Adıyaman University Journal of Science
https://dergipark.org.tr/en/pub/adyujsci
DergiPark AKADEMİK
ISSN 2147-1630
e-ISSN 2146-586X

Contributions to the Flora of Çelikhan District (Adıyaman)

Ömer KILIÇ[1,*], Şinasi YILDIRIMLI[2]

[1] *Adıyaman University, Faculty of Pharmacy, Department of Basic Science of Pharmacy, 02000, Adıyaman, Türkiye*
okilic@adiyaman.edu.tr, ORCID: 0000-0003-3409-1572
[2] *Hacettepe University, Faculty of Science, Department of Biology, 06000, Ankara, Türkiye*
ot@hacettepe.edu.tr, ORCID: 0000-0001-9648-7471

Received: 13.07.2022 **Accepted:** 29.09.2022 **Published:** 30.12.2022

Abstract

This study was carried out to contribute to the flora of Çelikhan District (Adıyaman). 592 plant samples were collected from the research area. As a result of the evaluation of these plants, a total of 454 taxa were identified, including 295 genera belonging to 62 families. Of these taxa, 3 of them were belong to Pteridophyta and 451 of Spermatophyta divisions. Coniferophyta and Magnoliophyta subdivisions in the Spermatophyta division contained 2 and 449 taxa, respectively. It was determined that 449 taxa were belong to Magnoliophyta subdivision, 385 were belong to Magnoliopsida and 64 were belong to Liliopsida class. It was determined that 30 taxa from the study area were endemic, and the endemism rate was found to be 6.6%. The distribution of taxa according to phytogeographic regions were as follows: Anatolian-Turan 158 (34.8%), Mediterranean 34 (7.5%), Euro-Siberian 33 (7.1%), multi-regional and unknown phytogeographical regions 229 (50.4%). The first five family according to the number of taxa were; Asteraceae 42 (9.2%), Fabaceae 37 (8.1%), Brassicaceae 36 (7.9%), Lamiaceae 35 (7.7%), Poaceae 31 (6.8%). The first five genera according to the number of taxa were; *Astragalus* 9, *Silene* 8, *Salvia* 7, *Trifolium* 6 and *Vicia* 6. Within the scope of the study, a new and endemic onion species was discovered, named Adıyaman and this species was introduced to the literature as *Allium adiyamanense* Yıld. & Kılıç.

* Corresponding Author DOI: 10.37094/adyujsci.1143607

Keywords: Plant; Flora; Çelikhan; Adıyaman; Turkey

Çelikhan İlçesi (Adıyaman) Florasına Katkılar

Öz

Bu çalışma, Çelikhan İlçesi (Adıyaman) ve yakın çevresinin florasına katkı sunmak amacıyla yapıldı. Araştırma alanından 592 bitki örneği toplandı. Bu bitkilerin değerlendirilmesi sonucunda toplamda 62 familyaya ait 295 cins olmak üzere toplam 454 takson tespit edildi. Bu taksonlardan 3'ü Pteridophyta ve 451'i Spermatophyta bölümlerine aittir. Spermatophyta bölümündeki Coniferophyta ve Magnoliophyta alt bölümleri sırasıyla 2 ve 449 takson içermekte. Magnoliophyta alt bölümüne ait 449 taksonun 385'nin Magnoliopsida, 64'nün Liliopsida sınıfına ait olduğu belirlendi. Çalışma alanından 30 taksonun endemik olduğu belirlenerek endemizm oranı %6.6 olarak tespit edildi. Taksonların fitocoğrafik bölgelere göre dağılımı şöyledir: Anadolu-Turan 158 (%34.8), Akdeniz 34 (%7.5), Avrupa-Sibirya 33 (%7.1), çok bölgeli ile bilinmeyen fitocoğrafik bölgeler 229 (%50.4). Takson sayısına göre ilk beş familya; Asteraceae 42 (%9.2), Fabaceae 37 (%8.1), Brassicaceae 36 (%7.9), Lamiaceae 35 (%7.7), Poaceae 31 (%6.8). Takson sayısına göre ilk beş cins; *Astragalus* 9, *Silene* 8, *Salvia* 7, *Trifolium* 6, *Vicia* 6. Çalışma kapsamında yeni ve endemik bir soğan türü keşfedilip Adıyaman ismi verilerek *Allium adiyamanense* Yıld. & Kılıç olarak literatüre kazandırıldı.

Anahtar Kelimeler: Bitki; Flora; Çelikhan; Adıyaman; Türkiye.

1. Introduction

Turkey is rich in plant diversity. More than 13.000 plant taxa have natural distribution in Turkey. Some of the reasons of Turkey's plant diversity can be listed as follows; Turkey includes three phytogeographic (Europe-Siberian, Mediterranean, Anatolian-Turanian) regions, geographical location, its topography, habitat diversity, being in the transition zone between Europe and Asia, geomorphological structure, different edaphic factors and ecological characteristics [1]. The research area is in the Anatolian-Turan phytogeographic region. The vegetation of the study area and its surroundings mostly depends on the topographic structure and ecological characteristics of the region. Although the continental climate type is generally seen in Adıyaman, the features of the Mediterranean climate are also encountered in some parts of the province. As a result of the field studies and observations, there are three dominant vegetation types in the project area and its near surroundings. These are; degraded forest-bush vegetation, steppe vegetation and aquatic-humid area vegetation.

The new species, *Aethionema adiyamanense* Yıld. & Kılıç, *Pimpinella adiyamanensis* Yıld. & Kılıç, *Allium adiyamanense* Yıld. & Kılıç [2-3], which were discovered in recent years; are also indicators that Adıyaman and its surroundings have an important potential in terms of plant diversity and richness. It is expected that the data obtained from this study will contribute to the relevant fields and shed light on them.

With this study, it is aimed to contribute the flora of Çelikhan (Adıyaman) district and to enrich Adıyaman University Pharmacy Faculty Herbarium.

2. Material and Methods

The research materials consist of plant samples that were collected with periodic field studies in the vegetation at periods of 2019-2022. Plant materials in the area were collected in accordance with the herbarium collection techniques and in a way to include the organs necessary for identification. The necessary information of these samples was recorded, and identification of plant materials were done by project member taxonomists Prof. Dr. Ömer Kılıç and Prof. Dr. Şinasi Yıldırımlı with the "Flora of Turkey and the East Aegean Islands" books [4] and with the help of a stereomicroscope. Some of the specimens were turned into herbarium specimens and kept in Adıyaman University Pharmacy Faculty Herbarium. The biological types of taxa were detected according to Raunkiaer [5]. IUCN (2012, 2013, 2021) sources were used to determine the hazard categories of endemic taxa [6-8]. The climate characteristics of the research area was evaluated using the data of the relevant meteorology station. The climate diagram was drawn according to the Gaussen (1955) method [9]. Climate type and bioclimatic layer were calculated and interpreted according to the Emberger method [10].

3. General Properties of Research Area

The research area is located in the C7 square according to Davis's grid system (Fig. 1). The main settlements in and around the research area are; Yeşilyayla, Yoğutlu, Köseuşağı, Aksu, Deveboynu, Yedioluk, Kozan, Koçali, Ormaniçi, Gökçay, Bulam, Recep, Korucak, Doğanlı, Şemikan, Karaçayır, Mutluca, Konakdere, Çatalağaç, Şahverdi, Kuyucak, Derinsu, Pınarbaşı, Kavak Mustafabeyli, Safe, Karadere, Rezip villages and their hamlets. The altitude of the research area varies between 1000-2000 m. The location map of the research area is shown in Fig. 2.

Adıyaman, is located in the southeast of Turkey, south of the Upper Euphrates Section of the Eastern Anatolia Region and north of the Middle Euphrates Section of the South-eastern Anatolia Region. Çelikhan, located between Malatya and Adıyaman cities, was established among the high mountains, which are the continuation of the Southeast Taurus Mountains. The

most important streams are Bulam and Abdulharap streams. Çat Dam is located on Abdulharap Stream. The altitude of the Çelikhan centre is 1387 m. There is Bozdağ Mountain (2.250 m) in the west, Bezar Mountain (1.900 m) in the south, Akdağ Mountain (2.506 m) in the east and Beydağ Mountain (2.544 m) in the north of Çelikhan. In the study area, there are different habitats such as steppe, bush, forest, rocky area, wetland, meadow areas, and the vegetation is shaped according to these habitats, in addition to ecological and geomorphological characteristics of the research area. In the study area, plant taxa belonging to the steppe formation were dominant.

In order to determine and interpret the climatic characteristics of the research area, the last ten years meteorological data of the Çelikhan district were used. Climate data are shown in Table 1 and Table 2, and the climate diagram is shown in Fig. 3.

Table 1: Climatic data of Çelikhan for the years 2012-2021

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Yearly Average
Temp (°C)	0.8	2.5	6.07	11.1	15.4	20.7	25.4	26.2	21.2	14.4	7.3	1.9	12.7
Min. Temp. (°C)	-12.1	-8.1	-4.5	0.3	5.2	9.6	11.3	12.1	7.1	5.53	-1.5	-8.2	1.4
Max. Temp. (°C)	9.1	14.6	17.9	23.9	28.01	33.3	36.1	36.5	33.7	24.6	19.0	11.2	24.0
Monthly relative humidity (mm)	75.4	70.4	64.4	56.1	57.0	40.3	29.3	29.6	36.3	51.2	63.0	74.2	47.9
Monthly precipitation (mm)	134.9	75.2	102.5	59.4	73.0	14.5	0.6	3.6	20.5	49.4	61.0	49.0	53.6

