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CONTRIBUTIONS TO THE FLORA OF BEYAĞAÇ (DENİZLİ)

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ABSTRACT. In this study, in order to determine the flora of Beyağaç (Denizli), 767 plant samples were collected and observed from 74 different localities by the field studies carried out in Beyağaç and its close surroundings in the years 2017 and 2018. The results of examination of the collected plant samples and evaluation of the observed plants, it was determined 362 species and totally 363 plant taxa, belonging to 63 families and 228 genera. Of 363 vascular plant taxa, 3 taxa belong to Pteridophyta division, 360 taxa to Magnoliophyta division. Of the Magnoliophyta division, 4 taxa belong to Gymnospermae subdivision and 356 taxa to Angiospermae subdivision. Of the Angiospermae subdivision, 312 taxa belong to Dicotyledonae classis and 44 taxa to Monocotyledonae classis. The phytogeographical spectrum of the flora of Beyağaç (Denizli) as follows: Mediterranean elements 115 taxa (31.6%), Irano-Turanian elements 13 taxa (3.6%), Euro-Siberian elements 20 taxa (5.5%) and multi-regional or unknown origin 216 taxa (59.3%). The largest ten families in flora of Beyağaç (Denizli) as follows: Fabaceae 43 taxa (11.8%), Asteraceae 42 taxa (11.5%), Lamiaceae 28 taxa (7.7%), Caryophyllaceae 27 taxa (% 7.4), Brassicaceae 24 taxa (6.6%), Poaceae 16 taxa (4.4%), Boraginaceae 14 taxa (3.8%), Apiaceae 13 taxa (3.6%), Asparagaceae 11 taxa (3.0%), and Plantaginaceae 10 taxa (2.7%). The largest ten families constitute 64% of the flora of Beyağaç (Denizli). The largest ten genera in the flora of Beyağaç (Denizli) as follows: *Alyssum* L. 8 taxa (2.2%), *Silene* L. 7 taxa (1.9%), *Medicago* L. 6 taxa (1.6%), *Salvia* L. 6 taxa (1.6%), *Cerastium* L. 5 taxa (1.4%), *Euphorbia* L. 5 taxa (1.4%), *Muscari* Mill. 5 taxa (1.4%), *Teucrium* L. 5 taxa (1.4%), *Veronica* L. 5 taxa (1.4%), and *Vicia* L. 5 taxa (1.4%). The number of endemic taxa in the flora of Beyağaç (Denizli) are 39 (10.7%). Their threat categories were given according to "Red Data Book of Turkish Plants". It is found 21 taxa in LC category, 4 taxa in NT category, 5 taxa in VU category, 6 taxa in EN category and 2 taxa in CR category.

Keyword and phrases. Systematics, Sandras Mountain, threat category, Denizli

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1. Introduction

Turkey is located in the temperate Mediterranean climate zone and the intersection point of Iran-Turanian, Euro-Siberian and Mediterranean phytogeographic regions [1]. With 9222 species, the flora of Turkey is one of the richest in region [2]. Among the main reasons for this rich plant species diversity in Turkey are climatic changes, topographical and geological diversity, different ecological environments, and the existence of several large mountain ranges in Anatolia that create effective barriers to the geographical spread of species [3,4].

The first work written on the flora of Turkey is “Flora Orientalis” [5]. Secondly, it is "Flora of Turkey and the East Aegean Islands", which was shown as one of the best and most comprehensive flora in the world at the time it was published [6]. In the following years, 10. and 11. volumes were published as the supplementary to the main work [1,2]. Finally, “Plant List of Turkey” including also taxa added after the completion of the main flora has been published [7]. According to the “Plant List of Turkey” [7], it is found 11707 taxa, 3649 (31.82%) of which are endemic to Turkey. Turkish endemic plants are seen intensively, especially in the Mediterranean region and around the Anatolian diagonal. In addition, Munzur Mountains, Van-Bitlis-Hakkari environs, Kazdağları, Uludağ and Ilgaz Mountains are among our regions that are very rich in terms of endemic plant diversity. However, some endemic species are faced with threats such as industrialization, urbanization, expansion of agricultural areas, overgrazing, collection for traditional usage, reclamation of barren areas and fires [8].

Beyağaç located in the western end of Sandras Mountain, Gölgeli (Bozdağ) Mountains and Taurus Mountains is an edge district of Denizli province. It takes place in the square of C2 according to "Davis' squaring system" and also in the Mediterranean phytogeographic region. The study area, which is mostly composed of serpentine rocks and partly limestone and sandstone rocks, has a unique vegetation. The region mainly contains the vegetation types such as maquis, forest and alpine steppe. The alpine steppes are also rich in herbaceous vegetation and many endemic plants, which are unique to medium and high lands [9].

It is known that the soils formed on the serpentine bedrock are generally composed of limeless, brown forest soils or terra rossa soils [10]. Serpentine soils are known to be quite challenging habitats for plants. Although the ecology of serpentine systems and the adaptive morphology of serpentine-specific plants are quite interesting, serpentine communities have a unique structure [11]. These plants, which grow on serpentine soils, have developed various adaptations specific to this soil structure,

such as sclerophyll structure, microphilia, and spiny stem structure [12]. Sandras Mountain is very rich in terms of endemic plants. The highest peak of Sandras Mountain, which reaches a height of 2295 m, is known as Çiçekbaba Hill. Due to its height reaching 2295 m, it is one of the highest mountains of Southwest Anatolia [13].

This study presents contributions to the flora of Beyağaç (Denizli), which has the high endemism ratito.

2. Materials and Methods

The field studies were carried out in Beyağaç (Denizli) district and its close surroundings in the flowering and the fruiting times of plants in the years 2017 and 2018. During the field studies, the plant samples were collected for identification, and also their natural appearance was photographed. A list is given in the Appendix 1 of the plant sampling localities as numbered. It was also recorded the GPS coordinates of the plant collection localities (Figure 1). The plant specimens collected were turned into herbarium material and identified under the Leica S8 Apo stereo microscope by using "Flora of Turkey and the East Aegean Islands" [1,2,6]. The voucher specimens are kept in the M. Çiçek herbarium (PAU).

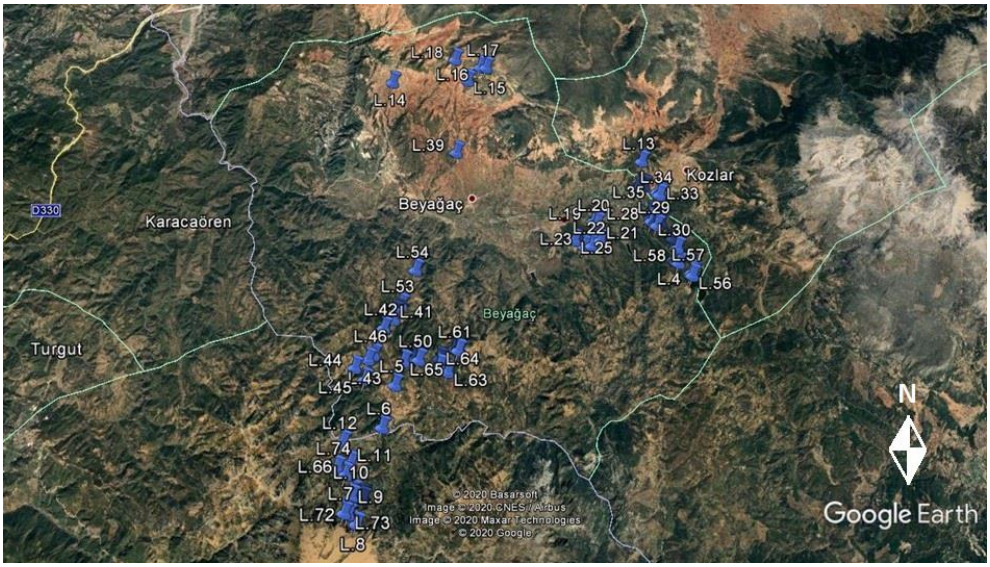

FIGURE 1. A map showing the plant sampling localities in the flora of Beyağaç (Denizli).

Taxon names were checked using “Türkiye Bitkileri Listesi (Damarlı Bitkiler)” and the online databases named “International Plant Names Index”, “The Plant List”, and “Bizim Bitkiler”, and their current taxonomic statuses were given [7,14,15,16]. The threat categories of the endemic taxa were given according to the data of “Red Data Book of Turkish Plants” [8].

3. Results

In totally, 767 plant samples were collected and observed from 74 different locations by the field studies (Figure 1, Appendix 1). As a result of examination of these samples, 363 vascular plant taxa were identified, of which 39 were endemic, belonging to 63 families and 228 genera. A list is given in the Appendix 2 of the taxa determined.

Of the identified vascular plant taxa, 3 taxa belong to Pteridophyta and 360 to Magnoliophyta. In the Pteridophyta, there are 3 taxa under 3 genera belonging to 3 families. It is found 4 taxa under 2 genera belonging to 2 families in the Gymnospermae subdivision of Spermatophyta; In the Angiospermae subdivision of Spermatophyta, there are 356 taxa under 223 genera belonging to 58 families. It is found 312 taxa under 194 genera belonging to 47 families in the class Dicotyledonae, and 44 taxa under 29 genera belonging to 11 families in the class Monocotyledonae (Table 1).

Table 1. Distribution in the upper taxonomic categories of taxa determined in the flora of Beyağaç (Denizli) in terms of the numbers of family, genus, species and total taxa.

The upper taxonomic categories	The number of family	The number of genus	The number of species	The total number of taxa
Phanerogamae	63	228	362	363
Pteridophyta	3	3	3	3
Magnoliophyta	60	225	359	360
Gymnospermae	2	2	4	4
Angiospermae	58	223	355	356
Dicotyledonae	47	194	311	312
Monocotyledonae	11	29	44	44

39 of the 363 taxa identified herein are endemic to Turkey, and constituted 10.7% of the flora of Beyağaç (Denizli). The number of other non-endemic taxa is 324 (89.3%) (Figure 2). The threat categories of endemic taxa are given according to the Red Book of Plants of Turkey [19] (Table 2). It is found 21 taxa in LC (Least Concern) category, 4 taxa in NT (Near Threatened) category, 5 taxa in VU (Vulnerable)

category, 6 taxa in EN (Endangered) category and 2 taxa in CR (Critically Endangered) category. The threat category of 1 taxon could not be evaluated.

