthus minuartioides* (Jaub. & Spach) Hub.-Mor., 8, 14.05.2015, ÖÇ 2166, Endemic (LC), Mediterranean, Hemicryptophyte.

149. *Bufonia calyculata* Boiss. & Balansa, 2, 30.06.2017, ÖÇ 2314; 2, 16.08.2019, ÖÇ 5580, Endemic (LC), Hemicryptophyte.

150. *Dianthus cf. stramineus* Boiss. & Heldr. 2, 30.06.2017, ÖÇ 2283; 2, 16.08.2019, ÖÇ 5583, Endemic (DD), Hemicryptophyte.

151. *Dianthus pallens* Sm. var. *oxylepis* Boiss., 3, 30.06.2017, ÖÇ 2273, Hemicryptophyte.

152. *Gypsophila laricina* Schreb., 2, 16.08.2019, ÖÇ 5579, Endemic (LC), Irano-Turanian, Kamephyte.

153. *Gypsophila perfoliata* L. var. *perfoliata*, 8, 25.06.2019, ÖÇ 3397, Kamephyte.

154. *Gypsophila viscosa* Murr., 6, 03.05.2013, ÖÇ 1959, Irano-Turanian, Therophyte.

155. *Herniaria incana* Lam., 1, 10.06.2017, ÖÇ 2096, Hemicryptophyte.

156. *Holosteum umbellatum* L. var. *glutinosum* (M. Bieb.) Gay, 7, 30.04.2017, ÖÇ 2042, Therophyte.

157. *Minuartia hamata* (Hausskn.) Mattf. 1, 03.05.2013, ÖÇ 1951, Kamephyte.

158. *Minuartia isaurica* McNeill. 4, 08.05.2015, ÖÇ 2210, Endemic (VU), Mediterranean.
159. *Minuartia meyeri* (Boiss.) Bornm., 2, 19.05.2017, ÖÇ 2137, Irano-Turanian, Therophyte.
160. *Minuartia multinervis* (Boiss) Bornm., 3, 30.06.2017, ÖÇ 2256, Therophyte.
161. *Paronychia chionaea* Boiss. subsp. *chionaea* var *chionaea*, 4, 19.05.2017, ÖÇ 2045; 2, 10.06.2017, ÖÇ 2134, Hemicryptophyte.
162. *Silene longipetala* Vent., 5, 13.05.2017, ÖÇ 2151; 5, 30.05.2019, ÖÇ 5140, Hemicryptophyte.
163. *Silene spergulfolia* (Desf.) Bieb., 4, 13.05.2017, ÖÇ 3253; 3, 30.06.2017, ÖÇ 2248, Irano-Turanian, Hemicryptophyte.
164. *Silene subconica* Friv., 1, 03.05.2013, ÖÇ 1956. 3, 19.05.2017, ÖÇ 3148, Therophyte.
165. *Telephium imperati* L. subsp. *orientale* (Boiss.) Nyman, 2, 10.06.2017, ÖÇ 2095, Hemicryptophyte.
- Cistaceae**
166. *Fumana aciphylla* Boiss., 3, 19.05.2017, ÖÇ 2141, Irano-Turanian, Kamephyte.
167. *Fumana thymifolia* (L.) Spach, 3, 19.05.2017, ÖÇ 2124. 10, 4, 10.06.2017, ÖÇ 2197, Kamephyte.
168. *Helianthemum microcarpum* Coss. ex Boiss., 1, 08.05.2015, ÖÇ 2098, Therophyte.
169. *Helianthemum salicifolium* (L.) Mill., 2, 10.06.2017, ÖÇ 2196, Therophyte.
- Convolvulaceae**
170. *Convolvulus arvensis* L., 6, 29.05.2015, ÖÇ 1114; 10, 13.05.2017, ÖÇ 5571, Hemicryptophyte.
171. *Convolvulus compactus* Boiss. 3, 30.06.2017, ÖÇ 2324, Mediterranean and Irano-Turanian, Hemicryptophyte.
172. *Convolvulus scammonia* L., 6, 10.06.2017, ÖÇ 2143, Mediterranean, Hemicryptophyte.
173. *Cuscuta campestris* Yuncker, 5, 30.06.2017, ÖÇ 2174 (Host: *Sideritis libanotica* subsp. *linearis* or *Ebenus hirsuta*), Vascular Parasite.
- Cyperaceae**
174. *Carex stenophylla* Wahlenb. subsp. *stenophylloides* (V. I. Krecz.) Egorova, 11, 16.08.2019, ÖÇ 5601, Irano-Turanian, Geophyte.
- Euphorbiaceae**
175. *Euphorbia aleppica* L., 11, 10.06.2017, ÖÇ 2185, Therophyte.
176. *Euphorbia chamaesyce* L., 11, 16.08.2019, ÖÇ 5896, Hemicryptophyte.
177. *Euphorbia kotschyana* Fenzl., 2, 16.08.2019, ÖÇ 5591; 2, 10.06.2017, ÖÇ 2186, Mediterranean, Hemicryptophyte.
178. *Euphorbia petiolata* Banks & Sol., 11, 30.06.2017, ÖÇ 2254, Therophyte.
- Fabaceae**
179. *Alhagi maurorum* Medik. subsp. *maurorum*, 7, 24.06.2015, ÖÇ 2239, Irano-Turanian, Kamephyte.
180. *Astragalus angustifolius* Lam. subsp. *angustifolius*, 4, 30.05.2015, ÖÇ 2191, Kamephyte.
181. *Astragalus commixtus* Bunge., 5, 10.06.2017, ÖÇ 2158, Irano-Turanian, Therophyte.
182. *Astragalus gaeobotrys* Boiss. & Bal., 5, 09.04.2017, ÖÇ 2076, Endemic (EN), Mediterranean, Hemicryptophyte.
183. *Astragalus hamosus* L., 12, 13.05.2017, ÖÇ 2149, Hemicryptophyte.
184. *Astragalus hirsutus* Vahl. 3, 30.04.2017, ÖÇ 2073, Endemic (LC), Kamephyte.
185. *Astragalus mesoginatus* Boiss., 4, 24.06.2015, ÖÇ 2217; 2, 30.06.2017, ÖÇ 2243, Endemic (LC), Irano-Turanian, Hemicryptophyte.
186. *Astragalus microcephalus* Willd. subsp. *microcephalus*, 5, 30.06.2017, ÖÇ 2259, Irano-Turanian, Kamephyte.
187. *Astragalus suberosus* Banks & Sol. 10, 13.05.2017, ÖÇ 2078, Irano-Turanian, Kamephyte.
188. *Astragalus tmoleus* Boiss. var. *bounacanthus* (Boiss.) Chamb., 2, 16.08.2019, ÖÇ 5571; 4, 13.05.2017, ÖÇ 2149, Endemic (LC), Kamephyte.
189. *Astragalus triradiatus* Bunge., 8, 13.05.2017, ÖÇ 2161, Therophyte.
190. *Astragalus unaliü* Çeçen, Aytaç & Mısırdalı, 3, 19.05.2017, ÖÇ 2116, Endemic (CR), Hemicryptophyte.
191. *Ebenus hirsuta* Jaub. & Spach., 2, 16.08.2019, ÖÇ 5587, 30.06.2017, ÖÇ 2343, Endemic (LC). Irano-Turanian, Hemicryptophyte.
192. *Hedysarum pannosum* (Boiss.) Boiss., 2, 10.06.2017, ÖÇ 2193, Irano-Turanian, Hemicryptophyte.
193. *Lathyrus nivalis* Hand. & Mazz., 10, 13.05.2017, ÖÇ 2147, Endemic, Irano-Turanian, Therophyte.
194. *Lens culinaris* Medik subsp. *orientalis* (Boiss.) Ponert., 1, 08.05.2015, ÖÇ 2209, Therophyte.
195. *Medicago fischeriana* (Ser.) Trautv., 1, 24.06.2015, ÖÇ 2229, Therophyte.
196. *Medicago radiata* L., 1, 03.05.2013, ÖÇ 1944, Irano-Turanian, Therophyte.
197. *Medicago rigidula* (L.) All. var. *rigidula*, 20, 30.05.2013, ÖÇ 2065, Therophyte.
198. *Medicago x varia* Martyn, 4, 24.06.2015, ÖÇ 2230, Therophyte.
199. *Onobrychis oxyodonta* Boiss. var. *armena* (Boiss. & Huet) Aktoklu, 2, 30.06.2017, ÖÇ 2258, Hemicryptophyte.
200. *Ononis pusilla* L., 2, 30.06.2017, ÖÇ 2359, Mediterranean, Hemicryptophyte.
201. *Trifolium pratense* L. var. *pratense*, 8, 25.06.2019, ÖÇ 4451, Therophyte.
202. *Trigonella coerulescens* (M. Bieb.) Halácsy subsp. *coerulescens*, 7, 30.04.2017, ÖÇ 2074, Therophyte.
203. *Trigonella filipes* Boiss., 4, 24.06.2015, ÖÇ 2219, Therophyte.
204. *Trigonella velutina* Boiss., 14, 13.05.2015, ÖÇ 2125, Therophyte.
205. *Vicia cracca* L. subsp. *cracca*, 4, 24.06.2015, ÖÇ 2203, Euro-Siberian, Hemicryptophyte.
206. *Vicia caesarea* Boiss. & Balansa, 4, 13.05.2017, ÖÇ 2109, Endemic (LC), Irano-Turanian. Hemicryptophyte.