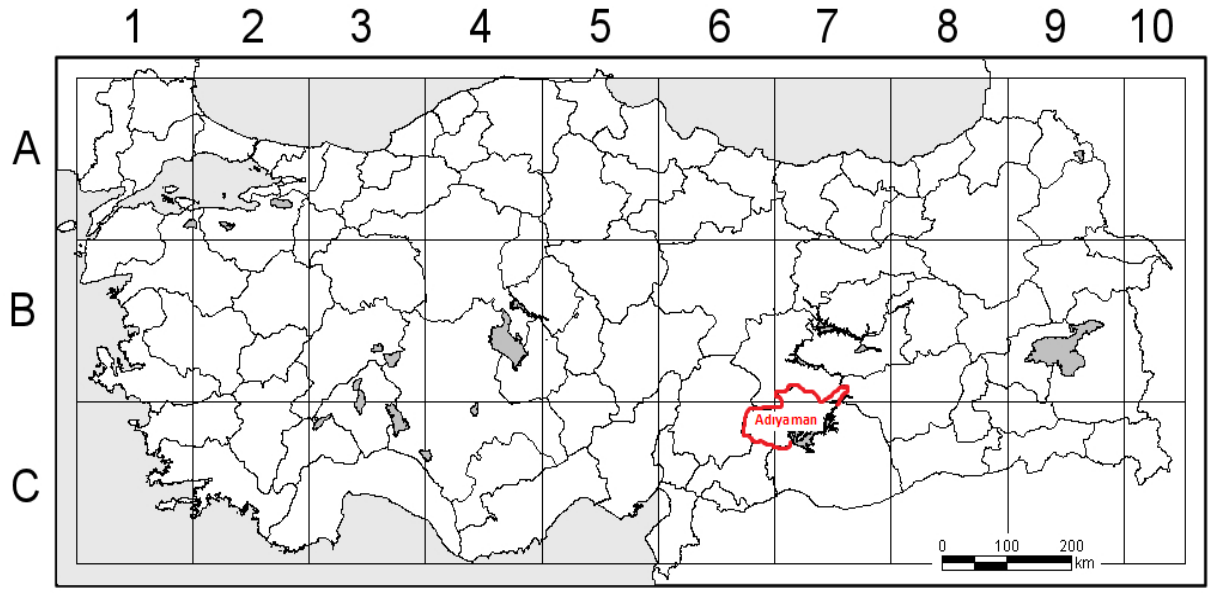


Figure 1: The location of Adıyaman according to the grid system

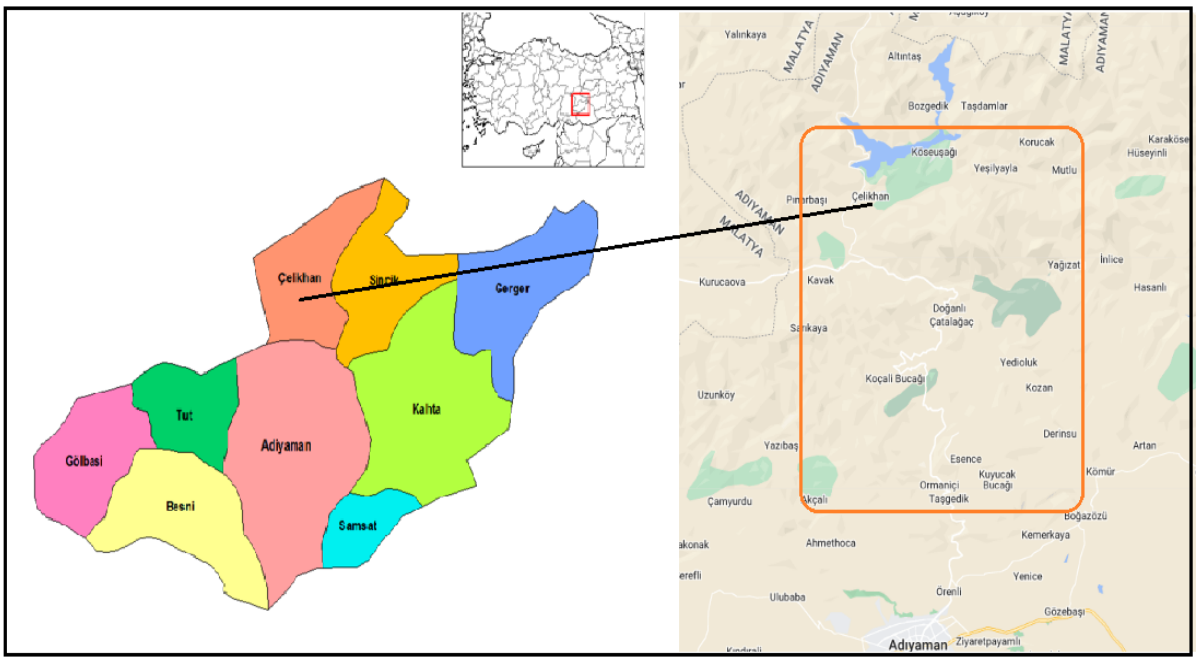


Figure 2: Location map of the research area

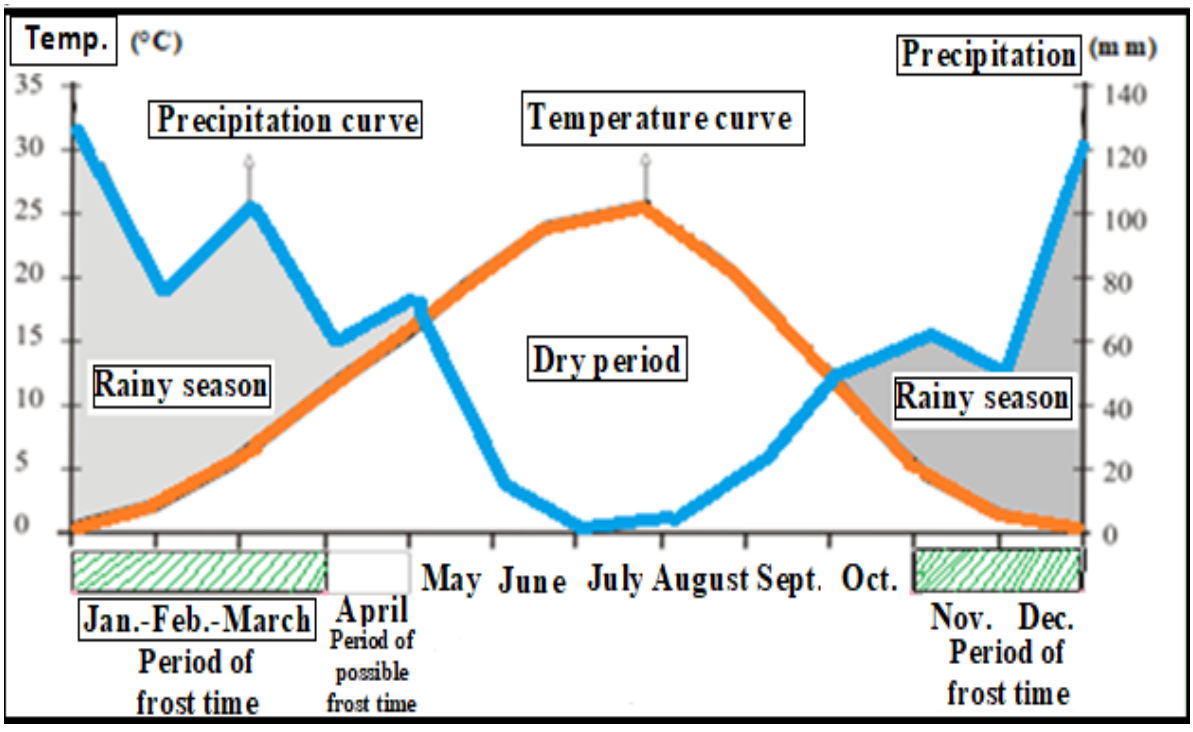


Figure 3: Climate diagram of Çelikhan

Table 2: Seasonal precipitation (mm) data of Çelikhan

Dec	Jan	Feb	March	Apr	May	June	July	August	Sept	Oct	Nov	Yearly
48.9	133.8	75.1	101.5	59.3	73.0	14.2	0.6	3.5	20.5	49.2	61.1	Average
	257.8			233.8			18.3			130.8		640.7

The highest average rainfall in Çelikhan was 134.9 mm in January. It is seen that the average relative humidity rate is the highest in January with a rate of 75.4%. Due to reasons such as different geomorphological and ecological characteristics of the Çelikhan district and its immediate surroundings, due to the roughness and mountainousness, the winter season is harsh in this district and therefore the possible frost event lasts for 4 months during the year. According to the climatic data of Çelikhan station, the average annual precipitation is 640.7 mm, and it is seen that the season with the highest average annual precipitation is winter (Table 2).

When Emberger's drought index (S = PE / M) formula is calculated using the climatic data of Çelikhan, the "S" value is 0.5 and *semi-arid mediterranean climate type* is observed in the research area [11]. When the seasonal distribution of precipitation in Çelikhan is examined (Table 2), it is seen that the most precipitation is in the winter season. After the winter season, the seasons with the highest precipitation are spring (S), autumn (A) and summer (S), respectively. So, the precipitation regime of research area is ranking winter, spring, autumn, summer; forming the *first type of the eastern mediterranean precipitation regime* [11].

4. Results

As a result of the evaluation of the collected plants, a total of 454 taxa were identified. It was determined that 30 taxa from the study area were endemic. The distribution of taxa according to phytogeographic regions was as follows: Anatolia-Turan 158, Mediterranean 34, Euro-Siberia 33, multi-regional and unknown phytogeographic regions 229. The first five families according to the number of taxa; Compositae 42, Leguminosae 37, Cruciferae 36, Labiatae 35, Graminea 31. The first five genera according to the number of taxa; *Astragalus* 9, *Silene* 8, *Salvia* 7, *Trifolium* 6, *Vicia* 6. *Allium adiyamanense* Yıld. & Kılıç was identified as a new and endemic species by the Project members. Photographs of some of the detected taxa and some images from the research area were given as supplementary material.

The localities, habitats and altitudes where the plants are collected are shown as codes in the list below and the locality and habitats of the taxa are indicated by using these codes in the plant list.

1. Çelikhan road right sections 8-10. km slopes, right and left of the road, stony areas, 1350-1400 m.

2. Yeşilyayla village surroundings, steppe areas, 1700-1800 m.

3. Akdağ northern slopes, steppe-stony areas, 1650-1750 m.

4. Northern parts of Şerefhan village, humid areas, 1400-1500 m.

5. Around Doğanlı village, degraded forest clearing, 1400-1500 m.

6. Eastern parts of Şemikan village, steppe, 1100-1200 m.

7. Mountains, slopes, steppe areas throughout Karaçayır village, 1300-1400 m.

8. Akdag, on the southwest slopes of the vineyards and around the summit, 1400-1500 m.

9. Eastern and western parts of Mutluca village, steppe areas, 1350-1450 m.

10. Southern and northern parts of Doğanlı village, steppe, humid areas, 1250-1350 m.

11. Kuyucak village surroundings, moist-stony habitats, 950-1050 m.

12. Çelikhan road, right sections, roadside, slopes, steppe stony areas, 1300-1400 m.

13. Konakdere village surroundings, forest clearings and steppe, 1300-1400 m.

14. Çatalağaç village entrance, roadsides, 1300-1400 m.

15. Northern parts of Şahverdi village plateau, humid areas, 1250-1350 m.

16. Sirinsu fountain surroundings, slopes, stream sides, 1200-1300 m.

17. Mustafabeyli village surroundings, slopes, 1250-1350 m.

18. Şıhment area, northern slopes of Akdağ, around the fountain, 1850-1950 m.