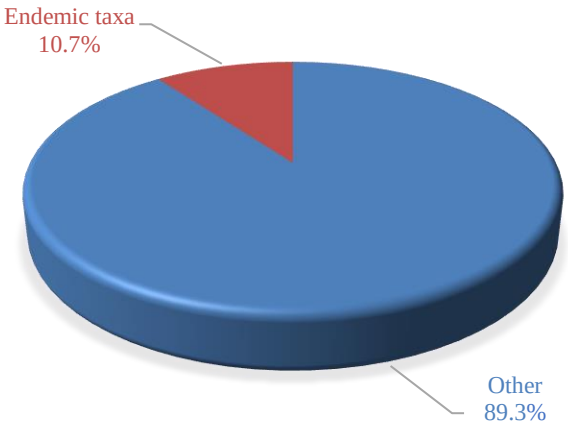

FIGURE 2. Endemism in the flora of Beyağaç (Denizli).

TABLE 2. Threat categories of the endemic taxa in the flora of Beyağaç (Denizli).

Abbreviations of threat categories: LC: Least Concern, NT: Near Threatened, VU: Vulnerable, EN: Endangered, CR: Critically Endangered

No	Family	Taxon name	Threat category
1	Plumbaginaceae	*Acantholimon ulicinum* (Willd. ex Schult.) Boiss. var. *purpurascens* (Bokhari) Bokhari & J.R.Edm.	LC
2	Brassicaceae	*Alyssum caricum* T.R.Dudley & Hub.-Mor.	EN
3	Brassicaceae	*Alyssum hirsutum* M.Bieb. subsp. *caespitosum* (T.R.Dudley) Ančev, Kožuharov & Kuzmanov	NT
4	Brassicaceae	*Alyssum masmenaeum* Boiss.	LC
5	Brassicaceae	*Alyssum propinquum* Baumg.	LC
6	Fabaceae	*Astragalus tmoleus* Boiss. var. *tmoleus*	LC
7	Caryophyllaceae	*Bolanthus frankenioides* (Boiss.) Barkoudah var. *fasciculatus* (Boiss. & Heldr.) Barkoudah	LC
8	Caryophyllaceae	*Bolanthus thymoides* Hub.-Mor.	LC
9	Asteraceae	*Centaurea ensiformis* P.H.Davis	VU
10	Caprifoliaceae	*Cephalaria lycica* V.A.Matthews	NT
11	Lamiaceae	*Clinopodium troodi* (Post) Govaerts subsp. *vardaranum* (Leblebici) Govaerts	EN
12	Primulaceae	*Cyclamen alpinum* Dammann ex Spreng.	LC
13	Caryophyllaceae	*Dianthus eretmopetalus* Stapf	VU

TABLE 2 (CONTINUED).

No	Family	Taxon name	Threat category
14	Fabaceae	*Ebenus pisidica* Hub.-Mor. & Reese	CR
15	Apiaceae	*Eryngium thorifolium* Boiss.	LC
16	Brassicaceae	*Erysimum serpentinicum* Polatschek	CR
17	Euphorbiaceae	*Euphorbia anacampseros* Boiss. var. *anacampseros*	LC
18	Euphorbiaceae	*Euphorbia austroanatolica* Hub.-Mor. & M.S.Khan	LC
19	Apiaceae	*Ferulago sandrasica* Peşmen & Quézel	EN
20	Fabaceae	*Genista sandrasica* Hartvig & Strid	EN
21	Hypericaceae	*Hypericum aviculariifolium* Jaub. & Spach	LC
22	Plantaginaceae	*Linaria corifolia* Desf.	LC
23	Caryophyllaceae	*Minuartia recurva* (All.) Schinz & Thell. subsp. *carica* McNeill	VU
24	Asparagaceae	*Muscari racemosum* Mill.	VU
25	Asparagaceae	*Muscari sandrasicum* Karlén	EN
26	Lamiaceae	*Nepeta cadmea* Boiss.	LC
27	Brassicaceae	*Noccaea cariensis* (Carlström) Parolly, Nordt & Aytac	EN
28	Lamiaceae	*Origanum hypericifolium* O.Schwarz & P.H.Davis	LC
29	Asparagaceae	*Ornithogalum alpigenum* Stapf	NT
30	Crassulaceae	*Prometheum serpentinicum* (Werderm.) t Hart var. *serpentinicum*	LC
31	Caprifoliaceae	*Scabiosa polykratis* Rech.f.	LC
32	Crassulaceae	*Sedum lydium* Boiss.	LC
33	Asteraceae	*Senecio sandrasicus* P.H.Davis	LC
34	Caryophyllaceae	*Silene echinospermoides* Hub.-Mor.	LC
35	Lamiaceae	*Teucrium alyssifolium* Stapf	LC
36	Lamiaceae	*Teucrium sandrasicum* O. Schwarz	LC
37	Scrophulariaceae	*Verbascum cariense* Hub.-Mor.	NT
38	Scrophulariaceae	*Verbascum trapifolium* (Stapf) Hub.-Mor.	VU
39	Violaceae	*Viola heldreichiana* Boiss.	-

The phytogeographical spectrum of the flora of Beyağaç (Denizli) is as follows: Mediterranean elements 115 taxa (31.6%), Irano-Turanian elements 13 taxa (3.6%), Euro-Siberian elements 20 taxa (5.5%) and multi-regional and/or unknown origin 215 taxa (59.3%) (Figure 3).

The largest ten families in the flora of Beyağaç (Denizli) are as follows: Fabaceae 43 taxa (11.8%), Asteraceae 42 taxa (11.5%), Lamiaceae 28 taxa (7.7%), Caryophyllaceae 27 taxa (7.4%), Brassicaceae 24 taxa (6.6%), Poaceae 16 taxa (4.4%), Boraginaceae 14 taxa (3.8%), Apiaceae 13 taxa (3.6%), Asparagaceae 11 taxa (3.0%), and Plantaginaceae 10 taxa (2.7%). The largest ten families constitute 62.6% of the flora of Beyağaç (Denizli) (Figure 4).

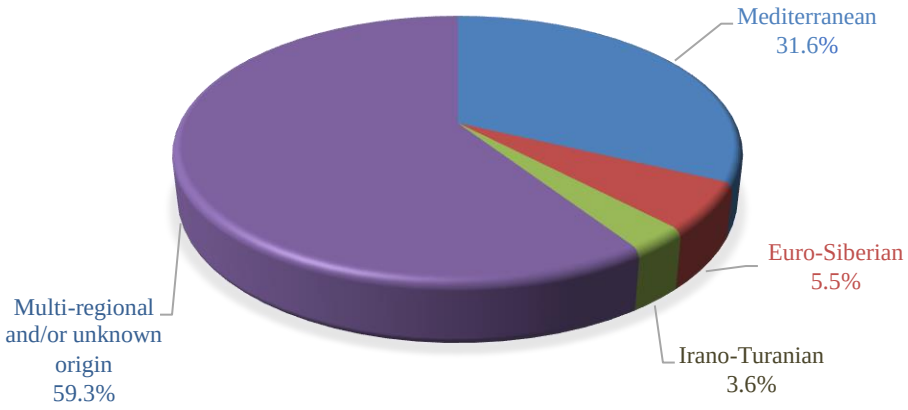

FIGURE 3. Phytogeographical spectrum for the flora of Beyağaç (Denizli).

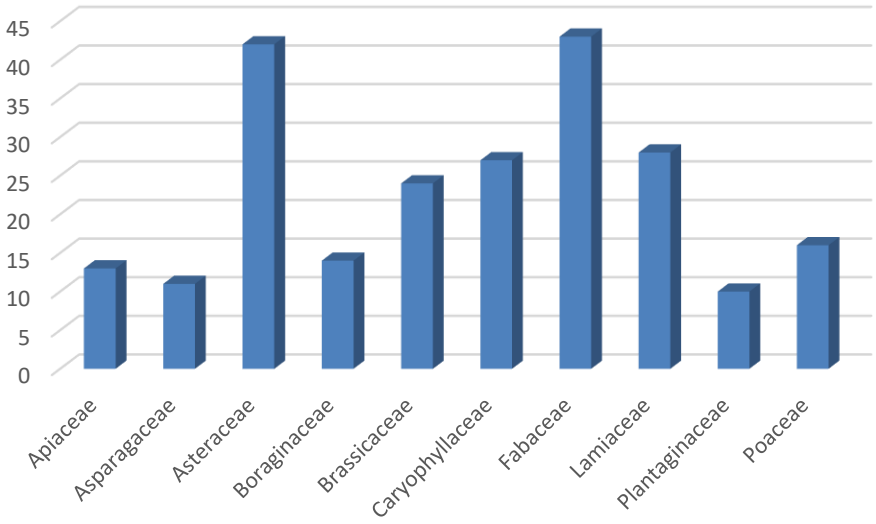

FIGURE 4. The largest ten families in the flora of Beyağaç (Denizli).

The largest ten genera in the flora of Beyağaç (Denizli) are as follows: *Alyssum* L. 8 taxa (2.2%), *Silene* L. 7 taxa (1.9%), *Medicago* L. 6 taxa (1.6%), *Salvia* L. 6 taxa (1.6%), *Cerastium* L. 5 taxa (1.4%), *Euphorbia* L. 5 taxa (1.4%), *Muscari* Mill. 5

taxa (1.4%), *Teucrium* L. 5 taxa (1.4%), *Veronica* L. 5 taxa (1.4%), and *Vicia* L. 5 taxa (1.4%) (Figure 5).

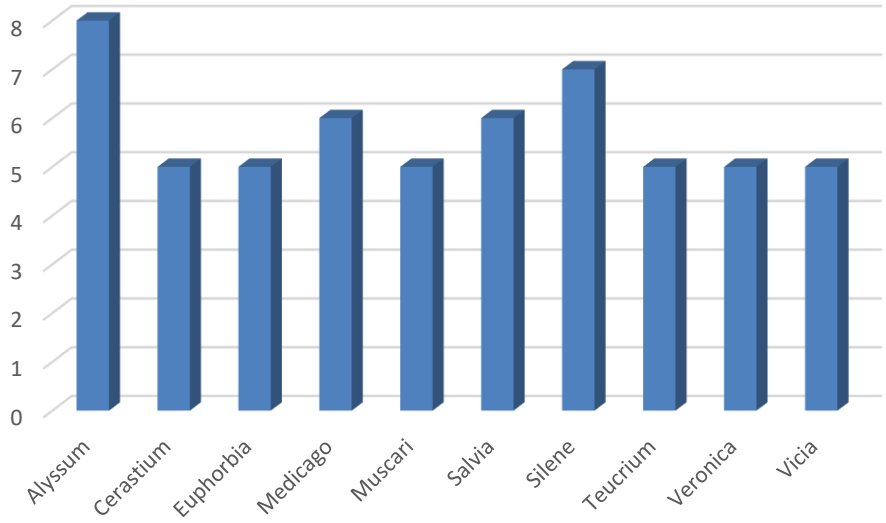

FIGURE 5. The largest ten genera in the flora of Beyağaç (Denizli).