**Fagaceae**

207. *Quercus trojana* Webb subsp. *trojana*, 2, 30.06.2017, ÖÇ 2305, Mediterranean, Fanerophyte.

**Geraniaceae**

208. *Erodium gruinum* (L.) L'Hérit., 3, 19.05.2017, ÖÇ 2123, Mediterranean, Therophyte.  
 209. *Erodium cicutarium* (L.) L'Hérit. subsp. *cutarium*, 4, 30.04.2017, ÖÇ 2066, Therophyte.  
 210. *Geranium molle* L., 4, 30.04.2017, ÖÇ 2016, Therophyte.  
 211. *Geranium tuberosum* L., 5, 09.04.2017, ÖÇ 2048, Irano-Turanian, Geophyte.

**Lamiaceae**

212. *Ajuga chamaepitys* (L.) Schreb. subsp. *chia* (Schreb.) Arcang., 3, 03.05.2013, ÖÇ 1947, Hemicryptophyte.  
 213. *Ajuga chamaepitys* (L.) Schreber. subsp. *mesoginatus*, 10, 13.05.2017, ÖÇ 2057, Mediterranean, Hemicryptophyte.  
 214. *Ballota larendana* Boiss. & Heldr., 1, 2, 24.06.2015, ÖÇ 2216, Endemic (LC), Irano-Turanian, Hemicryptophyte.  
 215. *Clinopodium graveolens* (M.Bieb) Kuntz. subsp. *rotundifolium* (Pers.) Govaerts, 1, 3, 30.04.2015, ÖÇ 2090, Therophyte.  
 216. *Lamium amplexicaule* L. var. *amplexicaule*, 4, 30.04.2017, ÖÇ 2029, Therophyte.  
 217. *Marrubium globosum* Montbret & Aucher ex Bent. subsp. *globosum*, 3, 30.06.2015, ÖÇ 2072, Endemic (LC), Irano-Turanian, Hemicryptophyte.  
 218. *Micromeria myrtifolia* Boiss. & Hohen., 1, 24.06.2015, ÖÇ 2233. 2, 10.06.2017, ÖÇ 2182, Kamephyte.  
 219. *Nepeta congesta* Fisch. & C.A.Mey. var. *congesta*, 1, 03.05.2013, ÖÇ 1960; 12, 30.07.2018, ÖÇ 4661, Endemic (LC), Irano-Turanian, Hemicryptophyte.  
 220. *Nepeta italica* L., 2, 10.06.2017, ÖÇ 2173, Hemicryptophyte.  
 221. *Phlomis armeniaca* Willd., 2, 24.06.2015, ÖÇ 2207, Irano-Turanian, Hemicryptophyte.  
 222. *Phlomis pungens* Willd. var. *pungens*, 2, 16.08.2019, ÖÇ 5557, Hemicryptophyte.  
 223. *Phlomis nissolii* L., 6, 30.06.2017, ÖÇ 2170. Endemic (LC), Irano-Turanian, Hemicryptophyte.  
 224. *Salvia absconditiflora* (Montbret & Aucher ex Benth.) Greuter & Burdet., 3, 19.05.2017, ÖÇ 3252, Endemic (LC), Irano-Turanian, Hemicryptophyte.  
 225. *Salvia candidissima* Vahl subsp. *candidissima*, 2, 30.06.2017, ÖÇ 2242, Irano-Turanian, Hemicryptophyte.  
 226. *Salvia ceratophylla* L., 4, 19.05.2017, ÖÇ 3254, Irano-Turanian, Hemicryptophyte.  
 227. *Salvia cyanescens* Boiss. & Balansa, 2, 30.05.2018, ÖÇ 2342, Endemic (LC), Irano-Turanian, Hemicryptophyte.  
 228. *Salvia sclarea* L., 11, 24.06.2015, ÖÇ 2266, Hemicryptophyte.  
 229. *Salvia virgata* Jacq., 8, 25.06.2019, ÖÇ 4454. Irano-Turanian, Hemicryptophyte.