19. Different habitats around the Güvenli village, 1300-1450 m.

20. Southern parts of Karadere village, slopes, 1400-1500 m.

21. Rezip village surroundings, steppe, 1000-1100 m.

22. Areas of Eti Bakır Krom business, humid, steppe regions, 1350-1500 m.

23. Yeşilyayla village surroundings, humid areas, 1700-1800 m.

24. Celikhan road 25-30 km, right and left of the road, slopes, 1300-1400 m.

25. Southern parts of Ormaniçi village, slopes, 1350-1450 m.

26. Eastern parts of Gökçay village, steppe-stony areas, 1400-1500 m.

27. Bulam village entrance, roadsides, 1250-1400 m.

28. Korucak village surroundings, steppe areas, 1350-1450 m.

29. Çelikhan road 35-40. km, right and left slopes of the road, 1350-1500 m.

30. Çelikhan, Başpınar neighborhood upper parts, 1500-1600 m.

31. Akdag, northern slopes, around Barziv, 1800-1900 m.

32. Eskiköy hamlet, stony and steppe areas at the upper parts of the mine, 1500-1550 m.

33. Çelikhan road left-right sections 45-50 km, slopes, 1400-1500 m.

34. Southern parts of Koçali village, steppe, 1150-1200 m.

35. Steppe south of Yoğutlu village, 1350-1500 m.

36. Aksu village, Çığdere locality, 900-1000 m.

37. Deveboynu village surroundings, steppe areas, 1250-1400 m.

38. Area around Recep village, moist habitats, 1300-1400 m.

39. From Adıyaman to Çelikhan, on the 55-60 th km of the road, right-left sections, slope, 1100-1200 m.

40. Between Çelikhan and Yeşilyurt, 15-20. km, right and left of road, stony slopes, 1350-1450 m.

41. Steppe slopes between Köseuşağı and Yeşilyayla villages, 1650-1750 m.

42. Between Koçali and Adıyaman, 10 km after Koçali, Ouercetum, sandy hills, 1300-1400 m.

43. Between Yesilyurt-Çelikhan, slopes, rocky and stony habitats, 1650-1865 m.

44. Humid areas between Yedioluk and Kozan villages, 1150-1250 m.

45. Kuyucak village surroundings, steppe habitats, 950-1050 m.

46. Between Kavak and Pınarbaşı villages, steppe, 1300-1400 m.

47. Between Koçali and Çelikhan, watery valley, oak (*Quercus brandii*) forest, 1060-1160m.

48. Derinsu village surroundings, moist habitats, 1100-1200 m.

49. Between Koçali and Çelikhan, Doğanlı village, Meydan hill, 1200-1300 m.

50. From Çelikhan to Akdağ, forest areas, 1600-1700 m.

4.1. Plant List

Abbreviations used in plant list are as follows; Akd.: Mediterranean; Av.-Sib.: Euro-Siberian; An.-Tur.: Anadolu-Turan; End.: Endemic; ÖK: Ömer Kılıç; ŞY: Şinasi Yıldırımlı, Fa: fanerophyte; Hk: hemicryptophyte; Ka: kamefit; Cr: cryptophyte; T: therophyte; EN: endangered; VU: vulnerable; LC: least concern; NT: near threatened.

PTERIDOPHYTA

DENNSTAEDTIACEAE

Pteridum aquilinum (L.) Kuhn, 7051, 02.07.2020, Hk.

ADIANTACEAE

Adiantum capillus-veneris L., 36, 18.06.2020, ÖK 6992. Hk.

EQUISETACEAE

Equisetum ramosissimum Desf., 10, 20.05.2021, ÖK 7112. Kr.

ATHYRIACEAE

Cystopteris fragilis (L.) Bernh., 4, 12.05.2022, ÖK 7351. Hk.

SPERMATOPHYTA

GYMNOSPERMAE

CUPRESSACEAE

Juniperus oxycedrus L., 8, 14.06.2021, ÖK 7195. Fa.

PINACEAE

Cedrus libani A.Rich var. *libani,* 2, 25.05.2022, ÖK 7352. Fa.

Picea orientalis (L.) Link, 30, 10.06.2021, ÖK 7196. Fa.

Pinus nigra Aiton. subsp. *pallasiana* (Lamb.) Holmboe, 30, 15.06.2021, ÖK 7197. Fa.

EPHEDRACEAE

Ephedra major Host, 16, 26.05.2021, ÖK 7113. Ka.

ANGIOSPERMAE

RANUNCULACEAE

Caltha polypetala Hochst. ex Lorent, 9, 10.06.2020, ÖK 7047. Hk.

Nigella nigellastrum (L.) Wilk., 19, 10.06.2020, ÖK 7050. Hk.

Delphinium peregrinum L., 1, 16.06.2021, ÖK 7198. Hk.

Consolida orientalis (Gay.) Schröd., 2, 15.04.2022, ÖK 7300. T.

Clematis flammula L., 3, 02.06.2020, ÖK 7042. Hk.

Adonis aestivalis L. subsp. *aestivalis*, 4, 20.05.2021, ÖK 7114. T.

Ranunculus cuneatus Boiss., 13, 12.06.2022, ÖK 7401. Hk.

Ranunculus damascenus Boiss. & Gaill., 1, 23.06.2022, ÖK 7442. An.-Tur. Kr.

Ceratocephalus falcatus (L.) Pers., 2, 12.06.2020, ÖK 6994. T.

Thalictrum minus L. var. *minus* Boiss., 5, 16.06.2020, ÖK 6995. Hk.

Anemone coronaria L., 6, 01.06.2020, ÖK 6990. Kr.

BERBERIDACEAE

Bongardia chrysogonum (L.) Griseb., 3, 17.06.2020, ÖK 6996. An.-Tur. Hk.

Leontice leontopetalum L. subsp. *leontopetalum* 4, 17.06.2020, ÖK 6997. Hk.

PAPAVERACEAE

Glaucium corniculatum (L.)Rud.subsp.*refractum* (Nàb.)Cullen, 7,16.06.2021,ÖK 7199.An.-Tur. Hk.

Roemeria hybrida (L.) DC. subsp. *hybrida,* 8, 16.05.2020, ÖK 6940. T.

Papaver rhoeas L., 9, 14.05.2020, ÖK 6941. Hk.

Papaver clavatum Boiss., 31, 04.05.2021, ÖK 7115. Hk. End.

Hypecoum imberbe Sibth. & Sm., 11, 16.04.2021, ÖK 7101. T.

Corydalis haussknechtii Liden, 12, 24.04.2022, ÖK 7301. Kr.

Fumaria officinalis L., 13, 16.05.2020, ÖK 6942. T.

BRASSICACEAE

Brassica deflexa Boiss, 14, 21.05.2021, ÖK 7116. T. An.-Tur.

Sinapis arvensis L. subsp. *arvensis*, 15, 18.04.2022, ÖK 7302. T.

Conringia orientalis (L.) Andrz., 16, 01.05.2020, ÖK 6943. T.

Cardaria draba (L.) Desv. subsp. *draba,* 17, 04.05.2021, ÖK 7117. Hk.

Coluteocarpus vesicaria (L.) Holmboe subsp.*vesicaria*, 18,14.05.2021, ÖK 7118. An.-Tur. Hk.

Aethionema adiyamanense Yıld. & Kılıç, 47, 18.06.2019, ŞY 44198. An.-Tur. Hk. End. New species. NT.

Aethionema arabicum (L.) Andrz. ex DC., 38, 20.05.2020, ÖK 6944. T.

Aethionema schistosum Boiss. & Kotschy, 42, 20.05.2020, ŞY 30793.

Aethionema membranaceum (Desf.) DC. 40, 24.11.2019, ŞY 43178

Erysimum smyrnaeum Boiss. & Balansae, 40, 24.11.2019, ŞY 43179.

Fibigia clypeata (L.) Medicus 40, 23.05.2017, ŞY 43180.

Fibigia eriocarpa (DC.) Boiss. 40, 23.05.2017, ŞY 43181.

Thlaspi arvense L., 32, 04.05.2020, ÖK 6945. T.

Capsella bursa-pastoris (L.) Medik., 13, 20.03.2020, ÖK 6899. T.

Alyssum praecox Boiss. et Bal. var. *praecox*, 15, 20.04.2021, ÖK 7102. End. LC. Ka.

Alyssum murale Waldst. & Kit. var. *murale*, 16, 01.05.2020, ÖK 6946. T.

Draba nemorosa L., 17, 14.05.2020, ÖK 6947. T.

Arabis deflexa Boiss., 18, 15.03.2020, ÖK 6890. Akd. Hk.

Barbarea auriculata Hausskn. ex Bornm. var. *auriculata*, 19, 20.04.2020, ÖK 6936. End. Hk.

Isatis candolleana Boiss. 20, 24.04.2022. ÖK 7303. End. Hk. An.-Tur.

Cardamine uliginosa Bieb., 21, 20.05.2020, ÖK 6948. Hk.

Drabopsis verna K. Koch, 22, 01.05.2021, ÖK 7119. An.-Tur. T.

Hesperis bicuspidata (Willd.) Poir., 23, 16.04.2020, ÖK 6937. Hk.

Erysimum eginense Hausskn. ex Bornm., 24, 20.03.2020, ÖK 6895. End. Hk.

Alliaria petiolata (M. Bieb.) Cavara & Grande, 25, 27.03.2020, ÖK 6898. T.

Sisymbrium altissimum L., 26, 21.06.2020, ÖK 6999. T.

Descuraina sophia (L.) Webb ex Prantl, 27, 24.05.2021, ÖK 7120. T.

RESEDACEAE

Reseda armena Boiss. var. *armena*, 28, 06.06.2021, ÖK 7210. End. An.-Tur. Hk.

CISTACEAE

Helianthemum ledifolium (L.) Mill. var. *ledifolium*, 29, 21.06.2020, ÖK 7000. Hk.

VIOLACEAE

Viola odorata L., 30, 20.03.2020, ÖK 6896. T.

Viola parvula Tineo, 31, 20.04.2021, ÖK 7103. T.

POLYGALACEAE

Polygala supina Schreb., 32, 21.06.2020, ÖK 7001. Hk.

PORTULACACEAE

Portulaca oleracea L., 33, 02.05.2020, ÖK 6949. T.

CARYOPHYLLACEAE

Arenaria macrosephala Boiss., 34, 04.05.2022, ÖK 7350. End. LC. Hk.

Minuartia hybrida (Vill.) Sch. subsp. *hybrida*, 35, 01.05.2020, ÖK 6950. Akd. T.

Stellaria media (L.) Vill. subsp. *media*, 36, 20.03.2022, ÖK 7295. T.

Cerastium longifolium Willd., 37, 27.04.2020, ÖK 6922. T.

Holosteum umbellatum L. var. *umbellatum*, 38, 20.04.2022, ŞY 44418. T.

Sagina procumbens L., 39, 01.05.2021, ÖK 7121. Hk.

Dianthus crinutus Sm. var. *crinutus*, 40, 22.06.2020, ÖK 7002. Hk.

Velezia rigida L., 7052, 13.07.2020, ŞY 44217. T.