4. DISCUSSION

The results of study revealed that compared to some other studies carried out in the region, the flora of Beyağaç (Denizli) have fewer plant diversity. Babadağ (Denizli) [17], Honaz Mountain (Denizli) [18,19,20] and Boncuk Mountains (Burdur-Muğla) [21] are the richest first three floras in the region, respectively (Table 3). Due to their having huge mass, big size, very different ecological conditions and habitat diversity, this is an expected situation that they contain more taxa. The flora of Beyağaç (Denizli) is in the tenth order.

TABLE 3. A comparison of the flora of Beyağaç (Denizli) with some other studies carried out in the region in terms of the numbers of family, genus, species and total taxa.

Abbreviations of studies: Studies: 1: Flora of Beyağaç (Denizli) (Results of this study), 2: Flora of Mt Aydoğdu (Denizli/Turkey) [22], 3: Babadağ (Denizli)'ın Flora ve Vejetasyonu [17], 4: Bencik Dağı (Yatağan-Muğla) Florası [23], 5: Flora of Boncuk Mountains (Burdur-Muğla, Turkey) [21], 6: Denizli Acıpayam Bozdağ'ın Flora ve Vejetasyonu [24], 7: Flora of Çökelez Mountain (Denizli-Turkey) and its environs [25], 8: Honaz Dağı'nın Bitkileri I (The Flora of Honaz Dağı I) [18], Honaz Dağı'nın Bitkileri II (The Flora of Honaz Dağı II) [19], A Supplementary List to the Flora of Honaz Dağı [20], 9: Flora of Kurukümes Mountain (Milas-Muğla/Turkey) [26], 10: Sandras Dağı'nın (Muğla) Bitkisel Örtüsü ve Bazı Endemik Türleri Üzerinde Palinolojik, Sitolojik Araştırmalar [27], 11: Yılanlı Dağı (Muğla)'nın Florası [28], *Number not specified in the study.

Taxonomic categories	**Research areas**										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Family	63	82	94	65	83	*	76	*	73	86	48
Genus	228	314	430	264	340	*	316	*	275	319	181
Species	362	*	*	407	*	*	*	*	522	*	338
Total Taxa	**363**	**586**	**1066**	**421**	**858**	**572**	**587**	**985**	**555**	**664**	**343**

Compared the phytogeographical spectrum of the flora of Beyağaç (Denizli) with those of some other studies carried out in the region, in all studies in the region, the Mediterranean phytogeographic region is in the first order, the Iran-Turanian phytogeographic region in the second order (except for the present study and Flora of Kurukümes Mountain [26]), and the Euro-Siberian phytogeographic region in the third order (Table 4). Since the study area is under the effect of the Mediterranean climate and is located within the borders of the Mediterranean phytogeographic region, it is an expected situation for the Mediterranean elements to be the first order in the phytogeographical spectrum. Secondly, considering all compared study areas to be close to the Irano-Turanian phytogeographic region, it is most likely for Iran-Turanian elements to be the second order.

TABLE 4. A comparison of the flora of Beyağaç (Denizli) with some other studies carried out in the region in terms of the phytogeographical spectrum.

Phytogeographic regions	**Research areas**										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Mediterranean	115 (31.6%)	180 (30.7%)	253 (23.7%)	171 (40.6%)	*	148 (25.8%)	153 (26.1%)	*	216 (38.9%)	175 (27.0%)	132 (38.4%)
Euro-Siberian	20 (5.5%)	24 (4.0%)	38 (3.6%)	8 (1.9%)	*	24 (4.1%)	30 (5.1%)	*	24 (4.3%)	7 (1.0%)	8 (2.3%)
Irano-Turanian	13 (3.6%)	43 (7.3%)	56 (5.3%)	18 (4.2%)	*	54 (9.4%)	46 (7.8%)	*	9 (1.6%)	21 (3.2%)	36 (10.5%)
Multiregional and/or unknown	215 (59.3%)	339 (58.0%)	719 (67.4%)	212 (50.3%)	*	346 (60.7%)	358 (61.0%)	*	306 (55.1%)	461 (68.8%)	167 (48.8%)

When we compared the flora of Beyağaç (Denizli) with some other studies carried out in the region in terms of endemism ratio (%), Boncuk Mountains (Burdur-Muğla) with 20.9% [21], Yılanlı Mountain (Muğla) with 18.6% [28] and Denizli Acıpayam Bozdağ [24] with 18.5% are in the first three order. Babadağ (Denizli) [17], Honaz Mountain (Denizli) [18,19,20] and Sandras Mountain (Muğla) [27] are in fourth, fifth and sixth order, respectively. The flora of Beyağaç (Denizli) is in seventh order with 10.7%. Aydoğdu Mountain (Denizli) [22] with 9.7%, Bencik Mountain (Muğla) [23] with 9.0%, Kurukümes Mountain (Muğla) [26] with 8.4% and Çökelez Mountain (Denizli) [25] with 5.6% are in eighth, ninth, tenth and eleventh order, respectively. The first three flora containing the largest number of endemic taxa; Boncuk Mountains (Burdur-Muğla) with 180 endemic taxa, Babadağ (Denizli) with 164 endemic taxa and Honaz Mountain (Denizli) with 135 endemic taxa. Denizli Acıpayam Bozdağ with 106 endemic taxa, Sandras Mountain (Muğla) with 76 endemic taxa, Yılanlı Mountain (Muğla) with 64 endemic taxa, Aydoğdu Mountain (Denizli) with 57 endemic taxa, Kurukümes Mountain (Muğla) with 47 endemic taxa, Beyağaç (Denizli) with 39 endemic taxa, Bencik Mountain (Muğla) with 38 endemic taxa, and Çökelez Mountain (Denizli) with 33 endemic taxa are in fourth, fifth, sixth, seventh, eighth, ninth, tenth and eleventh order, respectively (Table 5).

TABLE 5. A comparison of the flora of Beyağaç (Denizli) with some other studies carried out in the region in terms of the numbers of total taxa and endemic taxa.

Endemism	**Research areas**										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
The total number of taxa	363	586	1066	421	858	572	587	985	555	664	343
The number of endemic taxa (%)	39 (10.7%)	57 (9.7%)	164 (15.3%)	38 (9.0%)	180 (20.9%)	106 (18.5%)	33 (5.6%)	135 (13.7%)	47 (8.4%)	76 (11.4%)	64 (18.6%)

Compared the flora of Beyağaç (Denizli) with some other studies carried out in the region in terms of the largest ten families (Table 6), the family Fabaceae is in the first order in the floras of Beyağaç (Denizli), Babadağ (Denizli), Boncuk Mountains (Burdur-Muğla), Denizli Acıpayam Bozdağ, Honaz Mountain (Denizli) and Yılanlı Mountain (Muğla). It is in the second order in the floras of Aydoğdu Mountain (Denizli), Bencik Mountain (Muğla), Çökelez Mountain (Denizli) and Kurukümes Mountain (Muğla). The family Asteraceae is in the first order in floras of Aydoğdu Mountain (Denizli), Bencik Mountain (Muğla), Çökelez Mountain (Denizli), Kurukümes Mountain (Muğla) and Sandras Mountain (Muğla); in the second order in the floras of Babadağ (Denizli), Denizli Acıpayam Bozdağ, Honaz Mountain (Denizli) and Boncuk Mountains (Burdur-Muğla); in the third order in the flora of

Yılanlı Mountain (Muğla). The family Lamiaceae is in the third order in the flora of Beyağaç (Denizli), Bencik Mountain (Muğla), Denizli Acıpayam Bozdağ, Sandras Mountain (Muğla) and Kurukümes Mountain (Muğla). The family Poaceae is in the second order in the flora of Boncuk Mountains (Burdur-Muğla) and in the third order in the floras of Babadağ (Denizli) and Çökelez Mountain (Denizli). The family Brassicaceae is in the third order in the floras of Aydoğdu Mountain (Denizli) and Honaz Mountain (Denizli). The family Caryophyllaceae is in the second order in the flora of Sandras Mountain (Muğla). Except for the floras of Sandras Mountain (Muğla) (Asteraceae only, in the first order) and Yılanlı Mountain (Muğla) (Fabaceae only, in the first order), Asteraceae and Fabaceae families are in the first two order in all floras compared. Indeed, it is an expected situation that the families Asteraceae and Fabaceae are in the first two order in the all floras, because of them to be the largest families of the Flora of Turkey in terms of the number of taxa. Depending on the family Lamiaceae including many taxa of mesophytic and Mediterranean origin, because the compared floras are also mostly located in the Mediterranean region, it can also be considered as a possible situation that Lamiaceae comes the first rank in the floras of Beyağaç (Denizli), Bencik Mountain (Muğla), Denizli Acıpayam Bozdağ and Kurukümes Mountain (Muğla). Because of Poaceae to be one of the largest families in the flora of Turkey, it is a possible situation that it is in the first three order in the floras of Boncuk Mountains (Burdur-Muğla), Babadağ (Denizli), Çökelez Mountain (Denizli) and Yılanlı Mountain (Muğla).

TABLE 6. A comparison of the flora of Beyağaç (Denizli) with some other studies carried out in the region in terms of the largest ten families.

Families	**Research areas**										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Apiaceae	13 (3.6%)	23 (3.9%)	38 (3.6%)	17 (4.0%)	35 (4.0%)	-	20 (3.4%)	44 (4.4%)	17 (3.0%)	25 (3.7%)	-
Asparagaceae	11 (3.0%)	-	-	-	-	-	-	-	-	-	-
Asteraceae	42 (11.5%)	76 (12.9%)	123 (11.5%)	57 (13.5%)	80 (9.3%)	64 (11.1%)	87 (14.8%)	106 (10.7%)	73 (13.1%)	73 (10.9%)	33 (9.6%)
Boraginaceae	14 (3.8%)	-	30 (2.8%)	-	26 (3.0%)	21 (3.6%)	19 (3.2%)	36 (3.6%)	-	-	18 (5.2%)
Brassicaceae	24 (6.6%)	43 (7.3%)	64 (6.0%)	22 (5.2%)	58 (6. % 7)	35 (6.1%)	26 (4.4%)	70 (7.1%)	33 (5.9%)	36 (5.4%)	10 (2.9%)
Caryophyllaceae	27 (7.4%)	24 (4.0%)	71 (6.7%)	17 (4.0%)	55 (6.4%)	32 (5.5%)	21 (3.5%)	60 (6.0%)	21 (3.7%)	48 (7.2%)	13 (3.7%)
Euphorbiaceae	-	-	-	-	-	-	-		-	16 (2.4%)	-
Fabaceae	43 (11.8%)	65 (11.0%)	137 (12.9%)	39 (9.2%)	99 (11.5%)	70 (12.2%)	70 (11.9%)	109 (11.0%)	60 (10.8%)	39 (5.8%)	44 (12.8%)

TABLE 6 (CONTINUED).