230. *Scutellaria orientalis* L. subsp. *pinnatifida* Edm., 7, 30.04.2017, ÖÇ 2071, Hemicryptophyte.  
 231. *Sideritis bilgerana* P. H. Davis, 4, 30.06.2017, ÖÇ 2307, Endemic (VU), Mediterranean, Hemicryptophyte.  
 232. *Sideritis lanata* L., 4, 24.06.2015, ÖÇ 2212, Mediterranean, Therophyte.  
 233. *Sideritis libanotica* Labill. subsp. *linearis* (Benth.) Bornm., 2, 16.08.2019, ÖÇ 5582, Mediterranean, Hemicryptophyte.  
 234. *Stachys burgsdorffoides* (Benth.) Boiss. subsp. *burgsdorffoides*, 6, 30.04.2017, ÖÇ 2054, Irano-Turanian, Therophyte.  
 235. *Stachys cretica* L. subsp. *vacillans* Rech.f., 5, 30.05.2019, ÖÇ 5142, Mediterranean, Hemicryptophyte.  
 236. *Teucrium polium* L. subsp. *polium*, 2, 30.06.2017, ÖÇ 2232, Kamephyte.  
 237. *Thymus leucostomus* Hausskn. & Velen., 2, 24.05.2013, ÖÇ 2257, Endemic (NT), Irano-Turanian, Kamephyte.  
 238. *Thymus sipyleus* Boiss., 2, 03.05.2015, ÖÇ 2189 ; 1, 24.06.2015, ÖÇ 2255, Kamephyte.  
 239. *Ziziphora taurica* M. Bieb subsp. *taurica*, 3, 30.06.2017, ÖÇ 2253, Therophyte.  
 240. *Ziziphora tenuior* L., 1, 10.06.2017, ÖÇ 2192. Irano-Turanian, Therophyte.

**Linaceae**

241. *Linum austriacum* L. subsp. *austriacum*, 7, 30.06.2017, ÖÇ 2261. Hemicryptophyte.

**Malvaceae**

242. *Alcea biennis* Winterl., 6, 30.06.2017, ÖÇ 2309, Hemicryptophyte.  
 243. *Malva neglecta* Wallr., 12, 30.06.2017, ÖÇ 2249, Hemicryptophyte.  
 244. *Malvella sherardiana* (L.) Jaub. & Spach, 11, 30.07.2018, ÖÇ 4662, Hemicryptophyte.

**Nitrariaceae**

245. *Peganum harmala* L., 12, 30.06.2017, ÖÇ 2326, Kamephyte.

**Oleaceae**

246. *Jasminum fruticans* L., 1, 30.05.2017, ÖÇ 2310, Mediterranean, Fanerophyte.

**Orobanchaceae**

247. *Orobanche anatolica* Boiss. & Reuter, 6, 19.05.2017, ÖÇ 2139, Vascular parasite.  
 248. *Orobanche pubescens* d 'Urv., 4, 10.06.2017, ÖÇ 2180, Vascular parasite.

**Papaveraceae**

249. *Fumaria asepala* Boiss., 2, 19.05.2017, ÖÇ 2056, Irano-Turanian, Therophyte.  
 250. *Fumaria vaillantii* Lois., 3, 19.05.2017, ÖÇ 2064. Therophyte.  
 251. *Glaucium corniculatum* (L.) Rudolph subsp. *corniculatum*, 5, 30.06.2017, ÖÇ 2262, Hemicryptophyte.  
 252. *Hypecoum pendulum* L., 2, 10.06.2017. ÖÇ 2121, Therophyte.