Saponaria prostrata Willd. subsp. *anatolica* Hedge, 2, 16.06.2021, ÖK 7211. End. An.-Tur. T.

Gysophila aucheri Boiss. 3, 02.06.2020, ÖK 7003. End. VU. An.-Tur. Hk.

Vaccaria pyramidata Medik.var.*grandiflora* (Fisch. ex DC.)Cullen, 4, 14.06.20,ÖK 7004.An-Tur. T.

Silene spergulifolia (Desf.) M. Bieb., 5, 16.06.2020, AD 7005. An.-Tur. Hk.

Silene ampullata Boiss., 6, 20.05.2021, ÖK 7122. An.-Tur. Hk.

Silene vulgaris (Moench) Garcke var. *vulgaris*, 7, 18.06.2020, ÖK 7006. Hk.

Silene compacta Fisch., 8, 30.05.2020, ÖK 6951. Hk.

Agrostemma githago L., 9, 11.06.2021, ÖK 7212. T.

ILLECEBRACEAE

Herniaria incana Lam., 10, 21.04.2020, ÖK 6923. Hk.

Scleranthus annuus L. subsp. *annuus*, 11, 16.06.2021, ÖK 7213. T.

Paronychia kurdica Boiss. subsp. *kurdica* var. *kurdica*, 12, 01.05.2020, ÖK 6952. Hk.

POLYGONACEAE

Polygonum cognatum Meisn., 13, 16.05.2020, ÖK 6953. Hk.

Polygonum arenastrum Boreau, 14, 23.06.2020, ÖK 7007. T.

Polygonum lapathifolium L., 15, 11.05.2020, ÖK 6954. T.

Rumex acetosella L. 16, 16.05.2021, ÖK 7123. Hk.

Rumex scutatus L. 17, 01.06.2021, ÖK 7214. Hk.

Rheum ribes L., 42, ŞY 30802, 16.04.2016. Hk.

Rheum telianum İlçim, 3, 10.06.2022, ÖK 7430. Hk. End. NT.

CHENOPODIACEAE

Chenopodium album L. subsp. *album* var. *album*, 18, 19.06.2020, ÖK 7008. T.

Chenopodium foliosum (Moench) Asch., 19, 20.04.2020, ÖK 6924. T.

AMARANTHACEAE

Amaranthus albus L., 20, 11.06.2021, ÖK 7215. T.

TAMARICACEAE

Tamarix tetrandra Pallas ex M. Bieb., 22, 16.05.2021, ÖK 7124. Fa.

HYPERICACEAE

Hypericum scabrum L., 21, 20.05.2020, ÖK 6955. An.-Tur. Ka.

Hypericum perforatum L.,23, 11.06.2021, ÖK 7216. Hk.

MALVACEAE

Malva neglecta Wallr., 24, 21.04.2020, ÖK 6925. Hk.

Alcea pallida Waldst. & Kit., 25, 01.06.2021, ÖK 7217. Hk.

Hibiscus trionum L., 26, 18.05.2020, ÖK 6956. T.

LINACEAE

Linum nodiflorum L., 27, 20.06.2020, ÖK 7009. Akd. Hk.

GERANIACEAE

Geranium tuberosum L. subsp. *tuberosum*, 28, 25.03.2022, ÖK 7292. An.-Tur. Kr.

Geranium stepporum P.H. Davis, 29, 25.04.2022, ÖK 7304. An.-Tur. Kr.

ZYGOPHYLLACEAE

Tribulus terrestris L., 30, 26.05.2020, ÖK 6957. Hk.

RUTACEAE

Haplophyllum armenum Spach, 31, 19.06.2020, ÖK 7010. End. Ka

RHAMNACEAE

Paliurus spina-christi Mill., 32, 20.06.2021, ÖK 7218. Fa.

FABACEAE

Colutea cilicica Boiss. & Balansa, 33, 20.05.2020, ÖK 6958. Fa.

Astragalus gummifer Labill., 34, 22.06.2020, ÖK 7011. An.-Tur. Ka.

Astragalus bicolor Lam., 35, 14.06.2020, ÖK 7012. End. An.-Tur. Ka.

Astragalus declinatus Wild, 36, 23.06.2020, ÖK 7013. An.-Tur. Ka.

Astragalus compactus Lam., 37, 21.06.2021, ÖK 7219. End. An.-Tur. Ka.

Vicia cracca L. subsp. *stenophylla* Vel., 38, 23.06.2020, ÖK 3806. Hk.

Vicia ervilia (L.) Willd., 40, 23.04.2020, ÖK 6926. Akd. T.

Vicia cuspidata Boiss., 39, 23.06.2021, ÖK 7220. Akd. T.

Vicia tetrasperma (L.) Schreb., 13, 23.06.2021, ÖK 7215. T.

Lathyrus incospicus L., 4, 23.05.2020, ÖK 6959. Hk.

Pisum sativum L. subsp. *elatius* var. *pumilio*, 16, 11.03.2020, ÖK 6889. Akd. T.

Trifolium campestre Schreb., 32, 18.05.2020, ÖK 6960. Hk.

Trifolium pratense L. var. *pratense*, 20, 18.05.2021, ÖK 7125. T.

Trifolium arvense L. var. *arvense*, 25, 23.06.2020, ÖK 7014. T.

Trifolium angustifolium L. var. *intermedium* (Guss.) Gib. & Belli, 26, 23.06.2020, ÖK 7015. T.

Trifolium purpureum L. var. *purpureum*, 27, 21.06.2020, ÖK 7016. T. Det: ŞY.

Trifolium repens L. var. *repens*, 15, 20.05.2020, ÖK 6961. T

Melilotus officinalis (L.) Desr., 6, 26.06.2020, ÖK 7017. Hk.

Melilotus alba Desr., 26, 16.06.2021, ÖK 7222. Hk.

Trigonella brachycarpa (Fisch.) Moris, 28, 23.06.2021, ÖK 7223. An.-Tur. Hk.

Medicago sativa L. subsp. *sativa*, 38, 16.05.2020, AD 3711. Hk.

Medicago rigidula (L.) All. var. *cinerascens* (Jord.) Rouy, 29, 13.06.2020, ÖK 7018. T.

Medicago radiata L., 40, ŞY 44224, 13.07.2018. T.

Lotus gebelia Vent. var. *gebelia*, 5, 25.04.2020, ÖK 6927. Hk.

Coronilla varia L. subsp. *varia*, 24, 20.05.2021, ÖK 7126. Hk.

Onobrychis caput-galli (L.) Lam., 19, 20.05.2020, ÖK 6962. Akd. Hk.

Cicer anatolicum Alef., 22, 10.06.2022, ÖK 7411. Hk

Trigonella kotschyi Fenzl, 24, 04.06.2021, ÖK 7224. End. An.-Tur. T.

Robinia pseudoacacia L., 22, 17.06.2020, ÖK 7019. Fa.

Ebenus haussknechtii, 31, 17.06.2021, ÖK 7225. End. Hk.

Sophora alopecuroides L. var. *alopecuroides,* 18, 04.06.2020, ÖK 7020. Kr.

ROSACEAE

Filipendula vulgaris Moench, 33, 22.06.2020, ÖK 7021. Av.-Sib. Hk.

Rubus sanctus Schreb., 36*,* 11.06.2020, ÖK 7022. Fa.

Potentilla recta L., 36, 16.06.2021, ÖK 7226. Hk.

Potentilla reptans L., 30, 23.06.2020, ÖK 7023. Hk.

Sanguisorba muricata Franch subsp. *muricata*, 36, 07.05.2020, ŞY 3789. Hk

Geum urbanum L., 1, 23.06.2020, ÖK 7024. Av.-Sib. Kr.

Agrimonia eupatoria L., 2, 13.06.2021, ÖK 7227. Hk.

Rosa canina L., 23, 21.06.2020, ÖK 7025. Fa.

Crataegus monogyna Jacq. subsp. *monogyna*, 37, 16.06.2020, ÖK 7026. Fa.

Crataegus meyeri Pojark, 18, 21.06.2021, ÖK 7228. An.-Tur. Fa.

LYTHRACEAE

Lythrum salicaria L., 23, 02.06.2022, ÖK 7407. Av.-Sib. Hk.

ONAGRACEAE

Epilobium minutiflorum Hausskn., 15, 11.06.2021, ÖK 7248. An.-Tur. Hk.

CRASSULACEAE

Rosularia radiciflora Boriss. subsp. *radiciflora,* 29, 16.05.2021, ÖK 7127. An.-Tur. Hk.

Umbilicus erectus DC., 12, 21.06.2022, ÖK 7463. Kr.

Sedum sempervivoides Bieb., 32, 23.06.2020, ÖK 7038. Hk.

APIACEAE

Grammosciadium platycarpum Boiss. & Hausskn., 40, ŞY 44179. An.-Tur. Hk.

Eryngium campestre L. var. *virens* Link, 2, 16.05.2020, ÖK 7027. Hk.

Chaerophyllum crinitum Boiss., 3, 02.06.2021, ÖK 7229. An.-Tur. Kr.

Anthriscus cerefolium (L.) Hoffm., 4, 13.06.2022, ÖK 7437. Hk.

Scandix pecten-veneris L., 5, 13.06.2021, ÖK 7230. T.

Bifora radians M.Bieb., 6, 23.05.2020, ÖK 6964. T.

Pimpinella adiyamanensis Yıld. & Kılıç.,34,25.04.2020, ŞY 44185.An.-Tur. Hk. End. NT.

Lecokia cretica (Lam.) DC., 24, 27.04.2020, ŞY 30787. Kr.

Stenotaenia macrocarpa Freyn & Sint., 7, 14.06.2020, ÖK 7028. End. T.

Bupleurum rotundifolium L., 8, 23.05.2020, ÖK 6965. T.

Falcaria vulgaris Bernh., 9, 23.06.2021, ÖK 7231. Hk.

Ferula orientalis L., 10, 10.05.2020, ÖK 6960. An.-Tur. Hk.

Malabaila dasyantha (K.Koch) Grossh., 11, 18.05.2020, ÖK 6966. An.-Tur. Hk.

Heracleum persicum Desf., 15, 02.06.2021, ÖK 7232. An.-Tur. Hk.

Torilis leptocarpa (Hochst.) Towsend, 12, 02.06.2021, ÖK 7233. An.-Tur. Hk.

Zosima absinthifolia (Vent.) Link, 13, 14.06.2020, ÖK 7029. Kr.

Astrodaucus orientalis (L.) Drude, 14, 16.06.2021, ÖK 7234. An.-Tur. T.

Caucalis platycarpos L., 16, 01.06.2020, ÖK 7030. T.

Artedia squamata L., 17, 21.06.2021, ÖK 7235. T.

Asperula arvensis L., 18, 11.06.2020, ÖK 7031. Akd. T.