Families	Research areas										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Lamiaceae	28 (7.7%)	28 (4.7%)	71 (6.7%)	37 (8.7%)	74 (8.6%)	49 (8.5%)	32 (5.4%)	55 (5.5%)	41 (7.3%)	47 (7.0%)	37 (10.7%)
Liliaceae	-	27 (4.6%)	49 (4.6%)	23 (5.4%)	32 (3.7%)	23 (4.0%)	18 (3.0%)	31 (3.1%)	26 (4.6%)	45 (6.7%)	22 (6.4%)
Orchidaceae	-	-	-	-	-	-	-	-	18 (3.2%)	16 (2.4%)	-
Plantaginaceae	10 (2.7%)	-	-	-	-	-	-	-	-	-	-
Poaceae	16 (4.4%)	41 (6.9%)	79 (7.4%)	27 (6.4%)	81 (9.4%)	30 (5.2%)	47 (8.0%)	53 (5.3%)	34 (6.1%)	-	26 (7.5%)
Ranunculaceae	-	-	23 (2.2%)	-	16 (1.8%)	-	-	25 (2.5%)	-	-	-
Rosaceae	-	23 (3.9%)	42 (3.9%)	13 (3.0%)	23 (2.6%)	19 (3.3%)	19 (3.2%)	21 (2.1%)	-	-	17 (4.9%)
Scrophulariaceae	-	-	10 (0.9%)	11 (2.6%)	29 (3.3%)	19 (3.3%)	-	42 (4.2%)	17 (3.0%)	32 (4.8%)	10 (2.9%)

Compared the flora of Beyağaç (Denizli) with some other studies carried out in the region in terms of the largest ten genera (Table 7), *Allium* L. in Sandras Mountain (Muğla); *Alyssum* L. in Beyağaç (Denizli), Denizli Acıpayam Bozdağ and Honaz Mountain (Denizli); *Anthemis* L. in Çökelez Mountain (Denizli); *Astragalus* L. in Babadağ (Denizli), Boncuk Mountains (Burdur-Muğla), Denizli Acıpayam Bozdağ and Honaz Mountain (Denizli); *Bromus* L. in Çökelez Mountain (Denizli); *Centaurea* L. in Bencik Mountain (Muğla) and Yılanlı Mountain (Muğla); *Euphorbia* L. in Sandras Mountain (Muğla); *Galium* L. in Babadağ (Denizli), Boncuk Mountains (Burdur-Muğla) and Denizli Acıpayam Bozdağ; *Lathyrus* L. in Çökelez Mountain (Denizli); *Medicago* L. in Beyağaç (Denizli) and Çökelez Mountain (Denizli); *Ornithogalum* L. in Aydoğdu Mountain (Denizli); *Salvia* L. in Beyağaç (Denizli); *Scorzonera* L. in Yılanlı Mountain (Muğla); *Silene* L. in Beyağaç (Denizli), Bencik Mountain (Muğla), Boncuk Mountains (Burdur-Muğla), Kurukümes Mountain (Muğla) and Sandras Mountain (Muğla); *Trifolium* L. in Aydoğdu Mountain (Denizli), Babadağ (Denizli), Bencik Mountain (Muğla), Denizli Acıpayam Bozdağ, Çökelez Mountain (Denizli), Honaz Mountain (Denizli), Kurukümes Mountain (Muğla) and Yılanlı Mountain (Muğla); *Trigonella* L. in Yılanlı Mountain (Muğla); *Veronica* L. in Aydoğdu Mountain (Denizli) and *Vicia* L. in Bencik Mountain (Muğla) and Kurukümes Mountain (Muğla) are among the largest three genera. *Trifolium* L. is in the first order in the floras of Aydoğdu Mountain (Denizli), Bencik Mountain (Muğla), Çökelez Mountain (Denizli), Honaz Mountain (Denizli), Kurukümes Mountain (Muğla) and Yılanlı Mountain (Muğla), but *Alyssum* L. in the first order in Beyağaç (Denizli). *Allium* L. is in the first order in the flora of Sandras Mountain (Muğla), wheras *Astragalus* L. is in the first order

in the floras of Babadağ (Denizli), Boncuk Mountains (Burdur-Muğla) and Denizli Acıpayam Bozdağ.

TABLE 7. A comparison of the flora of Beyağaç (Denizli) with some other studies carried out in the region in terms of the largest ten genera.

Genera	**Research areas**										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Allium L.	-	-	17 (1.5%)	-	7 (0.8%)	-	-	-	-	18 (2.7%)	-
Alyssum L.	8 (2.2%)	7 (1.1%)	13 (1.2%)	-	15 (1.7%)	8 (1.3%)	-	19 (1.9%)	-	11 (1.6%)	-
Anthemis L.	-	7 (1.1%)	12 (1.1%)	-	6 (0.6%)	-	9 (1.5%)	-	8 (1.4%)	-	-
Astragalus L.	-	6 (1.0%)	21 (1.9%)	-	28 (3.2%)	15 (2.6%)	-	19 (1.9%)	-	-	-
Bromus L.	-	-	-	5 (1.1%)	-	-	9 (1.5%)	-	-	-	-
Centaurea L.	-	8 (1.3%)	13 (1.2%)	6 (1.4%)	12 (1.3%)	-	7 (1.2%)	13 (1.3%)	-	10 (1.5%)	6 (1.7%)
Cerastium L.	5 (1.4%)	-	-	-	-	-	-	-	-	-	-
Crepis L.	-	-	-	-	-	-	6 (1.0%)	-	-	-	-
Euphorbia L.	5 (1.4%)	-	-	-	-	-	-	-	-	16 (2.4%)	-
Galium L.	-	7 (1.1%)	20 (1.8%)	-	16 (1.8%)	9 (1.5%)	6 (1.0%)	13 (1.3%)	-	-	-
Geranium L.	-	-	-	-	-	-	-	-	7 (1.2%)	-	-
Lathyrus L.	-	-	-	-	-	-	9 (1.5%)	-	-	-	-
Medicago L.	6 (1.6%)	6 (1.0%)	-	-	-	-	9 (1.5%)	-	7 (1.2%)	-	-
Muscari Mill.	5 (1.4%)										
Orchis L.	-	-	-	-	-	-	-	-	7 (1.2%)	-	-
Ornithogalum L.	-	9 (1.5%)	-	-	-	-	-	-		8 (1.2%)	-
Ranunculus L.	-	7 (1.1%)	13 (1.2%)	5 (1.1%)	8 (0.9%)	-	-	14 (1.4%)	8 (1.4%)	11 (1.6%)	-
Rumex L.	-	-	-	-	-	-	7 (1.2%)	-	-	-	-
Salvia L.	6 (1.6%)	-	-	-	-	-	-	-	-	-	-
Scorzonera L.	-	-	-	-	-	-	-	-	-	-	6 (1.7%)
Sedum L.	-	-	9 (0.8%)	-	10 (1.1%)	7 (1.2%)	-	10 (1.0%)	-	-	-
Silene L.	7 (1.9%)	8 (1.3%)	14 (1.3%)	6 (1.4%)	16 (1.8%)	7 (1.2%)	-	18 (1.8%)	12 (2.1%)	14 (2.1%)	5 (1.4%)

TABLE 7 (CONTINUED).

Genera	Research areas										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Teucrium L.	5 (1.4%)	-	-	-	-	-	-	-	-	-	-
Trifolium L.	-	13 (2.2%)	18 (1.6%)	8 (1.9%)	9 (1.0%)	8 (1.3%)	13 (2.2%)	20 (2.0%)	18 (3.2%)	7 (1.0%)	10 (2.9%)
Trigonella L.	-	-	-	-	-	-	-	-	-	-	6 (1.7%)
Verbascum L.	-	7 (1.1%)	-	-	-	-	-	-	7 (1.2%)	11 (1.6%)	-
Veronica L.	5 (1.4%)	9 (1.5%)	-	-	-	-	6 (1.0%)	-	-	8 (1.2%)	-
Vicia L.	5 (1.4%)	-	-	6 (1.4%)	-	-	-	-	11 (1.9%)	-	-

5. CONCLUSION

Consequently, it would be said that the research area has an important plant diversity. The area is home to many endemic and rare plant species. The endemic species *Ebenus pisidica* and *Erysimum serpentinicum* with "Critically Endangered" (CR) category have a narrow population in this area. The data obtained in this study will contribute to future multidisciplinary studies.

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REFERENCES

[1] Davis, P.H., Mill, R., Tan, K. (Editors), Flora of Turkey and the East Aegean Islands, Vol. 10, Edinburgh University Press, Edinburgh, 1988.
[2] Güner, A., Özhatay, N., Ekim, T., Başer, K.H.C. (Editors), Flora of Turkey and the East Aegean Islands, Vol. 11, Edinburgh University Press, Edinburgh, 2000.
[3] Özhatay, N., Diversity of bulbous monocots in Turkey with special reference. Chromosome numbers, *Pure and Applied Chemistry*, 74 (4) (2002), 547–555. https://doi.org/10.1351/pac200274040547.
[4] Ekim, T., Bitkiler, In: Türkiye'nin Biyolojik Zenginlikleri, Türkiye Çevre Sorunları