253. *Hypocoum procumbens* L. subsp. *procumbens*, 6, 30.05.2019, ÖÇ 5144, Mediterranean, Therophyte.
254. *Papaver dubium* L. subsp. *dubium*, 7, 19.04.2017, ÖÇ 2027, Therophyte.
255. *Papaver macrostomum* Boiss. & Huet ex Boiss., 4, 19.05.2017, ÖÇ 2063. Irano-Turanian, Therophyte.
256. *Papaver rhoeas* L., 6, 10.06.2017, ÖÇ 2162, Therophyte.
257. *Roemeria hybrida* (L.) DC. subsp. *hybrida*, 10, 13.05.2017, ÖÇ 2013, Therophyte.
- Plantaginaceae**
258. *Linaria corifolia* Desf., 12, 13.05.2017, ÖÇ 2160, Endemic (LC), Irano-Turanian, Hemicryptophyte.
259. *Linaria simplex* (Willd.) DC., 4, 10.06.2017, ÖÇ 2183. Mediterranean? Therophyte.
260. *Plantago lanceolata* L., 7, 10.06.2017, ÖÇ 2177, Hemicryptophyte.
261. *Veronica biloba* Schreber, 11, 19.05.2015, ÖÇ 2007, Irano-Turanian, Therophyte.
262. *Veronica bozakmanii* M.A. Fisch, 6, 19.05.2015, ÖÇ 2052, Irano-Turanian-Therophyte.
263. *Veronica cuneifolia* D. Don. subsp. *cuneifolia*, 4, 30.04.2017, ÖÇ 2244, Endemic, Therophyte.
- Plumbaginaceae**
264. *Acantholimon venustum* Boiss. var. *venustum*, 4, 30.06.2017, ÖÇ 2272; 2, 16.08.2019, ÖÇ 5585, Kamephyte.
265. *Plumbago europaea* L., 12, 30.07.2018, ÖÇ 4671, Euro-Siberian, Hemicryptophyte.
- Poaceae**
266. *Aegilops cylindrica* Host, 2, 10.06.2017, ÖÇ 2194, Irano-Turanian, Therophyte.
267. *Aegilops triuncialis* L. subsp. *triuncialis*, 4, 30.05.2019, ÖÇ 5131, Therophyte.
268. *Alopecurus arundinaceus* Poir., 1, 03.05.2013, ÖÇ 1942, Euro-Siberian, Geophyte.
269. *Arrhenatherum palaestinum* Boiss., 10, 03.05.2013, ÖÇ 2184, Irano-Turanian, Geophyte.
270. *Avena barbata* Pottex Link subsp. *barbata*, 2, 30.05.2019, ÖÇ 5135, Mediterranean, Therophyte.
271. *Avena sativa* L., 2, 10.06.2017, ÖÇ 2168, Hemicryptophyte.
272. *Bromus cappadocicus* Boiss. & Balansa. subsp. *cappadocicus*, 5, 19.05.2017, ÖÇ 2187, Therophyte.
273. *Bromus japonicus* Thunb. subsp. *japonicus*, 6, 10.06.2017, ÖÇ 2152, Therophyte.
274. *Bromus squarrosus* L., 4, 30.06.2017, ÖÇ 2329, Therophyte.
275. *Bromus sterilis* L., 7, 24.06.2015, ÖÇ 2221, Therophyte.
276. *Crypsis alopecuroides* (Piller & Mitterp.) Schrad., 7, 16.08.2019, ÖÇ 5556, Hemicryptophyte.
277. *Cynodon dactylon* (L.) Pers. var. *villosus* Regel, 1, 16.08.2019, ÖÇ 5555, Hemicryptophyte.
278. *Echinaria capitata* (L.) Desf., 1, 03.05.2013, ÖÇ 1946, Therophyte.
279. *Eremopyrum confusum* Melderis subsp. *Sublaniginosum* (Drop) Cabi & Doğan, 6, 03.05.2013, ÖÇ 1943, Therophyte.
280. *Festuca valesiaca* Schleich. ex Gaudin, 5, 30.05.2019, ÖÇ 5132, Hemicryptophyte.
281. *Gaudiniopsis macra* (M.Bieb.) Eig. subsp. *macra*, 3, 08.05.2013, ÖÇ 2094, Irano-Turanian, Therophyte.
282. *Hordeum bulbosum* L., 3, 10.06.2017, ÖÇ 2085, Geophyte.
283. *Koeleria eriostachya* Pančić, 5, 10.06.2017, ÖÇ 2268, Hemicryptophyte.
284. *Melica ciliata* L. subsp. *ciliata*, 5, 30.05.2019, ÖÇ 5134, Hemicryptophyte.
285. *Melica persica* Kunth. subsp. *inaequiglumis* (Boiss.) Bor, 3, 30.05.2015, ÖÇ 2118, Hemicryptophyte.
286. *Oryzopsis coerulescens* (Desf.) Hack., 14, 03.05.2017, ÖÇ 2153, Hemicryptophyte.
287. *Pennisetum orientale* Rich., 10, 19.05.2017, ÖÇ 2100, Irano-Turanian, Geophyte.
288. *Phragmites australis* (Cav.) Trin ex Steudel, 7, 30.07.2018, ÖÇ 2202, Euro-Siberian, Hidrofit.
289. *Poa bulbosa* L., 7, 30.06.2017, ÖÇ 2117, Geophyte.
290. *Stipa holosericea* Trin., 2, 10.06.2017, ÖÇ 2172. Irano-Turanian, Hemicryptophyte.
291. *Stipa lessingiana* Trin. & Rupr., 1, 19.05.2017, ÖÇ 2228, Hemicryptophyte.
292. *Taeniatherum caput-medusae* (L.) Nevskisubsp. *crinitum* (Schreb.) Melderis, 7, 10.06.2017, ÖÇ 2138, Irano-Turanian, Therophyte.
293. *Vulpia ciliata* Dumart. subsp. *ciliata*, 2, 02.05.2015, ÖÇ 2140, Therophyte.
- Polygonaceae**
294. *Atraphaxis billardieri* Jaub. & Spach. subsp. *billardieri*, 4, 30.06.2017, ÖÇ 2306; 5, 30.05.2019, ÖÇ 5136, Irano-Turanian. Kamephyte.
295. *Polygonum arenarium* Waldst. & Kit., 6, 10.06.2019, ÖÇ 5574, Therophyte.
296. *Polygonum aviculare* L., 6, 30.07.2018, ÖÇ 4675, Therophyte.
- Primulaceae**
297. *Androsace maxima* L., 4, 13.05.2017 ÖÇ 2021, 3, 30.06.2017, ÖÇ 2318, Therophyte.
- Ranunculaceae**
298. *Adonis flammea* Jacq., 7, 30.04.2017, ÖÇ 2070, Therophyte.
299. *Ceratocephala testiculatus* (Crantz.) Roth., 10, 30.04.2017, ÖÇ 2023, Therophyte.
300. *Cosolida orientalis* (Gay) Schröd., 12, 10.06.2017, ÖÇ 2246, Therophyte.
301. *Consolida raveyi* (Boiss.) Schröd., 4, 6, 30.06.2017, ÖÇ 2279, Endemic (LC). Irano-Turanian, Therophyte.
302. *Consolida regalis* S. F. Gray subsp. *paniculata* (Host) Soo, 2, 30.06.2017, ÖÇ 2304, 12, 30.07.2018, ÖÇ 4660; 1, 30.06.2017, ÖÇ 2241, Therophyte.
303. *Delphinium venulosum* Boiss., 2, 16.08.2017, ÖÇ 2288, Endemic (LC), Irano-Turanian, Therophyte.
304. *Ranunculus cuneatus* Boiss., 3, 30.05.2017, ÖÇ 2059, Hemicryptophyte.

**Resedaceae**

305. *Reseda lutea* L. var. *lutea*, 1, 03.05.2013, ÖÇ 1958, Hemicryptophyte.

**Rhamnaceae**

306. *Rhamnus hirtellus* Boiss., 3, 10.06.2017, ÖÇ 2130, Endemic (LC), Irano-Turanian, Fanerophyte.

**Rosaceae**

307. *Amygdalus orientalis* Miller., 4, 13.05.2017, ÖÇ 2075, Irano-Turanian, Fanerophyte.

308. *Crataegus azarolus* L. var. *azarolus*, 1,2, 30.06.2017, ÖÇ 2270; 2, 12, 30.07.2018, ÖÇ. 4666, Fanerophyte.

309. *Potentilla recta* L., 2, 10.06.2017, ÖÇ 2114, Hemicryptophyte.

310. *Rosa pulverulenta* M. Bieb, 2, 30.05.2018, ÖÇ 2300, Fanerophyte.

**Rubiaceae**

311. *Asperula lilaciflora* Boiss. subsp. *phrygia* (Bornm.) Schönb.-Tem., 3, 10.06.2017, ÖÇ 2171; 3, 30.06.2017, ÖÇ 2267, Endemic (LC), Hemicryptophyte.

312. *Asperula stricta* Boiss. subsp. *stricta*, 2, 10.06.2017, ÖÇ 2199; 5, 30.05.2019, ÖÇ 5143, Mediterranean, Hemicryptophyte.

313. *Cruciata taurica* (Pall. Ex Willd.) Ehrend. 10, 13.05.2017, ÖÇ 3233, Irano-Turanian, Therophyte.

314. *Crucianella disticha* Boiss., 2, 10.06.2017, ÖÇ 2181, Endemic (LC), Irano-Turanian, Therophyte.

315. *Galium aparine* L., 3, 4, 13.05.2017, ÖÇ 2115, Therophyte.

316. *Galium incanum* Sm. subsp. *elatius* (Boiss.) Ehrend., 3, 10.06.2017, ÖÇ 2201, Irano-Turanian, Kamephyte.

317. *Galium setaceum* Lam., 5, 30.06.2017, ÖÇ 2387, Therophyte.

318. *Galium verticillatum* Danthoine ex Lam., 1, 10.06.2017, ÖÇ 2169, Mediterranean, Therophyte.