Galium verum L. subsp. *verum*, 19, 16.06.2020, ÖK 7032. Av.-Sib. Ka.

Galium humifusum M. Bieb., 20, 23.06.2021, ÖK 7236. Hk.

Callipeltis cucullaria (L.) Steven, 21, 23.05.2020, ÖK 6967. An.-Tur. T.

Cruciata articulata (L.) Ehrend., 22, 25.05.2021, ÖK 7128. An.-Tur. Hk.

VALERIANACEAE

Valeriana sisymbriifolia Vahl., 23, 14.05.2020, ÖK 6968. An.-Tur. Hk.

Valerianella pumila (L.) DC., 24, 21.06.2021, ÖK 7237. Hk.

DIPSACACEAE

Cephalaria hirsuta Stapf, 25, 11.06.2020, ÖK 7033. An.-Tur. Hk.

Scabiosa persica Boiss., 26, 16.05.2020, ÖK 6969. An.-Tur. T.

Scabiosa rotata M. Bieb., 27, 14.05.2021, ÖK 7129. An.-Tur. T.

Pterocephalus plumosus (L.) Coult., 28, 23.06.2020, ŞY 44220. Hk.

ASTERACEAE

Xanthium spinosum L., 29, 23.06.2020, ÖK 7034. T.

Xanthium strumarium L. subsp. *strumarium*, 30, 16.06.2021, ÖK 7259. T.

Inula oculus-christi L., 36, 21.06.2020, ÖK 7035. Av.-Sib. Kr.

Helichrysum plicatum DC. subsp. *plicatum*, 31, 01.06.2020, ÖK 7036. Ka.

Conyza canedensis (L.) Cronquist, 32, 16.06.2020, ÖK 7037. T.

Bellis perennis L., 36, 18.05.2021, ÖK 7130. Av.-Sib. Hk.

Senecio vernalis Waldst. & Kit., 37, 16.06.2020, ÖK 7038. T.

Tussilago farfara L., 38, 27.03.2020, ÖK 6859. Av.-Sib. Hk.

Anthemis tinctoria L. var. *tinctoria*, 39, 21.06.2020, ÖK 7039. Hk.

Anthemis coelopoda Boiss. var. *coelopoda*, 40, 14.06.2020, ÖK 7040. Hk.

Achillea vermicularis Trin., 34, 13.06.2020, ÖK 7041. An.-Tur. Hk.

Achillea biebersteinii Afan., 21, 18.05.2020, ÖK 6970. An.-Tur. Hk.

Achillea millefolium L. subsp. *pannonica* (Scheele) Hayek, 4, 31.06.2021,ÖK 7238. Av.-Sib. Hk.

Tanacetum densum (Lab.) subsp. *amani* Heywood, 26, 13.06.2021, ÖK 7239. End. Hk.

Tanacetum abrotenifolium (L.) Druce, 16, 13.06.2020, ÖK 7042. An.-Tur. Hk.

Gundelia tournefortii L. var. *armata* Freyn & Sint., 27, 20.05.2020, ÖK 6971. An.-Tur. Hk.

Gundelia komagenensis Fırat, 42, ÖK 7053, 13.07.2020. An.-Tur. Hk. End.

Arctium minus (Hill) Bernh. subsp. *pubens* (Bab.) Arènes, 28,14.06.2020,ÖK 7043. Av.-Sib. Hk.

Onopordum carduchorum Bornm. & Beauverd, 28, 21.06.2021, ÖK 7240. An.-Tur. Hk.

Cirsium amani Post., 29, 13.06.2020, ÖK 7045. Hk.

Cirsium macrobotrys (C.Koch) Boiss. 30, 29.06.2021, ÖK 7241. Hk.

Picnomon acarna (L.) Cass., 31, 13.06.2020, ÖK 7046. Akd. T.

Carduus nutans L. subsp. *nutans*, 28, 13.07.2020, ÖK 7054. Hk.

Carduus pycnocephalus L. subsp. *breviphyllarius* Davis, 29, 25.04.2022, ÖK 7305. Hk.

Centaurea solstitialis L. subsp. *solstitialis*, 30, 16.05.2022, ÖK 7353. T.

Centaurea iberica Trev. ex Spreng., 31, 16.05.2020, ÖK 6972. Hk.

Centaurea depressa M. Bieb., 32, 21.06.2020, ÖK 7047. T.

Crupina crupinastrum (Moris.) Vis., 40, 18.05.2021, ÖK 4135. T.

Crupina vulgaris Cass. 47, ŞY 44187, 13.07.2018. T.

Cnicus benedictus L. var. *benedictus*, 36, 13.06.2020, ŞY 44191. T.

Xeranthemum annuum L., 34, 14.06.2020, ÖK 7048. T.

Chardinia orientalis (L.) Kuntze, 35, 21.06.2020, ŞY43169. An.-Tur. T.

Echinops orientalis Trautv., 37, 13.06.2020, ÖK 7049. An.-Tur. Hk.

Klasea oligocephala (DC.) Greuter & Wagenitz, 42, Ş.Y 30789. An.-Tur. Hk.

Scorzonera suberosa K.Koch subsp. *suberosa*, 39, 24.05.2021, ÖK 7131. An.-Tur. Hk.

Scorzonera phaeopappa Boiss., 40, 28.11.2020*,* ŞY 43170. An.-Tur. Hk.

Scorzonera mollis M.Bieb. subsp. *mollis*, 43, ŞY 43171. 28.11.2020. An.-Tur. Hk.

Tragopogon aureus Boiss., 40, 13.06.2021, ÖK 7242. An.-Tur. Hk.

Leontodon asperrimus (Willd.) J. Ball., 27, 20.05.2021, ÖK 7132. An.-Tur. Hk.

Picris kotschyi Boiss., 28, 21.06.2020, ÖK 7050. Hk.

Pilosella cymosa (L.) C.H. & F.H. Schultz, 28, 13.06.2020, ÖK 7051. Av.-Sib. Hk.

Taraxacum crepidiforme DC. subsp. *crepidiforme*, 35, 14.06.2021, ÖK 7243. An.-Tur. Hk.

Crepis sancta (L.) Babc., 11, 13.06.2020, ÖK 7052. T.

Crepis foetida L. subsp. *foetida*, 12, 18.04.2021, ÖK 7104. T.

CAMPANULACEAE

Campanula involucrata Aucher ex A.DC., 9, 18.04.2021, ÖK 7105. An.-Tur. Hk.

Asyneuma amplexicaule (Willd.) Hand.-Mazz. subsp. *amplexicaule* var. *angustifolium* (Boiss.) Bornm., 24, 24.06.2020, ÖK 7085. An.-Tur. Hk.

Legousia pentagonia (L.) Thellung, 13, 14.04.2021, ÖK 7105. Akd. T.

ASCLEPIDIACEAE

Vincetoxicum canescens (Willd.) Decne. subsp. *canescens*, 24, 16.06.2020, ÖK 7053. Kr.

GENTIANACEAE

Centaurium erythraea Rafn. subsp. *turcicum* (Velen.) Melderis, 28, 03.06.2021, ÖK 7285. T.

Gentiana olivieri Griseb., 16, 14.05.2020, ÖK 6972. T.

CONVOLVULACEAE

Convolvulus galaticus Rostan ex Choisy, 32, 14.06.2020, ÖK 7054. End. An.-Tur. Hk.

CUSCUTACEAE

Cuscuta brevistyla A. Braun., 18, 16.06.2022, ÖK 7440. T.

BORAGINACEAE

Heliotropium circinatum Griseb., 28, 16.05.2020, ÖK 6974. An.-Tur. T.

Heliotropium europaeum L., 14, 14.06.2020, ÖK 7055. Akd. T.

Rochelia disperma (L. f.) K. Koch var. *disperma*, 21, 31.06.2021, ÖK 7244. T.

Asperugo procumbens L. 40, 24.05.2021, ÖK 7133. Av.-Sib. T.

Myosotis heteropoda Trautv., 2, 16.05.2022, ÖK 7354. An.-Tur. T.

Paracaryum racemosum (Schreb.)Brit var.*racemosum*, 29, 14.05.20,ÖK 6974. End.An.-Tur. Hk. LC.

Buglossoides arvensis (L.) I.M. Johnst., 17, 24.04.2020, ÖK 6928. T.

Echium glomeratum Poir., 29, 16.05.2020, ÖK 6975. Akd. Hk.

Echium italicum L., 27, 23.05.2022, ÖK 7355. Akd. Hk.

Moltkia coerulea (Willd.) Lehm., 24, 13.06.2020, ÖK 7056. An.-Tur. Hk.

Onosma sericeum Willd., 29, 23.05.2022, ÖK 7356. An.-Tur. Hk.

Onosma albo-roseum Fisch.& C.A.Mey. subsp. *albo-roseum* var. *albo-roseum*, 17, 13.06.2020, ÖK 7057. An.-Tur. Hk.

Rindera caestiposa (A. DC.) Bunge, 18, 14.06.2021, ÖK 7245. An.-Tur. Hk

Cerinthe minor L. subsp. *auriculata* (Ten.) Domac, 8, 21.06.2020, AD 3815. Av.-Sib. Hk.

Brunnera orientalis (Schenk.) John., 39, 13.06.2020, ÖK 7058. Hk.

Anchusa azurea Mill. var. *azurea*, 38, 16.05.2020, ÖK 6976. Hk.

Anchusa strigosa Labill., 37, 13.05.2022, ÖK 7357. Hk.

Nonea melanocarpa Boiss., 15, 18.05.2022, ÖK 7358. An.-Tur. T.

Nonea caspica (Willd.) G. Don, 27, 18.05.2021, ÖK 7134. T.

Alkanna tinctoria (L.) Tausch subsp. *tinctoria*, 36, 16.05.2022, ÖK 7359. Akd. Hk.

Solenanthus stamineus (Desf.) Wettst., 35, 16.05.2021, ÖK 7135. Hk.

SOLANACEAE

Solanum nigrum L. subsp. *nigrum*, 33, 11.06.2020, ÖK 7059. T.

Hyoscyamus niger L., 34, 24.05.2022, ÖK 7360. Hk.

SCROPHULARIACEAE

Verbascum diversifolium Hochst., 32, 21.06.2021, ÖK 7246. End. An.-Tur. Hk.

Verbascum lasianthum Boiss. ex Benth., 31, 13.06.2021, ÖK 7230. Hk.

Scrophularia scopolii (Hoppe ex) Pers. var. *scopolii*, 30, 21.05.2022, ÖK 7361. Hk.

Scrophularia rimarum Bornm., 28, 16.04.2021, ÖK 7107. Ka.

Linaria grandiflora Desf., 27, 13.06.2020, ÖK 7060. An.-Tur. Hk.

Veronica bozakmanii M.A. Fisch., 26, 18.04.2020, ÖK 6930. An.-Tur. T.