Vakfı Yayını, Ankara, 1990, 69–92.
[5] Boissier, P.E., Flora Orientalis: sive, Enumeratio plantarum in Oriente a Graecia et Aegypto ad Indiae fines hucusque observatarum, 5 vols.+Supplement, Basileae: H. Georg, 1867–1888.
[6] Davis, P.H. (Editor), Flora of Turkey and the East Aegean Islands, Vol. l–9, Edinburgh University Press, Edinburgh, 1965–1985.
[7] Güner, A., Aslan, S., Ekim, T., Vural, M., Babaç, M.T. (Editors), Türkiye Bitkileri Listesi (Damarlı Bitkiler), Nezahat Gökyiğit Botanik Bahçesi ve Flora Araştırmaları Derneği Yayını, İstanbul, 2012.
[8] Ekim, T., Koyuncu, M., Vural, M., Duman, H., Aytaç, Z., Adıgüzel, N., Türkiye Bitkileri Kırmızı Kitabı, Türkiye Tabiatını Koruma Derneği ve Van 100. Yıl Üniversitesi, Ankara, 2000.
[9] Kurt, B., Sandras Dağı. In: Eken, G., Bozdoğan, M., İsfendiyaroğlu, S., Kılıç, D.T., Lise, Y. (Editörler), Türkiye'nin Önemli Doğa Alanları, Cilt 1, Doğa Derneği, Ankara, 2006, 250–253.
[10] Altıoğlu, Y., Sandras Dağı (Muğla) Serpantin Substratı Üzerinde Yayılış Gösteren Bazı Endemik Bitkiler Üzerine Ekofizyolojik Çalışmalar, Ege Üniversitesi Fen Bilimleri Enstitüsü Yüksek Lisans Tezi, İzmir, 2009.
[11] Brady, K.U., Kruckeberg, A.R., Bradshaw Jr, H.D., Evolutionary ecology of plant adaptation to serpentine soils, *Annual Review of Ecology, Evolution, and Systematics*, 36 (1) (2005), 243–266. https://doi.org/10.1146/annurev.ecolsys.35.021103.105730.
[12] Iturralde, R.B., The influence of ultramafic soils on plants in Cuba, *South African Journal of Science*, 97 (11) (2001), 510–512.
[13] Doğan, M., Sandıras Dağı'nda (Muğla) Buzullaşma ve Buzul Şekilleri, *Ege Coğrafya Dergisi*, 20 (1) (2011), 29–52.
[14] Anonymous, The International Plant Names Index 2017: (http://www.ipni.org/), (2020a), (Accessed date: 01.09.2020).
[15] Anonymous, The Plant List, A working of all plant species 2016: (http://www.theplantlist.org/),(2020b), (Accessed date: 01.09.2020).
[16] Anonymous, Bizim Bitkiler: https://www.bizimbitkiler.org.tr/list.html), (2020c), (Accessed date: 01.09.2020).
[17] Gemici, Y., Oluk, S., Babadağ (Denizli)'ın Flora ve Vejetasyonu, TÜBİTAK, Temel Bilimler Araştırma Grubu, Proje No: TBAG-1387 (195T022), İzmir, 1999.
[18] Baytop, A., Tuzlacı, E., Honaz Dağı'nın Bitkileri I (The Flora of Honaz Dağı I), *İstanbul Üniversitesi Eczacılık Fakültesi Mecmuası (Journal of Faculty of Pharmacy Istanbul University)*, 12 (1976), 30–74.
[19] Tuzlacı, E., Honaz Dağı'nın Bitkileri II (The Flora of Honaz Dağı II), *İstanbul Üniversitesi Eczacılık Fakültesi Mecmuası (Journal of Faculty of Pharmacy Istanbul University)*, 13 (1977), 47–61.
[20] Tuzlacı, E., A Supplementary List to the Flora of Honaz Dağı (Honaz Dağı Florasına Ek Bir Liste), *İstanbul Üniversitesi Eczacılık Fakültesi Mecmuası (Journal of Faculty of Pharmacy Istanbul University)*, 19 (1983), 41–46.
[21] Çetin, E., Seçmen, Ö., Flora of Boncuk Mountains (Burdur-Muğla, Turkey), *International Journal of Botany*, 4 (2) (2008), 130–150. https://doi.org/10.3923/ijb.2008.130.150.

[22] Semiz, G., Çelik, A., Flora of Mt Aydoğdu (Denizli/Turkey), *Natura Croatica*, 14 (3) (2005), 185–212.
[23] Aytepe, H.A., Varol, Ö., Bencik Dağı (Yatağan-Muğla) Florası, *Ekoloji*, 16 (63) (2007), 41–61.
[24] Bekat, L., Denizli Acıpayam Bozdağ'ın Flora ve Vejetasyonu. Ege Üniversitesi Araştırma Fonu, Proje No: 1988/013, İzmir, 1992.
[25] Çiçek, M., Çelik, A., Flora of Çökelez Mountain (Denizli-Turkey) and its environs, *Bulletin of Pure and Applied Sciences*, 23 (2) (2004), 127–145.
[26] Arık, Ü.Ö., Görk, G., Flora of Kurukümes Mountain (Milas-Muğla/Turkey), *Biological Diversity and Conservation*, 9 (3) (2016), 149–167. https://doi.org/10.13140/RG.2.2.27206.88643.
[27] Özhatay, E., Sandras Dağı'nın (Muğla) Bitkisel Örtüsü ve Bazı Endemik Türleri Üzerinde Palinolojik, Sitolojik Araştırmalar. TÜBİTAK, Matematik, Fiziki ve Biyolojik Bilimler Araştırma Grubu, Proje No: TBAG-306, İstanbul, 1981.
[28] Varol, Ö., Doğru, A., Kaya, E., Yılanlı Dağı (Muğla)'nın Florası, *Ekoloji*, 13 (50) (2004), 23–36.

APPENDICES

APPENDIX 1. A list of the plant sampling localities in the flora of Beyağaç (Denizli)

Locality no	Locality	Altitude (m)	Date
1	**C2 Denizli:** Beyağaç	-	2017
2	**C2 Denizli:** Beyağaç, from Kozlar towards the chrome quarry, near the chrome quarry	795	13.07.2017
3	**C2 Denizli:** Beyağaç, above the chrome quarry, towards Eşen Pond	939	13.07.2017
4	**C2 Denizli:** Beyağaç, Eşen Pond, the edges of the pond	1013	13.07.2017
5	**C2 Denizli:** Beyağaç, Sandras Mountain, Kartal Lake road	1333	13.07.2017
6	**C2 Muğla:** Köyceğiz, Sandras Mountain, Kartal Lake road	1351	13.07.2017
7	**C2 Muğla:** Köyceğiz, near Kartal Lake	1888	13.07.2017
8	**C2 Muğla:** Köyceğiz, Kartal Lake, the areas around the lake where the water is withdrawn and the stream sides	1900	13.07.2017
9	**C2 Muğla:** Köyceğiz, Sandras Mountain, Kartal Lake road	1797	13.07.2017
10	**C2 Muğla:** Köycegiz, Sandras Mountain, Kartal Lake road	1756	13.07.2017
11	**C2 Muğla:** Köyceğiz, Sandras Mountain, Kartal Lake road	1617	13.07.2017
12	**C2 Muğla:** Köyceğiz, Sandras Mountain, Kartal Lake road	1415	16.09.2017
13	**C2 Denizli:** 9 km from Denizli to Beyağaç, under the *Pinus brutia* forest	933	08.04.2018
14	**C2 Denizli:** Beyağaç, Sazak entrance, field edges	902	08.04.2018
15	**C2 Denizli:** Beyağaç, Kapuz entrance	961	08.04.2018
16	**C2 Denizli:** Beyağaç, Serverler entrance	1114	08.04.2018
17	**C2 Denizli:** Beyağaç, Serverler entrance	1130	08.04.2018
18	**C2 Denizli:** Beyağaç, Kocabaşlar	1095	08.04.2018
19	**C2 Denizli:** Beyağaç, in the forest	757	08.04.2018
20	**C2 Denizli:** Beyağaç, in the forest	763	08.04.2018

21	**C2 Denizli:** Beyağaç, in the forest	763	08.04.2018
22	**C2 Denizli:** Beyağaç, in the forest	755	08.04.2018
23	**C2 Denizli:** Beyağaç, in the forest	754	08.04.2018
24	**C2 Denizli:** Beyağaç, in the forest	748	08.04.2018
25	**C2 Denizli:** Beyağaç, in the forest	742	08.04.2018
26	**C2 Denizli:** Beyağaç, above the chrome quarry, towards Eşen Pond	854	08.04.2018
27	**C2 Denizli:** Beyağaç, above the chrome quarry, towards Eşen Pond	882	08.04.2018
28	**C2 Denizli:** Beyağaç, above the chrome quarry, towards Eşen Pond	895	08.04.2018
29	**C2 Denizli:** Beyağaç, above the chrome quarry, towards Eşen Pond	925	08.04.2018
30	**C2 Denizli:** Beyağaç, between the chrome quarry and Eşen Pond	994	08.04.2018
31	**C2 Denizli:** Beyağaç, near Eşen Pond	998	08.04.2018
32	**C2 Denizli:** Beyağaç, near Eşen Pond	996	08.04.2018
33	**C2 Denizli:** Beyağaç, from Kozlar towards the chrome quarry, near the chrome quarry	840	21.04.2018
34	**C2 Denizli:** Beyağaç, from Kozlar towards the chrome quarry, near the chrome quarry	820	21.04.2018
35	**C2 Denizli:** Beyağaç, from Kozlar towards the chrome quarry, near the chrome quarry	852	21.04.2018
36	**C2 Denizli:** Beyağaç, from Kozlar towards the chrome quarry, near the chrome quarry	820	21.04.2018
37	**C2 Denizli:** Beyağaç, from Kozlar towards the chrome quarry, near the chrome quarry	790	21.04.2018
38	**C2 Denizli:** Beyağaç, in the forest	765	21.04.2018
39	**C2 Denizli:** Beyağaç, between Kızılcaağaç and Beyağaç	747	21.04.2018
40	**C2 Denizli:** Beyağaç, above Beyağaç, Sandras Mountain, Kartal Lake road	1195	21.04.2018
41	**C2 Denizli:** Beyağaç, above Beyağaç, Sandras Mountain, Kartal Lake road	1234	21.04.2018
42	**C2 Denizli:** Beyağaç, above Beyağaç, Sandras Mountain, Kartal Lake road	1267	21.04.2018
43	**C2 Denizli:** Beyağaç, Sandras Mountain, the right sides of the road before Kartal Lake-Karagöl junction	1237	21.04.2018
44	**C2 Denizli:** Beyağaç, Sandras Mountain, the right sides of the road before Kartal Lake-Karagöl junction	1199	21.04.2018
45	**C2 Denizli:** Beyağaç, Sandras Mountain, the right sides of the road before Kartal Lake-Karagöl junction	1148	21.04.2018
46	**C2 Denizli:** Beyağaç, Sandras Mountain, the right sides of the road before Kartal Lake-Karagöl junction	1245	21.04.2018
47	**C2 Denizli:** Beyağaç, Karagöl surroundings	1346	21.04.2018
48	**C2 Denizli:** Beyağaç, Karagöl, lakeside	1332	21.04.2018
49	**C2 Denizli:** Beyağaç, Karagöl, lakeside	1332	21.04.2018
50	**C2 Denizli:** Beyağaç, from Kartal Lake-Karagöl junction towards Karagöl	1398	21.04.2018
51	**C2 Denizli:** Beyağaç, from Kartal Lake-Karagöl junction towards Karagöl	1381	21.04.2018
52	**C2 Denizli:** Beyağaç, above Beyağaç, Sandras Mountain, Kartal Lake road	1197	21.04.2018
53	**C2 Denizli:** Beyağaç, above Beyağaç, Sandras Mountain, Kartal Lake road	1168	21.04.2018
54	**C2 Denizli:** Beyağaç, above Beyağaç, Sandras Mountain, Kartal Lake road	1020	21.04.2018