319. *Galium verum* L. subsp. *glabrescens* Ehrend., 2, 30.06.2017, ÖÇ 2293, Irano-Turanian, Hemicryptophyte.

**Rutaceae**

320. *Haplophyllum vulcanicum* Boiss. & Heldr., 4,5, 13.05.2017, ÖÇ 2126, Endemic (VU), Irano-Turanian, Kamephyte.

321. *Ruta thesoides* Fisch ex DC., 12, 10.06.2017, ÖÇ 2214; 1, 30.06.2017, ÖÇ 2290, Hemicryptophyte.

**Santalaceae**

322. *Viscum album* L. subsp. *album*, 2, 30.07.2018, ÖÇ 4677, Vascular parasite.

**Scrophulariaceae**

323. *Scrophularia scopoli* Hoppeex Pers. var. *scopoli*, 4, 30.04.2017, ÖÇ 3357. Hemicryptophyte.

324. *Scrophularia xanthoglossa* Boiss. var. *decipiens* (Boiss. & Kotschy) Boiss., 3, 19.05.2017, ÖÇ 2060. Irano-Turanian. Hemicryptophyte.

325. *Verbascum campestre* Boiss. & Heldr., 5, 19.05.2017, ÖÇ 2083 ; 12, 10.06.2017, ÖÇ 2163. Endemic (NT), Irano-Turanian, Hemicryptophyte.

326. *Verbascum cheiranthifolium* Boiss. var. *cheiranthifolium*, 6, 30.06.2017, ÖÇ 2335, Hemicryptophyte.

327. *Verbascum glomeratum* Boiss., 8, 10.06.2017, ÖÇ 2165, Irano-Turanian, Hemicryptophyte.

328. *Verbascum lasianthum* Boiss. ex Benth., 2, 16.08.2019, ÖÇ 5570; 12, 30.07.2018, ÖÇ 4663, Hemicryptophyte.

329. *Verbascum vulcanicum* Boiss. & Heldr. var. *vulcanicum*, 12, 30.05.2019, ÖÇ 5137, Endemic (LC), Irano-Turanian, Hemicryptophyte.

**Urticaceae**

330. *Parietaria judaica* L., 1-3, 30.06.2017, ÖÇ 2289, Kamephyte.

331. *Urtica dioica* L., 7, 13.05.2017, ÖÇ 2122, Hemicryptophyte.

**Violaceae**

332. *Viola occulta* Lehm., 4, 30.04.2017, ÖÇ 2044; 10, 13.05.2017, ÖÇ 2132, Therophyte.

**4. Discussions**

Three hundred and thirty two taxa belonging to 44 families and 212 genera were identified in the study area. Two of them belong to Pteridophyta and 320 belong to Magnoliophyta (one taxon from Pinophytina subdivision and 321 taxa from Magnoliophytina subdivision). Out of the 332 identified taxa, 51 are endemic and the endemism rate is 15.4%.

Among the determined taxa, 70 (21.1%) belong to the Iranian-Turanian, 34 (10.3%) Mediterranean, and 4 (1.1%) Euro-Siberian phytogeographic regions. The remaining 224 taxa (67.5%) are either unknown or widely distributed. According to these data, the study area mainly consists of Irano-Turanian element plants, but since it is close to the border of the Mediterranean phytogeographic region, a large increase is observed in Mediterranean element plants (Table 1).

**Table 1.** Comparison of the phytogeographic elements percentages with the neighbouring studies

	1	2	3	4	5	6	7
Research area	Davda Mount	Karadağ	Çakırdağı	Hacıbaba	Karapınar	Ayrancı	Büyükeğri
Number of total taxa	332	521	516	1027	227	250	330
Iranian-Turanian (%)	21.1	25.5	29,8	21,9	21,5	16,5	14.3
Mediterranean (%)	10,3	11,6	12,1	20,5	5,2	12,1	27.3
Euro-Siberian (%)	1,1	3,1	2,5	3,1	2,2	1,6	2.7
Unknown or widely distributed (%)	67,5	59,8	55,6	48,3	48,4	69,8	54.7

The findings of research area and the researches carried out in neighbouring regions show similar ratios in terms of Iran-Turanian phytogeographic region elements. Since the Hacibaba and Ayrancı study areas are near to the Mediterranean phytogeographic region, and cover a wider surface area, the Mediterranean phytogeographic region elements seems to be closer with the research area. The Euro-Siberian phytogeographic region elements show less distribution in research area because of the distance from the compared areas (Table 2).

The most common families in the Flora of Turkey are *Asteraceae*, *Fabaceae*, *Brassicaceae*, *Lamiaceae*, *Caryophyllaceae*, *Poaceae*, *Apiaceae* and

*Scrophulariaceae* respectively. Similar distribution is also observed in research area and the neighbouring regions, though some small changes in the order of the families. The order of *Scrophulariaceae* has been replaced by *Boraginaceae* due to the transfer of some genera to other families. The taxa number of the most common 8 families in study area is 216, constituting 65.1% of the total flora (Table 2). Due to its cosmopolitan structure and easy spreading with pappus, as well as its adaptation to different habitats, *Asteraceae* is the most crowded family in the region. The steppe characteristics of the research area and the neighbouring areas seems to favor *Brassicaceae* and *Poaceae* in terms of taxa number (Ekim, 2014; Kılıç, 2022).

**Table 2.** Families with the highest number of taxa in the research area and nearby study areas

	1	2	3	4	5	6	7
Research area	Davda Mount	Karadağ	Çakırdağı	Hacıbaba	Karapınar	Ayrancı	Büyükeğri
<i>Asteraceae</i> (%)	50	15.1	12,2	14,9	12,7	12,3	13,4
<i>Lamiaceae</i> (%)	28	8.4	6,7	6,9	7	6,1	7,5
<i>Fabaceae</i> (%)	27	8.1	10,6	9,5	9,9	5,7	8,4
<i>Poaceae</i> (%)	27	8.1	6,9	7,2	8,3	13,6	6,7
<i>Brassicaceae</i> (%)	26	7.8	7,4	9	8,4	8,8	6,4
<i>Boraginaceae</i> (%)	23	6.9	5,5	4,2	3,9	6,1	5,5
<i>Apiaceae</i> (%)	18	5.4	3,2	3,5	4,3	3	4,3
<i>Caryophyllaceae</i> (%)	17	5.1	4,8	6	5,5	4,8	6

**Table 3.** The genera with the highest number of taxa in the area of study and areas nearby

	1	2	3	4	5	6	7
Research area	Davda Mount	Karadağ	Çakırdağı	Hacıbaba	Karapınar	Ayrancı	Büyükeğri
<i>Astragalus</i>	11	10	17	22	3	20	5
<i>Alyssum</i>	7	6	11	13	3	12	4
<i>Salvia</i>	6	4	6	11	2	12	4
<i>Centaurea</i>	5	8	11	16	6	15	7
<i>Galium</i>	5	6	9	13	2	15	1
<i>Valerianella</i>	5	3	8	6	0	2	1
<i>Verbascum</i>	5	4	4	7	2	10	2
<i>Allium</i>	4	5	9	5	2	7	1