Veronica orientalis Mill. subsp. *orientalis*, 25, 13.06.2021, ÖK 7258. Ka.

Veronica bornmuellerii Hausskn., 24, 18.04.2021, ÖK 7108. An.-Tur. T.

Bungea trifida (Vahl) C.A.Mey., 22, 18.05.2020, ÖK 6977. An.-Tur. Hk.

OROBANCHACEAE

Orobanchae aegyptica Pers., 21, 03.06.2021, ÖK 4222. T.

ACANTHACEAE

Acanthus dioscoridis L. var. *dioscoridis*, 20, 14.06.2020, ÖK 7061. An.-Tur. Hk.

GLOBULARIACEAE

Globularia trichosantha Fisch. & C.A. Mey. subsp. *trichosantha*, 15, 16.05.2021, ÖK 4147. Hk.

LAMIACEAE

Ajuga chamaepitys (L.) Schreb. subsp. *chia* (Schreb.) Arcang.var.*chia*, 19,18.05.2022, ÖK 7362. Hk.

Teucrium parviflorum Schreb., 18, 14.05.2020, ÖK 6978. An.-Tur. Hk.

Teucrium chamaedrys (Celàk.) Rech. fil. subsp. *sinuatum*, 17, 30.05.2020, ÖK 6979. An.-Tur. Ka.

Teucrium polium L., 16, 14.05.2021, ÖK 7137. Hk.

Scutellaria orientalis L. subsp. *bicolor* (Hochst.)J.R. Edm.,17,01.06.2021,ÖK 7228.End.An-Tur. Ka.

Phlomis leucophracta P.H. Davis & Hub.-Mor., 16, 23.06.2021, ÖK 7246. Hk.

Lamium amplexicaule L. subsp. *amplexicaule*, 15, 14.04.2020, ÖK 6931. Hk.

Lamium macrodon Boiss. & A. Huet., 34, 18.04.2022, ÖK 7306. An.-Tur. T.

Marrubium astracanicum Jacq. subsp. *astracanicum*, 14, 14.05.2022, ÖK 7363. Hk.

Sideritis montana L. subsp. *montana*, 13, 14.04.2022, ÖK 7307. Akd. T.

Stachys lavandulifolia Vahl var. *brachydon* Boiss., 12, 14.05.2020, ÖK 6980. An.-Tur. Ka.

Stachys atherocalyx K. Koch, 11, 03.06.2020, ÖK 7039. Av.-Sib. T.

Stachys rupestris Montbret et Aucher ex Benth., 27, 03.06.2020, ÖK 7040. An.-Tur. Hk.

Nepeta transcaucasica Grossh., 27, 16.05.2020, ÖK 6981. An.-Tur. Hk.

Lallemantia peltata Fisch. & C.A. Mey., 10, 18.04.2021, ÖK 7111. An.-Tur. T.

Prunella vulgaris L., 4, 21.05.2022, ÖK 7364. Av.-Sib. Hk.

Origanum vulgare L. subsp. *gracile* (K.Koch) Letswaart, 9, 14.06.2020, ÖK 7062. An.-Tur. Hk.

Satureja hortensis L., 8, 01.05.2020, ÖK 6982. Hk.

Thymus pubescens Boiss. & Kotschy ex Čelak var. *pubescens*, 7, 23.06.2020, ÖK 7063. An.-Tur. Ka.

Thymus kotschyanus Boiss. & Hohen. var. *kotschyanus*, 6, 30.05.2020, ÖK 6983. An.-Tur. Ka.

Mentha longifolia (L.) Huds. subsp. *longifolia*, 4, 01.06.2022, ÖK 7435. Av.-Sib. Hk.

Ziziphora capitata L., 5, 14.05.2022, ÖK 7360. An.-Tur. T.

Salvia verticillata L. subsp. *verticillata,* 3, 14.06.2020, ÖK 7064. Hk.

Salvia trichoclada Benth., 2, 24.06.2021, ÖK 7247. An.-Tur. Hk.

Salvia multicaulis Vahl., 1, 21.05.2022, ÖK 7365. An.-Tur. Hk.

Salvia microstegia Boiss. & Bal., 14, 23.06.2020, ÖK 7065. An.-Tur. Hk.

Salvia virgata Jacq., 10, 14.05.2022, ÖK 7366. An.-Tur. Hk.

PLUMBAGINACEAE

Acantholimon acerosum (Willd.) Boiss. var. *acerosum*, 31, 21.06.2021, ÖK 7248. LC. An.-Tur. Ka.

PLANTAGINACEAE

Plantago lanceolata L., 36, 18.05.2020, ÖK 6984. Hk.

ELAEAGNACEAE

Elaeagnus angustifolia L., 22, 18.05.2020, ÖK 6985. Fa.

ARISTOLOCHIACEAE

Aristolochia maurorum L., 26, 23.06.2021, ÖK 7249. An.-Tur. Hk.

EUPHORBIACEAE

Euphorbia chamaesyce L., 17, 14.06.2020, ÖK 7066. T.

Euphorbia falcata L. subsp. *falcata* var. *falcata*, 15, 23.06.2020, ÖK 7067. T.

Euphorbia denticulata Lam., 10, 01.05.2020, ÖK 6986. An.-Tur. Hk.

URTICACEAE

Urtica dioica L., 36, 16.05.2020, ÖK 6987. Av.-Sib. Hk.

ULMACEAE

Celtis tournefortii Lam. 22, 23.06.2021, ÖK 7250. Ka.

FAGACEAE

Quercus libani Olivier, 1, 14.06.2020, ÖK 7068. An.-Tur. Fa.

Quercus coccifera L. 1, 14.06.2020, ÖK 7069. An.-Tur. Fa.

Quercus brantii Lindley, 47, ŞY 44227 13.07.2018. An.-Tur. Fa.

SALICACEAE

Salix alba L., 36, 21.06.2020, ÖK 7070. Av.-Sib. Fa.

Populus alba L., 16, 22.05.2022, ÖK 7367. Av.-Sib. Fa.

LILIOPSIDA (MONOCOTYLEDON)

LILIACEAE

Allium adiyamanense Yıld. & Kılıç, 47, 03.08.2019, ŞY 44252. Kr. End. NT.

Allium atroviolaceum Boiss., 26, 23.06.2020, ÖK 7071. Kr.

Allium scorodoprasum L. subsp. *rotundum* (L.) Stearn, 40, 21.06.2021, ÖK 7251. Akd. Kr.

Allium chrysantherum Boiss. & Reut., 42, 23.05.2017. ŞY 43208. Kr.

Eremurus spectabilis M. Bieb., 31, 16.05.2020, ÖK 6988. An.-Tur. Kr.

Scilla siberica Haw. subsp. *armena* (Grossh.) Mordak, 18, 25.04.2022, ÖK 7310. An.-Tur. Kr.

Puschkinia scilloides Adams var. *libanotica* (Zucc.) Boiss., 15,18.04.2020, ÖK 6932.An.-Tur. Kr.

Ornithogalum oligophyllum E.D. Clarke, 15, 15.04.2020, ÖK 6933. Kr.

Ornithogalum narbonense L. 38, 04.05.2022, ŞY 4506. Akd. Kr.

Ornithogalum yesilyurtense Yıld. & Kılıç, ŞY 45168. An.-Tur. Kr. End.

Muscari neglectum Guss., 19, 15.04.2022, ÖK 7308. Kr.

Muscari comosum (L.) Mill., 20, 16.04.2020, ŞY44253. An.-Tur. Kr.

Bellevaila pycnantha (K. Koch) Losinsk., 11, 16.04.2020, ÖK 6934. An.-Tur. Kr.

Bellevaila fominii Woronow, 38, 21.04.2022, ÖK 7309. An.-Tur. Kr.

Fritillaria latifolia Willd., 8, 01.05.2020, ÖK 6989. Akd. Kr.

Tulipa armena Boiss. var. *armena*, 40, 14.05.2021, ÖK 7138. An.-Tur. Kr.

Gagea taurica Stev., 16, 15.03.2022, ÖK 7295. An.-Tur. Kr.

Gagea villosa subsp. *villosa* var. *villosa*, 24, 25.03.2022, ÖK 7315. Akd. Kr.

Colchicum szovitsii Fisch. & C.A.Mey., 34, 15.04.2021, ÖK 7110. An.-Tur. Kr.

Merendera sobolifera C.A. Mey., 15, 25.03.2020, ÖK 3550. An.-Tur. Kr.

AMARYLLIDACEAE

Ixiolirion tataricum (Pall.) Herb. subsp. *montanum* (Labill.) Takht., 19, 24.05.2022, ÖK 7362. An.-Tur. Kr.

IRIDACEAE

Iris reticulata M. Bieb. var. *reticulata*, 12, 01.05.2020, ÖK 6768, ÖK 3779. Kr.

Iris persica L., 34, 11.04.2020, ÖK 6935. An.-Tur. Kr.

Crocus kotschyanus K. Koch subsp. *kotschyanus,* 38, 30.05.2022, ÖK 7368. Kr.

Gladiolus atroviolaceus Boiss., 47, ŞY 43210, 24.03.2018. Kr.

Gladiolus kotschyanus Boiss. 47, 24.05.2017, ŞY 43307. An.-Tur. Kr.

ORCHIDACEAE

Orchis mascula (L.) L. subsp. *pinetorum* (Boiss. & Kotschy) G.Camus, 47, 06.12.2018. ŞY 43213.

Orchis coriophora L., 23, 01.06.2020, ÖK 7047. Kr.

Ophrys reinholdii Spruner ex Fleischm. 28, 24.05.2022, ŞY 7369. Kr.

Dactylorhiza romana (Seb.) Soó subsp. *romana,* 47, ŞY 30805. Kr.

TYPHACEAE

Typha latifolia L., 16, 16.05.2022, ÖK 7382. Hk.

JUNCACEAE

Juncus inflexus L., 36, 01.06.2022, ÖK 7404. Hk.

Luzula pseudosudetica V. Krecz., 16, 02.06.2020, ÖK 7047. Öksin Elementi. Hk.

CYPERACEAE

Cyperus fuscus L., 22, 14.06.2022, ÖK 7439. Av.-Sib. Hk.

Scirpoides holoschoenus (L.) Sojak, 22, 11.05.2022, ÖK 7380. Hk.

Carex melanostachya Bieb. ex Willd.,22, 14.06.2020, ÖK 7072. Hk.

Carex distans L., 22, 11.05.2020, ÖK 6990. Av.-Sib. Hk.

POACEAE

Trisetum rigidum (Bieb.) Roemer & Schultes, 37, 21.06.2020, ÖK 7073. An.-Tur.

Elymus repens (L.) Gould subsp. *repens*, 19, 23.06.2021, ÖK 7252. An.-Tur. Hk.

Aegilops umbellulata Zhuk. subsp. *umbellulata*, 11, 14.06.2020, ÖK 7074. An.-Tur. T.