55	**C2 Denizli:** Beyağaç	-	18.05.2018
56	**C2 Denizli:** Beyağaç, Eşen Pond, the in-water and the areas around the pond where the water is drawn	1005	11.08.2018
57	**C2 Denizli:** Beyağaç, Eşen Pond, the in-water and the areas around the pond where the water is drawn	1006	11.08.2018
58	**C2 Denizli:** Beyağaç, near Eşen Pond, pastures	996	11.08.2018
59	**C2 Denizli:** Beyağaç, between the chrome quarry and Eşen Pond	970	11.08.2018
60	**C2 Denizli:** Beyağaç, the tops of the chrome quarry towards the Eşen Pond	915	11.08.2018
61	**C2 Denizli:** Beyağaç, Karagöl, the areas around the lake where the water is withdrawn	1329	11.08.2018
62	**C2 Denizli:** Beyağaç, Karagöl, the areas around the lake where the water is withdrawn	1328	11.08.2018
63	**C2 Denizli:** Beyağaç, Karagöl surroundings	1341	11.08.2018
64	**C2 Denizli:** Beyağaç, Karagöl surroundings	1375	11.08.2018
65	**C2 Denizli:** Beyağaç, Kartal Lake-Karagöl road junction	1337	11.08.2018
66	**C2 Muğla:** Köyceğiz, Sandras Mountain, Kartal Lake road	1572	11.08.2018
67	**C2 Muğla:** Köyceğiz, Sandras Mountain, Kartal Lake road	1743	11.08.2018
68	**C2 Muğla:** Köyceğiz, Sandras Mountain, Kartal Lake road	1746	11.08.2018
69	**C2 Muğla:** Köyceğiz, Sandras Mountain, Kartal Lake road	1749	11.08.2018
70	**C2 Muğla:** Köyceğiz, Sandras Mountain, Kartal Lake road	1746	11.08.2018
71	**C2 Muğla:** Köyceğiz, Kartal Lake, the edges of the lake	1910	11.08.2018
72	**C2 Muğla:** Köyceğiz, Kartal Lake surroundings	1866	11.08.2018
73	**C2 Muğla:** Köyceğiz, Kartal Lake surroundings	1867	11.08.2018
74	**C2 Muğla:** Köyceğiz, Sandras Mountain, Kartal Lake road	1544	11.08.2018

APPENDIX 2. A list of the plant taxa determined in the flora of Beyağaç (Denizli)

Abbreviations: Obs.: Observation; Medit.: Mediterranean; Ir.-Tur.: Irano-Turanian; Euro-Sib.: Euro-Siberian; Phy. reg.: Phytogeographic region *: Endemic

No	Taxon name	Locality no	Collecter no	Phy. reg.
	PHANEROGAMAE			
	PTERIDOPHYTA			
	ASPLENIACEAE			
1	*Asplenium ceterach* L.	5; 46	Obs.; Obs.	
	DRYOPTERIDACEAE			
2	*Dryopteris filix-mas* (L.) Schott	1	2017-39, 2017-84	
	EQUISETACEAE			
3	*Equisetum fluviatile* L.	33	2018-211	
	MAGNOLIOPHYTA			
	GYMNOSPERMAE			
	CUPRESSACEAE			
4	*Juniperus excelsa* M.Bieb. subsp. *excelsa*	16; 57	Obs.; Obs.	
5	*Juniperus oxycedrus* L. subsp. *oxycedrus* var. *oxycedrus*	1; 16; 46	2017-46; Obs.; Obs.	
	PINACEAE			

6	*Pinus brutia* Ten. var. *brutia*	4; 13; 19; 25; 26; 27; 33; 36; 37; 39; 57	Obs.	Medit.
7	*Pinus nigra* J.F.Arnold subsp. *pallasiana* (Lamb.) Holmboe var. *pallasiana*	8; 42; 44; 63; 66; 69	Obs.	
	ANGIOSPERMAE			
	DICOTYLEDONAE			
	ACANTHACEAE			
8	*Acanthus hirsutus* Boiss. subsp. *hirsutus*	1	2017-109	
	AMARANTHACEAE			
9	*Chenopodium album* L. subsp. *album* var. *album*	4	2017-274	
	APIACEAE			
10	*Anethum graveolens* L.	2	Obs.	
11	*Apium nodiflorum* (L.) Lag.	33	Obs.	
12	*Bifora testiculata* (L.) Spreng.	34	Obs.	
13	*Bupleurum rotundifolium* L.	34	2018-261	
14	*Eryngium campestre* L. var. *campestre*	2	2017-247	
15	**Eryngium thorifolium* Boiss.	1; 3; 13; 29	2017-55; 2017-269; Obs.; Obs.	Medit.
16	**Ferulago sandrasica* Peşmen & Quézel	1; 6; 9; 50; 63	2017-51; 2017-293; Obs.; 2018-323; Obs.	Medit.
17	*Foeniculum vulgare* Mill.	2	2017-251	
18	*Pastinaca sativa* L. subsp. *urens* (Req. ex Gren. & Godr.) Celak.	14	2018-97, 2018-109	
19	*Pimpinella tragium* Vill. subsp. *lithophila* (Schischk.) Tutin	67	2018-547	
20	*Scandix pecten-veneris* L.	14	2018-92	
21	*Torilis arvensis* (Huds.) Link subsp. *arvensis*	55	2018-386, 2018-423	
22	*Turgenia latifolia* (L.) Hoffm.	1	2017-118	
	APOCYNACEAE			
23	*Vinca herbacea* Waldst. & Kit.	41; 43	2018-289; 2018-296	
	ARALIACEAE			
24	*Hedera helix* L.	15	2018-129	
	ASTERACEAE			
25	*Anthemis arvensis* L.	1; 37	2017-37; 2018-274	Euro-Sib.
26	*Anthemis cretica* L. subsp. *tenuiloba* (DC.) Grierson	13; 15; 17; 18; 34; 40; 42; 44	2018-72; 2018-142; 2018-158; 2018-168; 2018-238, 2018-240; 2018-284; 2018-292; 2018-301	
27	*Bellis perennis* L.	31; 32; 34	2018-205; Obs.; 2018-224	Euro-Sib.
28	*Carduus pycnocephalus* L. subsp. *arabicus* (Jacq. ex Murray) Nyman	15	Obs.	Medit.
29	*Carthamus dentatus* (Forssk.) Vahl	59	2018-538	
30	*Carthamus lanatus* L.	2	Obs.	

31	**Centaurea ensiformis* P.H.Davis	1; 7; 8; 9; 73	2017-81; Obs.; Obs.; 2017-327; Obs.	
32	*Centaurea solstitialis* L. subsp. *solstitialis*	2; 58	Obs.; Obs.	
33	*Centaurea urvillei* DC. subsp. *urvillei*	1; 27; 50; 55	2017-60, 2017-116; Obs.; 2018-326; 2018-406	Medit.
34	*Centaurea virgata* Lam.	1; 5; 9; 66	2017-41; 2017-283; Obs.; Obs.	Ir.-Tur.
35	*Chondrilla juncea* L.	64	Obs.	
36	*Cichorium intybus* L.	1; 2; 58	2017-82; 2017-233; 2018-533	
37	*Cirsium vulgare* (Savi) Ten.	1; 6; 58	2017-45; Obs.; 2018-534	
38	*Cnicus benedictus* L.	2	2017-254	
39	*Crepis capillaris* (L.) Wallr.	19	2018-176	
40	*Crepis foetida* L. subsp. *foetida*	2; 14; 34; 55	2017-241; 2018-87; 2018-248; 2018-404, 2018-405	
41	*Crepis sancta* (L.) Bornm. subsp. *nemausensis* (P.Fourn.) Babc.	23	2018-188	
42	*Cyanus segetum* Hill	55	2018-378	
43	*Cyanus thirkei* (Sch.Bip.) Holub	1; 9; 17; 43; 46	2017-49, 2017-78; 2017-326; 2018-161; Obs.; 2018-312	Medit.
44	*Cyanus triumfettii* (All.) Dostál ex Á.Löve & D.Löve subsp. *triumfettii*	23; 34; 46	2018-187; 2018-258; 2018-307	
45	*Doronicum orientale* Hoffm.	22	2018-184	
46	*Echinops sphaerocephalus* L. subsp. *sphaerocephalus*	59; 63	Obs.; Obs.	Euro-Sib.
47	*Echinops spinosissimus* Turra subsp. *spinosissimus*	2	2017-243	Medit.
48	*Filago pyramidata* L.	37; 54	2018-277; 2018-339	
49	*Helichrysum plicatum* DC. subsp. *plicatum*	7; 8	2017-310; Obs.	
50	*Inula anatolica* Boiss.	3	2017-270	
51	*Jurinea mollis* (L.) Rchb.	1	2017-112	Medit.
52	*Lactuca serriola* L.	2	Obs.	
53	*Leontodon asperrimus* (Willd.) Endl.	73	2018-563	Ir.-Tur.
54	*Leontodon hispidus* L. subsp. *hispidus*	58	2018-528	Euro-Sib.
55	*Matricaria chamomilla* L. var. *chamomilla*	1; 33; 55	2017-125; Obs.; 2018-402	
56	*Onopordum illyricum* L.	1	2017-137	Medit.
57	*Picnomon acarna* (L.) Cass.	1; 2; 58	2017-139; 2017-256; Obs.	Medit.
58	*Pilosella piloselloides* (Vill.) Soják subsp. *piloselloides*	1; 23; 55; 63	2017-59, 2017-73; 2018-190; 2018-412; Obs.	
59	*Pulicaria vulgaris* (L.) Gaertn.	2	2017-264	Euro-Sib.