*Astragalus* L., *Verbascum* L., *Allium* L., *Centaurea* L., and *Silene* L. are the most crowded genera in Flora of Turkey. Similar distributions were also observed in research area and the neighbouring regions with some small exceptions. *Astragalus* is the richest genus in the research area and the studies in closer regions except Karapınar and Büyükeğri. Taxa richness order of *Astragalus* and *Centaurea* order in the research area is the same with the flora of Turkey. *Verbascum* and *Allium* which has the 2<sup>nd</sup> and 3<sup>rd</sup> crowded genera in the Flora of Turkey, had the 7<sup>th</sup> and 8<sup>th</sup> places in the current study. Though *Alyssum* L., *Galium* L., *Salvia* L., and *Valerianella* Mill. don't take place among the most crowded 10 genera in Flora of Turkey, they do in current study. The underlying reason could be the domination of steppe vegetation in the area. The fact that other genera contain different numbers of taxa can be attributed to habitat differences and the lack of a detailed investigation due to the wider surface areas of the other regions (Ekim, 2014).

Fifty one (15.4%) of the 332 determined taxa are endemic. Though the research area does not have a prominent

altitude, the isolated volcanic character of the region could be underlying reason of increased endemism rate. The endemism rate is also similar to the nearby study areas (Table 4). The threatened endemic plants categories of the the study area are listed as CR (2), EN (1), VU (6), NT (6), LC (35) and DD (1). Rare taxa do not show distribution in the research area.

The distribution of the determined taxa according to Raunkiaer's life forms are as follows: 146 Hemicryptophytes, 118 Therophytes, 31 Kamephytes, 23 Geophytes, 9 Phanerophytes, 4 Vascular parasites, and 1 Hydrophyte (Table 5).

In addition to the records of Andrasovszky and *Astragalus unalii* Çeçen, Aytaç & Mısırdalı (Çeçen et al. 2016) as new species, 332 existing in the area were also listed. The floristic composition of the region has also become known. *Ferula parva* Feryn et Bornm., a suspicious record of 4<sup>th</sup> volume of the Flora of Turkey (Çeçen et al. 2019), was also determined in the region.

**Table 4.** Endemic taxa in the research area and close study areas

	1	2	3	4	5	6	7
Research area	Davda Mount	Karadağ	Çakırdağı	Hacıbaba	Karapınar	Ayrancı	Büyükeğri
Number of total taxa	332	521	516	1027	227	834	330
Number of endemic taxa	51	70	88	190	29	168	56
Endemism rate (%)	15.4	13.5	17.3	18.5	12.2	20	16.9

**Table 5.** Life forms of plants in the research area and nearby study areas

	1	2	3	4	5	6	7
Research area	Davda Mount	Karadağ	Çakırdağı	Hacıbaba	Karapınar	Ayrancı	Büyükeğri
Hemicryptophytes	146	43.9	-	38,8	41,8	-	40,5
Therophytes	118	35.6	-	39	31,7	-	37
Geophytes	31	6.9	-	9,5	11	-	5,3
Kamephytes	24	9.4	-	6,6	8,6	-	13,2
Phanerophytes	9	2.7	-	5,1	4,8	-	1,8
Vascular parasites (%)	4	1.2	-	1	0,4	-	0
Hydrophyte	1	0.3	-	0	1,7	-	2,2

*Dianthus cyri* Fisch et Mey. and *Lythrum tribracteatum* Salzm. ex Spreng. taxa could not be collected in the region. The herbarium samples on which Andrasovszky bases these records are in the Budapest herbarium. Although we have not contacted the curators, samples have not been reached so far. *Dianthus cyri* Fisch et Mey. one of the *Dianthus* taxa in our area may have been misdiagnosed as it is described as an annual taxon. Both of Andrasovszky's samples in Budapest and those collected from other regions should be validated and added to the flora of Türkiye in future.

Grazing pressure outside the protected area has decreased due to the decreasing sheep and goat farming in the region. Afforestation and protection of a part of the study area are considered beneficial. But the construction of houses and hobby gardens seem to be increasing in the region, especially depending on Covid 19 disease. Prevention of such attempts which disrupt the vegetation of the natural region, will contribute to the continuity of the endemic plants of the region.

Considering the revival and increase in the natural plant diversity of the protected area in our study area, it will be better to take whole area under protection in order not to

damage the vegetation outside the protected area. As a result, flora lists of such narrow areas and efforts should be made to protect every taxon that constitutes plant richness in our region, as in the whole country.

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#### References

- Akdağ T, Doğu S (2016). The Medical Plants Of Karaman-Yeşildere Village And It's Surroundings. International Journal of Agriculture and Environmental Research 2(5): 1214-1223.
- Akman Y, (1999). İklim ve Biyoiklim. Ankara: Palme Yayınları.
- Akman Y, Vural M, Quézel P, Kurt L, Ketenoğlu O., Serin M, Barbéro M (1996). Etüde de la végétationsteppeique de la région de Karaman et d'Ermenek (sud de l'Anatoliecentrale). Ecology Mediterrane 22: 1-7.
- Andrasovszky J (1912). Vorläufiger Bericht über die im Jahre 1911 in den Steppen Kleinasiens ausgeführte Reise. Botanikai Közlemenyek 11: 57- 64.
- Andrasovzky J (1914). Additamenta ad Floram Galaticam et Lycaonicam (Adatok Galatíaés Lycaonia flórájához). Budapest.
- Andrasovszky J (1917). Magyarország Orchidea-Flórájához. Budapest : Magyar Botanikai Lapok (Ungarische Botanische Blätter).
- Aytaç Z, Çeçen Ö, Fişne A (2020). *Astragalus sertavulensis* (sect. Onobrychoidei/ Fabaceae), a new species from Turkey. Nordic Journal of Botany 38: 1-7.
- Bağcı Y, Tatlı A, Kargıoğlu M (1996). The Vegetation of Konya-Karapınar. Selçuk Üniversitesi Fen Edebiyat Fakültesi Fen Dergisi 13: 98-113.
- Bağcı Y, Erdoğan R, Doğu S (2016). Sarıveliler (Karaman) ve Çevresinde Yetişen Bitkilerin Etnobotanik Özellikleri. Selçuk

Üniversitesi Fen Dergisi 42(1): 84-107.