Secale ciliatoglume (Boiss.) Grossh., 6, 11.06.2020, ÖK 7075. An.-Tur. Ka.

Hordeum bulbosum L., 37, 21.06.2021, ÖK 7253. Kr.

Hordeum violaceum Boiss. & A. Huet, 24, 13.06.2020, ÖK 7042. An.-Tur. Hk.

Taeniatherum caput-medusae (L.) Nevski subsp. *crinitum* (Schreb.) Melderis, 12, 14.06.2020, ÖK 7076. An.-Tur. T.

Bromus sterilis L., 20, 23.06.2021, ÖK 7254. T.

Avena sterilis L. subsp. *sterilis*, 17, 21.06.2021, ÖK 7250. T.

Arrhenatherum kotschyii Boiss., 31, 23.06.2020, ÖK 7255. An.-Tur. Hk.

Koeleria cristata (L.) Pers., 17, 14.06.7221, ÖK 4209. Hk.

Calamagrostis pseudophrogmites (Haller f.) Koeler, 32, 03.06.2021, ÖK 7195. Av.-Sib. Hk.

Apera intermedia Hack., 15, 23.06.2020, ÖK 7078. An.-Tur. T.

Nardus stricta L., 24, 23.06.2020, ÖK 7079. Av.-Sib. Hk.

Phleum exaratum Hochst. ex Griseb. subsp. *exaratum*, 23, 03.06.2022, ÖK 7399. T.

Agrostis gigantea Roth., 23, 24.06.2020, ÖK 7080. Av.-Sib. Hk.

Vulpia myuros (L.) C.C. Gmelin, 34, 24.06.2020, ÖK 7081. T.

Psilurus incurvus (Govan) Schinz & Thell., 37, 14.06.2020, ÖK 7082. T.

Poa bulbosa L. var. *vivipara*, 2, 14.06.2020, ÖK 7083.

Catabrosa aquatica (L.) P. Beauv., 3, 15.06.2020, ÖK 7084. Hk.

Dactylis glomerata L. subsp. *glomerata*, 25, 14.06.2020, ÖK 7085. Hk.

Briza humilis M. Bieb., 4, 14.06.2021, ÖK 7259. T.

Melica persica Kunth subsp. *persica*, 5, 04.06.2021, ÖK 7106. An.-Tur. Hk.

Stipa ehrenbergiana Trin. & Rupr., 8, 02.06.2020, ÖK 7045. An.-Tur. Hk.

Phragmites australis (Cav.) Trin. ex Steud., 12, 24.06.2020, ÖK 7086. Av.-Sib. Hk.

Cynodon dactylon (L.) Pers. var. *villosus* Regel, 26, 31.06.2020, ÖK 7087. Hk.

Setaria verticillata (L.) P. Beauv. var. *verticillata*, 12, 24.06.2021, ÖK 7256. T.

Lolium perenne L., 19, 24.05.2021, ÖK 7140. Av.-Sib. Hk.

5. Discussion

This study was carried out to contribute the flora of Çelikhan District (Adıyaman). Within the scope of the study, 592 plant samples were collected by visiting the research area during the vegetation periods of 2019-2022. As a result of the evaluation of these plants, a total of 454 taxa,

295 genera belonging to 62 families, were identified. Between those, it was determined that 30 taxa from the study area were endemic. According to the number of taxa, the first families emerged as Asteraceae, Legumimosae, Brassicaceae, Lamiaceae, Poaceae. The first five genera according to the number of taxa were *Astragalus, Silene, Salvia, Trifolium* and *Vicia* respectively. The new species named *Aethionema adiyamanense* Yıld. & Kılıç, *Pimpinella adiyamanensis* Kılıç & Yıld., *Rheum telianum* İlçim, *Gundelia komagensis* Fırat, which have been introduced to the scientific world in Adıyaman in recent years, were collected again from the study area. Although the order of families containing the most taxa in our country does not change in short periods; the current order is as follows; Asteraceae, Fabaceae, Brassicaceae, Poaceae, Lamiaceae, Caryophyllaceae, Apiaceae, Scrophulariaceae. The order of the five families containing the most taxa in research area is Asteraceae, Fabaceae, Brassicaceae, Lamiaceae, Poaceae, and the first three of the families containing the most taxa in the Flora of Turkey are the same and similar to other orders. The order of Lamiaceae and Poaceae families has changed. The families in the first place in terms of the number of taxa in our research area reflect the general characteristics of the Eastern Anatolian Flora, except for their order. The ranking of the first five families in the floristic studies carried out in areas close to our area is given in Table 3.

Table 3: Distribution of the first five families containing the most taxa according to studies

Research No and Title	**First Five Family According to Number of Taxa**
1. Contributions to the Flora of Çelikhan District (Adıyaman)	Asteraceae 42, Fabaceae 37, Brassicaceae 36, Lamiaceae 35, Poaceae 31
2. Flora and vegetation of Adıyaman Unv. Campus [15]	Poaceae 33, Asteraceae 32, Fabaceae 31, Brassicaceae 26, Lamiaceae 15
3. Flora of Akdağ (Çelikhan-Adıyaman) [17]	Asteraceae 75, Fabaceae 66, Brassicaceae 45, Caryophyllaceae 43, Lamiaceae 42
4. Flora of Ali Mountain ve Ziyaret Hill (Adıyaman) [14]	Asteraceae 47, Fabaceae 39, Poaceae 36, Lamiaceae 31, Brassicaceae 21
5. Flora of Atatürk Dam Basin of Şanlıurfa Part [16]	Fabaceae 49, Asteraceae 49, Poaceae 21, Brassicaceace 20, Lamiaceae 17
6. Flora and Vegetation of Gazihan Dede (Adıyaman) Promenade Area [13]	Asteraceae 43, Fabaceae 27, Lamiaceae 27, Poaceae 20, Apiaceae 17
7. Contributions of Nemrut Mountain (Adıyaman) Flora [12]	Asteraceae 35, Lamiaceae 25, Poaceae 23, Brassicaceae 19, Fabaceae 18

In our research area, the richest family in terms of number of taxa is Asteraceae with 42 taxa. Asteraceae family is the first family with the highest number of taxa in the Flora of Turkey. As seen in our research and studies in nearby areas, Asteraceae is the richest family in terms of taxa number, except for the 2nd and 5th studies (Table 3). The majority of Asteraceae taxa are cosmopolitan in nature, and the reasons such as their members' adaptation to different habitats, has wide ecological tolerance and their ability to spread easily with their pappus are among the

most important factors that cause this family to contain the most taxa in Turkey. The second family containing the most taxa in our research area is Fabaceae with 37 taxa (Table 3). Research area reflects the characteristics of the Iran-Turanian phytogeographic region and the abundance of habitats suitable for Leguminosae taxa have caused Leguminosae members to be in the second place in terms of the number of taxa. As can be seen in Table 3, Fabaceae is in the second place in terms of taxon content in studies 3, 4 and 6. Brassicaceae family has 36 taxa in the research area. Most of Brassicaceae taxa are cosmopolitan and in the therophyte life form, and most of Brassicaceae members have a high adaptability to harsh climatic conditions. As seen in Table 3, Cruciferae family is in the first place in terms of taxon content. The fourth largest family in terms of the number of taxa in research area is the Lamiaceae family with 35 taxa (Table 3). As seen in Table 3, Labiatae family is among the first five families in terms of taxon content in all studies. In our research area, Poaceae family is in the fifth place with 31 taxa. Most of the Graminea members are cosmopolitan and their habitats are generally steppe areas, open meadows, pasture areas and sandy areas; have caused an increase in the grassy taxa in our research area (Table 3). The five genera richest in terms of taxa number in our research area are *Astragalus 9, Silene 8, Salvia 7, Trifolium 6, Vicia 6*, and the taxa numbers of the first five genera in the areas close to our research area are shown in Table 4.

Table 4: Distribution of the first five genera containing the most taxa according to studies

Research No and Title	**First Five Genus According to Number of Taxa**
1. Contributions to the Flora of Çelikhan District (Adıyaman)	*Astragalus* 9, *Silene* 8, *Salvia* 7, *Trifolium* 6, *Vicia* 6
2. Flora and Vegetation of Adıyaman Unv. Campus [15]	*Trifolium* 5, *Bromus* 5, *Allium* 4, *Euphorbia* 4, *Lamium* 3
3. Flora of Akdağ (Çelikhan-Adıyaman) [17]	*Astragalus* 21, *Silene* 13, *Veronica* 10, *Allium*/ *Galium* 9, *Ranunculus/Asperula/Trifolium /Minuartia/Geranium/ Erysimum* 8
4. Flora of Ali Mountain ve Ziyaret Hill (Adıyaman) [14]	*Allium/Convolvulus/Trifolium* 7, *Bromus/Galium 6*
5. Flora of Atatürk Dam Basin of Şanlıurfa Part [16]	*Trifolium* 10, *Vicia* 7, *Astragalus* 6, *Centaurea* 5, *Bromus* 5
6. Flora and Vegetation of Gazihan Dede (Adıyaman) Promenade Area [13]	*Inula* 8, *Euphorbia* 7, *Scabiosa* 6, *Hypericum* 5, *Convolvulus* 4
7. Contributions of Nemrut Mountain (Adıyaman) Flora [12]	*Astragalus* 9, *Alyssum* 7, *Silene* 7, *Allium* 6, *Centaurea* 6

The reasons such as the high adaptation characteristics of *Astragalus, Silene, Salvia, Trifolium, Vicia* members to the habitats and their adoption of the living conditions brought about by the climatic characteristics of the Anatolian-Turanian phytogeographic region are among the factors that cause these genus members to be seen at a high rate in our area. Table 4 shows the first five genera rankings in terms of the number of taxa in the study area and the first five genera

rankings determined as a result of floristic studies in nearby regions. In the studies we compared in terms of taxon content at family and genus level, there are some differences in the ordering of families and genera, which can be explained by reasons such as the habitat demands of plants, differences in the ecological characteristics of the areas, biotic-abiotic conditions of the environment, and differences in working method and time. In terms of taxon content, *Astragalus* is in the first five genera in most of the studies in Table 4, and the predominance of steppe habitats in and around the area is one of the most important factors causing this situation.

The ratios of phytogeographic region members determined as a result of floristic research in our research area and nearby areas are shown in Table 5.