60	*Scorzonera mollis* M.Bieb. subsp. *szowitzii* (DC.) D.F.Chamb.	68	2018-549	Ir.-Tur.
61	**Senecio sandrasicus* P.H.Davis	74	2018-564	Medit.
62	*Senecio vernalis* Waldst. & Kit.	1; 18; 19; 26; 27; 29; 34	2017-57; 2018-166; 2018-175; 2018-198; 2018-200; Obs.; Obs.	
63	*Sonchus asper* (L.) Hill subsp. *asper*	14; 15; 34	2018-94; Obs.; 2018-255	
64	*Taraxacum aleppicum* Dahlst.	17	Obs.	Medit.
65	*Taraxacum assemanii* Blanche ex Boiss.	8; 58	2017-324; 2018-535	Ir.-Tur.
66	*Tragopogon porrifolius* L. subsp. *longirostris* (Sch.Bip.) Greuter	1; 6; 15; 34; 35; 37	2017-102, 2017-103; 2017-295; 2018-147; 2018-230; 2018-266; 2018-272	
	BERBERIDACEAE			
67	*Berberis cretica* L.	1; 8	2017-43, 2017-72; 2017-318	Medit.
	BORAGINACEAE			
68	*Alkanna tubulosa* Boiss.	13; 35; 46; 55	2018-83; 2018-265; 2018-306; 2018-393	Medit.
69	*Anchusa azurea* Mill. var. *azurea*	34	2018-244	
70	*Anchusa hybrida* Ten.	15; 18; 55	2018-140; Obs.; 2018-394	Medit.
71	*Anchusa officinalis* L.	1; 55	2017-106; 2018-370	Euro-Sib.
72	*Buglossoides arvensis* (L.) I. M. Johnst subsp. *sibthorpiana* (Griseb.) R.Fern.	14	2018-100	
73	*Cynoglossum creticum* Mill.	34	2018-246, 2018-253	
74	*Echium italicum* L.	1	2017-100	Medit.
75	*Heliotropium hirsutissimum* Grauer	4; 57; 61; 62	2017-281; 2018-522; 2018-541; Obs.	Medit.
76	*Myosotis lithospermifolia* Hornem.	46	2018-305	
77	*Myosotis ramosissima* Rochel	15; 19; 55	2018-122; 2018-173; 2018-387	
78	*Nonea echioides* (L.) Roem. & Schult.	14	2018-111	Medit.
79	*Onosma frutescens* Lam.	15	2018-118	Medit.
80	*Onosma taurica* Willd. var. *taurica*	51	2018-328	
81	*Paracaryum lithospermifolium* (Lam.) Grande subsp. *cariense* (Boiss.) R.R.Mill var. *cariense*	1	2017-69, 2017-124	Medit.
	BRASSICACEAE			
82	*Aethionema arabicum* (L.) Andrz. ex DC.	13; 39	2018-75; 2018-280	
83	*Alyssum alyssoides* (L.) L.	13; 16; 17	2018-74; Obs.; 2018-164	
84	**Alyssum caricum* T.R.Dudley & Hub.-Mor.	3; 4; 57; 64	Obs.; 2017-277; 2018-523, 2018-524; Obs.	Medit.
85	*Alyssum corsicum* Duby	33; 58; 64	2018-221; 2018-531, 2018-532; Obs.	
86	*Alyssum desertorum* Stapf.	15	2018-116, 2018-123	

87	**Alyssum hirsutum* M.Bieb. subsp. *caespitosum* (T.R.Dudley) Ančev, Kožuharov & Kuzmanov	23; 50	2018-185; 2018-327	Ir.-Tur.
88	**Alyssum masmenaeum* Boiss.	2; 5; 7; 63; 66; 69; 70	2017-239; Obs.; 2017-307; Obs.; Obs.; 2018-551; 2018-557	
89	*Alyssum murale* Waldst. & Kit. subsp. *murale* var. *murale*	4; 15; 21; 53	Obs.; 2018-144; 2018-183; 2018-334	
90	**Alyssum propinquum* Baumg.	43	2018-295	
91	*Arabidopsis thaliana* (L.) Heynh.	47	2018-313	
92	*Arabis verna* (L.) R.Br.	15; 16; 17	2018-126; Obs.; 2018-162	Medit.
93	*Barbarea verna* (Mill.) Aschers.	49	2018-318	
94	*Capsella bursa-pastoris* (L.) Medik.	14; 34	2018-88; 2018-242	
95	*Clypeola jonthlaspi* L.	15; 16	Obs.; 2018-153	
96	*Draba verna* L.	15; 16; 21; 42; 48	2018-117; Obs.; Obs.; Obs.; 2018-316	
97	*Eruca vesicaria* (L.) Cav.	15	2018-113	
98	**Erysimum serpentinicum* Polatschek	44	2018-300	Medit.
99	*Hirschfeldia incana* (L.) Lagr.-Foss.	1	2017-98	
100	*Iberis carnosa* Willd.	8	Obs.	Medit.
101	*Isatis tinctoria* L. subsp. corymbosa (Boiss.) P.H.Davis	55	2018-373	
102	*Microthlaspi perfoliatum* (L.) F.K.Mey.	14; 17	2018-105; 2018-163	
103	**Noccaea cariensis* (Carlström) Parolly, Nordt & Aytac	1; 41; 43	2017-42; 2018-288; 2018-299	Medit.
104	*Sinapis arvensis* L.	13; 14; 15	2018-82, 2018-85; 2018-102; Obs.	
105	*Sisymbrium irio* L.	1; 15	2017-36, 2017-44; 2018-133	
	CAMPANULACEAE			
106	*Campanula erinus* L.	15	2018-148	
107	*Campanula glomerata* L. subsp. *hispida* (Witasek) Hayek	6	2017-294	Euro-Sib.
108	*Campanula lyrata* Lam. subsp. *lyrata*	1	2017-68	
109	*Campanula stricta* L. var. *libanotica* (A.DC.) Boiss.	7; 8; 9; 69; 73	2017-314; Obs.; 2017-328; 2018-554; Obs.	
110	*Legousia pentagonia* (L.) Thell.	1; 55	2017-120; 2018-396, 2018-420	Medit.
	CAPRIFOLIACEAE			
111	**Cephalaria lycica* V.A.Matthews	10; 68; 69	Obs.; 2018-550; Obs.	Medit.
112	*Pterocephalus plumosus* (L.) Coulter	15; 55	2018-114; 2018-372	
113	*Scabiosa columbaria* L.	2	2017-234	
114	**Scabiosa polykratis* Rech.f.	7; 69; 72	2017-313; 2018-555; 2018-559	Medit.
115	*Valerianella coronata* (L.) DC.	21; 23	Obs.; 2018-189	

116	*Valerianella vesicaria* (L.) Moench	1; 34; 54; 55	2017-123; 2018-227, 2018-259; Obs.; 2018-383	
117	*Valeriana officinalis* L.	2; 21; 26; 29; 40	2017-265; 2018-181; 2018-195; Obs.; Obs.	
	CARYOPHYLLACEAE			
118	*Arenaria serpyllifolia* L. subsp. *serpyllifolia*	14	2018-99	
119	**Bolanthus frankenioides* (Boiss.) Barkoudah var. *fasciculatus* (Boiss. & Heldr.) Barkoudah	7	2017-305	Medit.
120	**Bolanthus thymoides* Hub.-Mor.	5	2017-287	Ir.-Tur.
121	*Bufonia tenuifolia* L.	64	Obs.	
122	*Cerastium arvense* L.	16; 24; 25; 26	2018-150; 2018-191; Obs.; 2018-194	
123	*Cerastium brachypetalum* Pers. subsp. *roeseri* (Boiss. & Heldr.) Nyman	15; 19	2018-135; 2018-172	Medit.
124	*Cerastium dichotomum* L. subsp. *dichotomum*	34	Obs.	
125	*Cerastium glomeratum* Thuill.	34	2018-235	
126	*Cerastium ligusticum* Viv.	40; 43; 50; 51; 64	2018-282; 2018-297; Obs.; 2018-331; Obs.	Medit.
127	**Dianthus eretmopetalus* Stapf	7; 8; 70; 73	2017-302; Obs.; 2018-556; 2018-562	Medit.
128	*Dianthus zonatus* Fenzl var. *zonatus*	1; 3; 6; 55; 59; 66; 67	2017-34, 2017-53, 2017-113; 2017-271; 2017-297; 2018-413; Obs.; Obs.; 2018-548	
129	*Holosteum umbellatum* L. var. *umbellatum*	17	2018-157	
130	*Minuartia hybrida* (Vill.) Schischk. subsp. *hybrida*	20	2018-177	
131	*Minuartia mesogitana* (Boiss.) Hand.-Mazz. subsp. *mesogitana*	46; 50	2018-310; 2018-322	Medit.
132	**Minuartia recurva* (All.) Schinz & Thell. subsp. *carica* McNeill	7	2017-304	Medit.
133	*Moenchia mantica* (L.) Bartl.	19; 20; 42	Obs.; 2018-179; 2018-291	
134	*Polycarpon tetraphyllum* (L.) L.	62	Obs.	
135	*Saponaria calabrica* Guss.	13; 27; 40	2018-76; 2018-201; 2018-283	Medit.
136	*Silene bupleuroides* L. subsp. *bupleuroides*	10	2017-331	
137	*Silene conica* L.	34	2018-237, 2018-239	
138	**Silene echinospermoides* Hub.-Mor.	5	2017-282	Medit.
139	*Silene italica* (L.) Pers. subsp. *italica*	34	2018-231	Medit.
140	*Silene macrodonta* Boiss.	59	Obs.	
141	*Silene supina* M.Bieb. subsp. *pruinosa* (Boiss.) Chowdhuri	8	2017-317, 2017-321	
142	*Silene vulgaris* (Moench) Garcke	1	2017-117	

143	*Stellaria holostea* L.	15	2018-127	
144	*Vaccaria hispanica* (Mill.) Rauschert	1	2017-132	
	CISTACEAE			
145	*Cistus creticus* L.	1; 19; 54	2017-92; Obs.; 2018-335	Medit.
146	*Cistus laurifolius* L.	1	2017-35	Medit.
147	*Fumana aciphylla* Boiss.	5	2017-290	Ir.-Tur.
148	*Fumana arabica* (L.) Spach	5; 39	Obs.; Obs.	
149	*Fumana procumbens* (Dunal) Gren. & Godr.	33	2018-209	
150	*Helianthemum salicifolium* (L.) Mill.	16	2018-155	
	CLEOMACEAE			
151	*Cleome iberica* DC.	2	2017-267	Medit.
	CONVOLVULACEAE			
152	*Convolvulus arvensis* L.	1; 34; 55	2017-105; 2018-254; 2018-422	
153	*Convolvulus compactus* Boiss.	5; 55	2017-292; 2018-399	
	CRASSULACEAE			
154	**Prometheum serpentinicum* (Werderm.) t Hart var. *serpentinicum*	9	2017-329	Medit.
155	*Sedum album* L.	16	Obs.	
156	**Sedum lydium* Boiss.	69	2018-552	Medit.
157	*Sedum pallidum* M.Bieb.	4	2017-276	Euro-Sib.
158	*Umbilicus rupestris* (Salisb.) Dandy	15	Obs.	
	ERICACEAE			
159	*Arbutus andrachne* L.	54	2018-337	
160	*Erica manipuliflora* Salisb.	6; 45; 46	2017-298; 2018-302; Obs.	Medit.
	EUPHORBIACEAE			
161	**Euphorbia anacampseros* Boiss. var. *anacampseros*	9; 46; 50	Obs.; 2018-304; 2018-324	
162	**Euphorbia austroanatolica* Hub.-Mor. & M.S.Khan	25; 43; 46	Obs.; Obs.; 2018-309	Medit.
163	*Euphorbia exigua* L. subsp. *exigua*	15; 34	2018-124, 2018-137; 2018-257	
164	*Euphorbia falcata* L. subsp. *falcata* var. *galilaea*	34	Obs.	
165	*Euphorbia helioscopia* L. subsp. *helioscopia*	14	2018-96	
	FABACEAE			
166	*Anagyris foetida* L.	15	2018-128	Medit.
167	*Anthyllis vulneraria* L. subsp. *boissieri* (Sagorski) Bornm.	35; 55	2018-267; 2018-410, 2018-426	
168	*Astragalus angustifolius* Lam. subsp. *pungens* (Willd.) Hayek	7; 8	Obs.; 2017-316	
169	*Astragalus anthylloides* Lam.	55	2018-411	Ir.-Tur.
170	**Astragalus tmoleus* Boiss. var. *tmoleus*	2	2017-245	Medit.