- Bilgiç T (2009). Türkiye Jeoloji Haritaları Serisi Karaman-N30 Paftası (No:127). Ankara: Maden Teknik ve Arama Genel Müdürlüğü Jeoloji Etütler Dairesi.
- Büyüksar H, Dursun E, Çetinkaya A (1992). Konya İli Arazi Varlığı. Ankara: Tarım ve Köy İşleri Bakanlığı Köy Hizmetleri Genel Müdürlüğü'nün Yayınları.
- Celep F, Raders E, Drew B (2020). Two new hybrid species of *Salvia* (*S.* × *karamanensis* and *S.* × *doganii*) from Turkey: evidence from molecular and morphological studies. Turkish Journal of Botany 44(6): 647-660.
- Christenhusz MJM, Byng JW (2016). The number of known plants species in the world and its annual increase. Phytotaxa 261(3): 201-217.
- Çeçen Ö, Aytaç Z, Mısırdalı H (2016). *Astragalus unalii* (Fabaceae), a new species from Turkey. Turkish Journal of Botany 40: 81-86.
- Çeçen Ö, Aytaç Z, Mısırdalı H, Ünal A (2018). József Andrasovszky'nin (1889- 1943) Türkiye'deki *Astragalus* L. türlerine ait Kayıtları. Bağbahçe Bilim Dergisi 5(3): 1-9.
- Çeçen Ö, Aytaç Z, Mısırdalı H, Ünal A (2019). József Andrasovszky's (1889-1943) Botanical Trip to Anatolia in 1911. Bağbahçe Bilim Dergisi 6(3): 22-34.
- Çeçen Ö, Karavelioğulları FA, Ünal A (2015). *Verbascum misirdalianum* (Scrophulariaceae), a new species from central Anatolia, Turkey. Phytotaxa 217: 96-99.
- Çeçen Ö, Mısırdalı H, Ünal A (2018). Flora of Çakırdağı (Karaman), Biological Diversity and Conservation 11(1): 45-60.
- Çeçen Ö, Özcan T (2021). A new *Teucrium* L. (Lamiaceae) Species from South Anatolia (Turkey). Turkish Journal of Botany 45: 353-370.
- Davis PH (Ed.) (1965-1985). Flora of Turkey and the East Aegean Islands, Vol. 1-9. Edinburgh: Edinburgh University Press.
- Davis PH, Mill RR, Tan K (Ed.) (1988). Flora of Turkey and the East Aegean Islands, Vol. 10. Edinburgh: Edinburgh University Press.
- Dinç M, Bağcı Y (2018). A new species of *Genista* sect. *Spartocarpus* (Fabaceae) from Karaman (Turkey). Phytotaxa 371: 49-54.
- Dinç M, Doğu S (2020). *Arenaria goekyigitii* (Caryophyllaceae), a new species from Turkey. Phytotaxa 459: 69-71.
- Doğru-Koca A, Zare G, Çeçen Ö (2016). *Valerianella turcica* (Caprifoliaceae), a new species from Turkey. Phytotaxa 272(2): 157-164.
- Dönmez AA, Yerli SV (2018). Biodiversity in Turkey, in: Pullaiah, T. (Ed.), Global Biodiversity. USA: Apple Academic Press.
- Eker İ, Tekşen M (2017). Resimli Türkiye Florası'na Katkılar 2: İç Anadolu'dan yeni bir sarıyıldız türü [*Gagea goekyigitii* (Liliaceae)]. Bağbahçe Bilim Dergisi 4(1): 22-30.
- Eker İ, Sağiroğlu M (2021). *Gladiolus izzet-baysalii* (Iridaceae, Crocoideae), a new species from Turkey. Phytotaxa 527(2): 97-106.
- Ekim T (2014). Damarlı Bitkiler. Şu eserde: Güner, A. ve Ekim, T. (edlr.) (2014). Resimli Türkiye Florası, Cilt 1. Nezahat Gökyiğit Botanik Bahçesi Yayınları Flora Dizisi 2, Flora Araştırmaları Derneği Yayını ve Türkiye İş Bankası Kültür Yayınları. İstanbul.
- Ekim T, Koyuncu M, Vural M, Duman H, Aytaç Z, Adıgüzel N (2000). Türkiye Bitkileri Kırmızı Kitabı (Eğrelti ve Tohumlu Bitkiler) Red Data Book of Turkish Plants (Pteridophyta and Spermatophyta). Ankara: Türkiye Tabiatını Koruma Derneği & Van 100. Yıl Üniv.
- Ertuğrul K, Tugay O (2018). Karaman'ın Endemik Bitkileri. Karaman: Tarım ve Orman Bakanlığı, Doğa Koruma ve Milli Parklar Genel Müdürlüğü, 8. Bölge Müdürlüğü Karaman Şube Müdürlüğü.
- Geven F, Adıgüzel N, Vural M (2010). İç Anadolu'dan (Ereğli-Karaman) *Onobrychidoartmeni-Thymetalia leucostomi* Akman, Ketenoğlu, Quezel 1985, ordosu için yeni bir alyans. Ekoloji 19: 89-101.
- Geven F, Adıgüzel N, Vural M (2015). İç Anadolu Bölgesi'nin güneydoğusunda (Ereğli-Karaman) *Artemisia santonicum* L. kommunitésinin floristik ve ekolojik özellikleri. Journal of Biodiversity and Environmental Sciences 7(1): 368-379.
- Gül MA, Çuhadar Ö, Öztaş Y, Aklan H, Efeçinar T (1984). Bolkar Dağı-Belemedik yöresinin jeolojisi ve petrol olanakları. Ankara: TPAO Arama Grubu Dökümantasyon Merkezi.
- Güner A, Aslan S, Ekim T, Vural M, Babaç MT (2012). Türkiye Bitkileri Listesi (Damarlı Bitkiler). İstanbul: Nezahat Gökyiğit Botanik Bahçesi ve Flora Araştırmaları Derneği.
- Güner A, Ekim T (2014). Resimli Türkiye Florası 1. İstanbul: Nezahat Gökyiğit Botanik Bahçesi, Flora Araştırmaları Derneği ve Türkiye İş Bankası.
- Güner A, Kandemir A, Menemen Y, Yıldırım H, Aslan S, Ekşi G, Güner I, Çimen AÖ (2018). Resimli Türkiye Florası 2. İstanbul: Nezahat Gökyiğit Botanik Bahçesi.
- Güner A, Kandemir A, Menemen Y, Yıldırım H, Aslan S, Çimen AÖ, Güner, I, Ekşi G, Şen F (2022). Resimli Türkiye Florası 3a. İstanbul: Nezahat Gökyiğit Botanik Bahçesi.
- Güner A, Özhatay N, Ekim T, Başer, KHC (eds) (2000). Flora of Turkey and the East Aegean Islands. Vol. 11.(Supplement 2) Edinburgh: Edinburgh Univ.
- Hamzaoğlu E, Ertuğrul K, Koç M (2022). An ignored habitat in Türkiye: Sandy steppes. Anatolian Journal of Botany 6(1): 49-54.