Table 5: Distribution rates of taxa in the study area and nearby areas in phytogeographic regions

Research No and Title	**Phytogeographic Regions**
1. Contributions to the Flora of Çelikhan District (Adıyaman)	Anatolia-Turanian 158, Mediterrian 34 Europe-Siberia 33
2.Flora and Vegetation of Adıyaman Unv. Campus [15]	Anatolia-Turanian 45, Mediterrian 16 Europe-Siberia 89
3.Flora of Akdağ (Çelikhan-Adıyaman) [17]	Anatolia-Turanian 220, Mediterrian 64 Europe-Siberia 29
4.Flora of Ali Mountain ve Ziyaret Hill (Adıyaman) [14]	Anatolia-Turanian 97, Mediterrian 59 Europe-Siberia 19
5. Flora of Atatürk Dam Basin of Şanlıurfa Part [16]	Anatolia-Turanian 79, Mediterrian 38 Europe-Siberia 12
6.Flora and Vegetation of Gazihan Dede (Adıyaman) Promenade Area [13]	Anatolia-Turanian 87, Mediterrian 39 Europe-Siberia 17
7.Contributions of Nemrut Mountain (Adıyaman) Flora [12]	Anatolia-Turanian 101, Mediterrian 26 Europe-Siberia 2

There are 158 taxa belonging to the Anatolian-Turanian phytogeographic region in the research area. In the Anatolian-Turan phytogeographic region, the continental climate with hot and dry summers and cold and rainy winters is dominant. As seen in Table 5, taxa belonging to the Anatolian-Turanian phytogeographic region are in the first place in all areas. Mediterranean phytogeographic region taxa are in the second rank in terms of the number of taxa in our area (Table 5), this is the case in which the continental climate is dominant in the research area, microclimatic features are seen in some regions, it includes transitional regions with continental and Mediterranean climate characteristics, temperate and summer drought, which is typical of the Mediterranean climate. It can be attributed to the fact that the habitats that it has an impact on are more in the research area. In the Euro-Siberian phytogeographic region, humid, cool and semi-

temperate climate characteristics are dominant, the ecological demands of the members of this phytogeographic region are mostly wet, less hot, humid and shaded habitats. All of the research areas seen in Table 3 are located in the Anatolian-Turanian phytogeographic region. Therefore, it is normal for Anatolian-Turan elements to take the first place in terms of taxa number in all studies. There are similarities in the distribution ratios of taxa in the research area and areas close to the research area according to the plant geography regions, and the differences in the ratios can be caused by the geological, geomorphological, topographic, ecological characteristics of the study areas, the climatic differences in the years studied and the differences in the field studies.

In the research area, it was determined that 30 taxa were endemic (Table 6). Hazard categories are of endemic taxa are showed in the plant list at the end of the plant taxa.

Table 6: Number of taxa and endemic taxa of research areas

Research No and Title	Number of Taxa	Number of Endemic Taxa
1. Contributions to the Flora of Çelikhan District (Adıyaman)	454	30
2. Flora and Vegetation of Adıyaman Unv. Campus [15]	322	6
3. Flora of Akdağ (Çelikhan-Adıyaman) [17]	677	97
4. Flora of Ali Mountain ve Ziyaret Hill (Adıyaman) [14]	428	19
5. Flora of Atatürk Dam Basin of Şanlıurfa Part [16]	291	9
6. Flora and Vegetation of Gazihan Dede (Adıyaman) Promenade Area [13]	297	13
7. Contributions of Nemrut Mountain (Adıyaman) Flora [12]	250	43

As a result, it is expected that the data obtained from this study will shed light on and supports floristic studies both in Adıyaman and Turkey.

Acknowledgements

This study was supported by Adıyaman University Scientific Research Projects Unit under project number ECZFMAP/2019-0004.

References

[1] Ekim, T., Damarlı Bitkiler in Güner A., Ekim T., *Resimli Türkiye Florası*, Flora Araştırmaları Derneği/Türkiye İş Bankası Kültür Yayınları, İstanbul, 2014.

[2] Kılıç, Ö., Yıldırımlı, Ş., *A New Species, Allium adiyamanense* (*Amaryllidaceae*/ *Alliaceae*/ *Liliaceae*) From Turkey, Ot Sistematik Botanik Dergisi, 26(1), 33-39, 2019.

[3] Yıldırımlı, Ş., Kılıç Ö., *Three new species of Apiaceae Family from Turkey, Bunium sancakense, Pimpinella adiyamanensis, Trigonosciadium solhanense,* Ot Sistematik Botanik Dergisi, 26(1), 41-52, 2019.

[4] Davis, P.H., *Flora of Turkey and the East Aegean Islands*, Edinburgh University Press., volumes 1-9, 1965-1988.

[5] Raunkiaer, C., *The life forms of plants and statistical plant geography,* Oxford, Clarendon Press, 1934.

[6] IUCN., *Guidelines for Application of IUCN Red List Criteria at Regional and National Levels*: Version 4.0. IUCN, Gland, Switzerland and Cambridge, UK, 2012.

[7] IUCN., *Red list categories: Version 3.1.* Prepared by the IUCN Species Survival Commission. Gland", Switzerland and Cambridge, 2013.

[8] IUCN., *Green Status of Species: A global standard for measuring species recovery and assessing conservation impact.* Version 2.0. Gland, Switzerland, 2021.

[9] Gaussen, H., *Determination des Climats par la Methode des Courbes Ambrothermiques*, Comptes Rendus Hebdomadaires Des Seances De L Academie Des Sciences, 240(6), 642-643, 1955.

[10] Emberger, L*., Sur une Formule Climatique et ses Applications en Botanique*, Comptes rendus de l'Académie des Sciences, 191, 389-390, 1930.

[11] Akman, Y., *İklim ve Biyoiklim*. Palme Yayınları Mühendislik Serisi, Ankara. 304, 1990.

[12] Tel, A.Z., *Contributions to the flora of Nemrut Mountain (Adıyaman/Turkey*), Biological Diversity and Conservation, 2, 1, 36-60, 2009.

[13] Ortaç, Z., Tel, Z., *Gazihan Dede Mesire Alanı (Adıyaman-Türkiye) florası*. Türler ve Habitatlar, 2, 1, 33-53, 2021.

[14] Tel, A.Z. & Şahin, M.S., *A Research on the Floristic Composition of the Vegetation Types of Ali Mountain and Ziyaret Hill (Adiyaman/Turkey)*. ADYÜTAYAM 4 (1),1-19, 2016.

[15] Koç, S., *Adıyaman Üniversitesi Kampüsünün Flora ve vejetasyonu,* Yüksek lisans tezi, Adıyaman Üniversitesi, 2019.

[16] Çetiner, M., *Atatürk Baraj Gölü Havzası'nın Şanlıurfa Bölümü Florası*, Yüksek lisans tezi, Adıyaman Üniversitesi, 2020.

[17] Avcı, H., *Akdağ (Çelikhan) Florası,* Yüksek lisans tezi, İnönü Üniversitesi, 2019.

SUPPLEMENTARY INFORMATION FILE

Adıyaman University Journal of Science
https://dergipark.org.tr/en/pub/adyujsci
ADYU J SCI
DergiPark AKADEMİK
ISSN 2147-1630
e-ISSN 2146-586X

Contributions to the Flora of Çelikhan District (Adıyaman)

Ömer KILIÇ[1*], Şinasi YILDIRIMLI[2]

[1]*Adıyaman University, Faculty of Pharmacy, Department of Basic Science of Pharmacy, 02000, Adıyaman, Türkiye.*
okilic@adiyaman.edu.tr, ORCID: 0000-0003-3409-1572
[2]*Hacettepe University, Faculty of Science, Department of Biology, 06000, Ankara, Türkiye*
ot@hacettepe.edu.tr, ORCID: 0000-0001-9648-7471

Captions

Figure SI-1. Some plant taxa and habitats in the research area

* Corresponding Author
DOI: 10.37094/adyujsci.1143607

SUPPLEMENTARY INFORMATION FILE

Gundelia komagenensis

Fibigia macrocarpa

Melica persica subsp *persica*

Stony steppe habitat

Steppe habitat

Wetland-moisty habitat

Morina persica subsp. *decussatifolia*

Papaver rhoeas

Rocky-garigue habitat

Herbarium samples

Project researcher Prof.Dr.Şinasi Yıldırımlı

Steppe-stony habitat

Forested area and rocky habitat

Project manager Prof.Dr.Ömer Kılıç

Wetland habitat

Aethionema apetalum

Acanthus dioscoridis var. *dioscoridis*

Centaurea urvillei subsp *hayekiana*

Acantholimon calvertii

Damaged foresty, steppe and Rocky habitat

Aethionema adiyamanense

SUPPLEMENTARY INFORMATION FILE

Ajuga chamaepitys subsp. chia var. chia

Alcea dissecta

Achillea vermicularis

Carex distans

Centaurea iberica

Ceratocephala falcata

Cuscuta brevistyla

Chenopodium foliosum

Dianthus lactiflorus

Fumaria parviflora

Geranium stepporum

Hypericum perforatum

Juniperus oxycedrus subsp. *oxycedrus*

Crataegus monogyna subsp. *monogyna*

Platanus orientalis

Quercus libani

Rosa canina

Rubus sanctus

Cichorium intybus

Mellilotus officinalis

Teucrium polium

SUPPLEMENTARY INFORMATION FILE

Senecio vernalis

Marrubium astracanicum subsp. astracanicum

Ixilorion tataricum subsp *montanum*

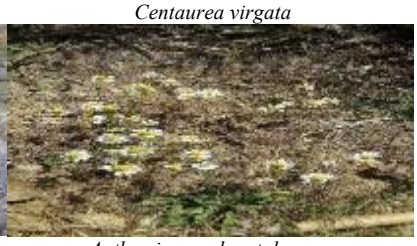
Forest, open area habitat

Scutellaria orientalis subsp. *orientalis*

Centaurea virgata

Buglossoides arvensis

Anarrhinum orientale



Anthemis pseudocotula

Onosma sericeum

Scabiosa rotata

Ziziphora capitata

Cnicus benedictus var. *benedictus*

Centaurea solstitialis subsp. *solstitialis*

Crupina crupinastrum

Salvia multicaulis

Fibigia ericarpa

Rumex acetosella

Silene vulgaris

Galium mite

Plantago lanceolata

Malva neglecta

Equisetum arvense var. *arvense*

Stony habitat

Phragmites australis

Nasturtium officinale

Stachys rupestris

Iris persica

Marrubium astracanicum subsp. astracanicum

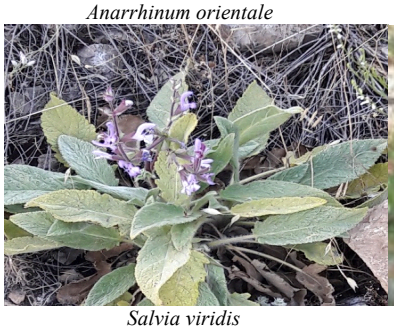
Legousia falcata

Buglossoides arvensis

Anarrhinum orientale

Anthemis pseudocotula

Marrubium globosum



Salvia viridis

Tamarix smyrnensis

Muscari comosum

Allium flavum subsp. *flavum*

Gagea taurica

Figure SI-1: Some plant taxa and habitats in the research area