- IPNI (2023). International plant names index. Published on the Internet; <https://www.ipni.org>. [accessed 8 March 2023].
- Karaman Avlaklar Haritası (2022-2023). <https://avbis.tarimorman.gov.tr/AvlakHaritalari.aspx> [accessed 8 March 2023].
- Ketenoglu O, Serin M (1988). New records of the C4 Squares in the flora of Turkey. *Doğa Türk Botanik Dergisi* 12(2): 147-153.
- Kılıç Ö, Yıldırım Ş (2022). Contributions to the Flora of Çelikhhan District (Adıyaman) Adıyaman University Journal of Science 12(2): 203-229.
- Koçak S, Özhatay N (2000). Local names of some plants from Karaman Province. *Istanbul Journal of Pharmacy* 33: 27-36.
- Koçak S, Özhatay N (2013). Wild edible plants in Karaman (Southern Turkey). *Istanbul Journal of Pharmacy* 43(1): 21-32.
- Komarov VL (1934-1964). Flora of the USSR, Vol. 1-30. Moskova.
- Maassoumi AA, Ashouri P (2022) The hotspots and conservation gaps of the mega genus *Astragalus* (*Fabaceae*) in the Old-World Biodiversity and Conservation 31: 2119-2139.
- Noroozi J, Zare G, Sherafati M, Mahmoodi M, Moser D, Asgarpour Z, Schneeweiss GM (2019). Patterns of endemism in Turkey, the meeting point of three global biodiversity hotspots, based on three diverse families of vascular plants. *Frontiers Ecology and Evolution*. 7: 159.
- Özhatay N, Koçak S (2010–2011). Plants used for medicinal purpose in Karaman province (Southern Turkey), *Journal of Faculty Pharmacy Istanbul* 41: 75-89.
- Özhatay N, Kültür S, Gürdal B (2022). Check-list of additional taxa to the supplement of flora of Turkey X. *Istanbul Journal of Pharmacy* 52(2): 226-249.
- Peşmen H, (1972). *Ferula* L. In: Davis PH (ed.) Flora of Turkey and the East Aegean Islands, Vol. 4. Edinburgh: Edinburgh University Press.
- POWO (2019). Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. <https://powo.science.kew.org/> [accessed 11 April 2023].
- Rechinger KH, (1965-1979). Flora of Iranica. Graz: Akademisch Druck u Verlangsanstalt.
- Reveal JL, Chase MW (2011). Bibliographical information and synonymy of Magnoliidae. *Phytotaxa* 19: 71-134.
- Sağiroğlu M, Duman H (2006). *Ferula parva* Freyn & Bornm. (*Apiaceae*): A contribution to an enigmatic species from Turkey *Turkish Journal of Botany* 30: 399-404.
- Sağlam C, Ünal A (2007). C4 Karesi için yeni floristik kayıtlar. Süleyman Demirel Üniversitesi Fen Bilimleri Enstitüsü Dergisi 11: 158-162.
- Saya Ö, Mısırdalı H (1982). Bitkileri toplama, kurutma ve herbaryum tekniği. Dicle Üniversitesi Şanlıurfa Ziraat Fakültesi Yıllığı 1(1):93-104.
- Seçmen Ö, Gemici Y, Görk G, Bekat L, Leblebici E (2008). Tohumlu bitkiler sistematigi. İzmir: Ege Üniversitesi Yayınları.
- Serin M (1996). Hacıbaşa Dağı'nın (Karaman-Kazımkarabekir) florasına katkılar. *Ot Sistematiği Botanik Dergisi* 3(2): 15-48.
- Şenel M (1997). 1/100.000 Ölçekli Türkiye Jeoloji Haritaları. No: 2, Fethiye- L8 Paftası, Ankara: Maden Tetkik ve Arama Genel Müdürlüğü.
- Şirin E, Çeçen Ö, Bozkurt M, Ertuğrul K (2019). *Centaurea uysalii* (*Cyanus/Asteraceae*), a new species from Turkey. *Turkish Journal of Botany* 43: 809-816.
- Şirin E, Ertuğrul K (2015). Büyükeğri Dağı (Mut, İçel) ve çevresinin florası. *Biological Diversity and Conservation* 8(2): 23-36.
- Şirin E, Uysal T, Bozkurt M, Ertuğrul K (2020). *Centaurea akcadaghensis* and *C. ermenekensis* (*Asteraceae*), two new species from Turkey. *Mediterranean Botany* 41(2): 173-179.
- The International Plant Name Index. Royal Botanic Gardens, Kew. <http://www.ipni.org>. [accessed 11 April 2023].
- Townsend CC, Guest E (1966-1985). Flora of Iraq, Vol. 1-9. Baghdad: Ministry of Agriculture Republic of Iraq.
- Uluş D, Tugay O (2018). *Haplophyllum ermekense* (Rutaceae) from a new species Turkey. *PhytoKeys* 111: 119-131.
- Tutin TG, Heywood VH, Burges NA, Moore DM, Valentine, DH, Walters SM, Webb DB (1964-1981). Flora Europaea. Cambridge: Cambridge Univ. Press.
- Ulu Ü, Balcı V (2009). Türkiye Jeoloji Haritaları Serisi Karaman-N30 Paftası (No:128). Ankara: Maden Teknik ve Arama Genel Müdürlüğü Jeoloji Etütler Dairesi.
- Ünal A, (1987). New Records of the C4 squares in The Flora of Turkey. *Selçuk Üniversitesi Eğitim Fakültesi Dergisi* 1: 205-211.
- Ünal A, Ocakverdi H (1991). Karadağ'ın (Karaman) bitkileri. *Doğa Türk Botanik Dergisi* 15: 380-399.
- Ünal A, Sağlam C (2008a). Ayrancı Barajı, Karakükürtlü Dağı, Alahan ve Karaman Arasında Kalan Bölgenin Florası 1. *Dumlupınar Üniversitesi Fen Bilimleri Enstitüsü Dergisi* 17: 27-47.
- Ünal A, Sağlam C (2008b). Ayrancı Barajı, Karakükürtlü Dağı, Alahan ve Karaman Arasında Kalan Bölgenin Florası 2. *Dumlupınar Üniversitesi Fen Bilimleri Enstitüsü Dergisi* 18:15-32.
- Yücel E, Tapırdamaz A, Şengün İ. Y, Yılmaz G, Ak A (2011). Kisecik Kasabası (Karaman) ve çevresinde bulunan bazı yabancı bitkilerin kullanım biçimleri ve besin ögesi içeriklerinin belirlenmesi. *Biological Diversity and Conservation* 4(3): 71-82.
- Zohary M, (1966-1986). Flora Palaestina, Vol. 1-4. Israel: Jerusalem Academic Press.