171	*Cercis siliquastrum* L. subsp. *siliquastrum*	37	2018-269	Medit.
172	*Colutea melanocalyx* Boiss. & Heldr. subsp. *davisiana* (Browicz) D.F.Chamb.	33	2018-210	Medit.
173	*Cytisopsis dorycniifolia* Jaub. & Spach	1; 7; 13; 23; 36; 39; 44; 46	2017-50; 2017-303; 2018-80; Obs.; Obs.; Obs.; Obs.; Obs.	
174	*Cytisus eriocarpus* Boiss.	13	2018-73	Medit.
175	*Cytisus hirsutus* L.	18; 34; 37	Obs.; 2018-228; 2018-271	
176	*Dorycnium pentaphyllum* Scop. subsp. *anatolicum* (Boiss.) Gams	55	2018-418	
177	**Ebenus pisidica* Hub.-Mor. & Reese	1; 8	2017-70; 2017-319	Medit.
178	*Genista acanthoclada* DC.	3; 4; 13; 33; 35; 39; 55	Obs.; 2017-279; Obs.; 2018-220; 2018-264; Obs.; 2018-414	Medit.
179	*Genista januensis* Viv. subsp. *januensis*	16	2018-151	Medit.
180	**Genista sandrasica* Hartvig & Strid	7	2017-301	Medit.
181	*Hippocrepis emerus* (L.) Lassen subsp. *emeroides* (Boiss. & Spruner) Lassen	13; 26	2018-71; 2018-193	
182	*Hymenocarpos circinnatus* (L.) Savi	34	2018-234	
183	*Lathyrus cicera* L.	15; 18; 37; 50	2018-146; Obs.; 2018-270; 2018-320	Medit.
184	*Lathyrus setifolius* L.	14	2018-101	Medit.
185	*Lotus corniculatus* L. var. *corniculatus*	2; 7; 58; 61; 63	2017-242, 2017-259; 2017-300; 2018-536; 2018-542; Obs.	
186	*Medicago lupulina* L.	15	2018-132	
187	*Medicago minima* (L.) Bartal. var. *minima*	19	2018-171	
188	*Medicago monspeliaca* (L.) Trautv.	33	2018-219	Medit.
189	*Medicago rigidula* (L.) All. var. *rigidula*	15	2018-134	
190	*Medicago sativa* L. subsp. *sativa*	2	2017-250	
191	*Medicago truncatula* Gaertn. var. *truncatula*	15	2018-119, 2018-120	Medit.
192	*Melilotus indicus* (L.) All.	35	2018-268	
193	*Onobrychis aequidentata* (Sibth. & Sm.) d Urv.	55	2018-416	Medit.
194	*Onobrychis viciifolia* Scop.	55	2018-382, 2018-415	
195	*Ononis spinosa* L. subsp. *leiosperma* (Boiss.) Sirj.	1; 2; 58	2017-87; 2017-236; 2018-530	
196	*Ononis viscosa* L. subsp. *breviflora* (DC.) Nyman	1	2017-91	Medit.
197	*Pisum sativum* L. subsp. *elatius* (M.Bieb.) Aschers. & Graebn. var. *elatius*	14; 15	Obs.; 2018-145	Medit.

198	*Robinia pseudoacacia* L.	58; 59	Obs.; Obs.	
199	*Spartium junceum* L.	1; 55	2017-115; 2018-391	Medit.
200	*Trifolium campestre* Schreb. subsp. *campestre* var. *campestre*	55	2018-425	
201	*Trifolium hirtum* All.	34	2018-229	Medit.
202	*Trifolium stellatum* L. var. *stellatum*	55	2018-424	
203	*Trigonella corniculata* L.	55	2018-397	
204	*Vicia narbonensis* L. var. *narbonensis*	18	Obs.	
205	*Vicia sativa* L. subsp. *incisa* (M.Bieb.) Arc. var. *incisa*	14; 19	2018-91; 2018-174	
206	*Vicia sativa* L. subsp. *sativa*	15	2018-138	
207	*Vicia tetrasperma* (L.) Schreb.	33	2018-215	
208	*Vicia villosa* Roth subsp. *eriocarpa* (Hausskn.) P.W.Ball	39	2018-281	
	FAGACEAE			
209	*Quercus coccifera* L.	1; 4; 13; 15; 16; 37; 46	2017-89; Obs.; Obs.; Obs.; Obs.; Obs.; Obs.	Medit.
210	*Quercus infectoria* Oliv. subsp. *infectoria*	43; 44; 46	Obs.; Obs.; 2018-308	Euro-Sib.
211	*Quercus pubescens* Willd. subsp. *pubescens*	1	2017-88	
	GENTIANACEAE			
212	*Centaurium tenuiflorum* (Hoffmanns. & Link) Fritsch subsp. *tenuiflorum*	2	2017-263	
	GERANIACEAE			
213	*Erodium acaule* (L.) Becherer & Thell.	33; 55	Obs.; 2018-380	Medit.
214	*Erodium ciconium* (L.) L Her.	13	2018-79	
215	*Erodium cicutarium* (L.) L Hér. subsp. *cicutarium*	14; 15; 17; 34	Obs.; Obs.; Obs.; 2018-250	
216	*Geranium dissectum* L.	14; 15	2018-107; 2018-125	
217	*Geranium rotundifolium* L.	14; 15; 33	2018-98, 2018-103; 2018-121; 2018-223	
218	*Geranium tuberosum* L.	25; 37	2018-192; 2018-273	Ir.-Tur.
219	*Pelargonium endlicherianum* Fenzl	5	2017-284	
	HYPERICACEAE			
220	**Hypericum aviculariifolium* Jaub. & Spach	70	2018-558	Medit.
221	*Hypericum perforatum* L. subsp. *perforatum*	2; 55	2017-249; 2018-401	
	LAMIACEAE			
222	*Ajuga chamaepitys* (L.) Schreb. subsp. *palaestina* (Boiss.) Bornm.	1; 2; 13; 15; 34	2017-122, 2017-133; 2017-268; 2018-77; 2018-139; 2018-245	Medit.
223	*Clinopodium acinos* (L.) Kuntze	54	2018-338	Euro-Sib.
224	**Clinopodium troodi* (Post) Govaerts subsp. *vardaranum* (Leblebici) Govaerts	1; 9; 69; 70	2017-61, 2017-75, 2017-138; 2017-330; 2018-553; Obs.	Medit.

225	*Cyclotrichium origanifolium* (Labill.) Manden & Scheng.	2	Obs.	Medit.
226	*Lamium amplexicaule* L. var. *amplexicaule*	14	2018-106	
227	*Mentha spicata* L. subsp. *spicata*	2	2017-261	
228	**Nepeta cadmea* Boiss.	15	Obs.	Medit.
229	**Origanum hypericifolium* O.Schwarz & P.H.Davis	12; 63	2017-479; Obs.	Medit.
230	*Origanum onites* L.	1; 18	2017-111, 2017-114; Obs.	
231	*Phlomis armeniaca* Willd.	7; 8	Obs.; 2017-320	Ir.-Tur.
232	*Salvia argentea* L.	68	Obs.	Medit.
233	*Salvia candidissima* Vahl subsp. *occidentalis* Hedge	55	2018-409	
234	*Salvia sclarea* L.	1; 53; 55	2017-129; 2018-333; 2018-398	
235	*Salvia tomentosa* Mill.	1	2017-94	Medit.
236	*Salvia verbenaca* L.	2; 15	2017-240; Obs.	Medit.
237	*Salvia virgata* Jacq.	1	2017-52, 2017-79	Ir.-Tur.
238	*Scutellaria orientalis* L. subsp. *pinnatifida* J.R.Edm.	2; 13; 16; 21; 30; 33; 34; 39; 46; 50	2017-260; Obs.; Obs.; Obs.; Obs.; 2018-222; 2018-260; 2018-279; Obs.; Obs.	
239	*Sideritis libanotica* Labill. subsp. *linearis* (Benth.) Bornm.	8; 60	2017-322; Obs.	Medit.
240	*Stachys annua* (L.) L. subsp. *annua* var. *annua*	1; 55	2017-121; 2018-381	
241	*Stachys cretica* L. subsp. *cretica*	1; 2; 55	2017-101, 2017-140; 2017-235; 2018-389	
242	*Stachys germanica* L. subsp. *heldreichii* (Boiss.) Hayek	2	Obs.	Medit.
243	**Teucrium alyssifolium* Stapf	1; 6; 66	2017-58, 2017-77; 2017-296; Obs.	Medit.
244	*Teucrium chamaedrys* L. subsp. *chamaedrys*	1	2017-93	
245	*Teucrium polium* L. subsp. *polium*	1; 3; 5; 65; 72	2017-47; 2017-272; 2017-288; Obs.; 2018-560	
246	**Teucrium sandrasicum* O. Schwarz	11; 13; 64	2017-332; Obs.; Obs.	Medit.
247	*Teucrium scordium* L. subsp. *scordium*	57	2018-525	Euro-Sib.
248	*Thymus zygioides* Griseb.	5; 7; 55	2017-285; 2017-306; 2018-384, 2018-417	Medit.
249	*Ziziphora capitata* L.	55	2018-379	
	LENTIBULARIACEAE			
250	*Pinguicula crystallina* Sm.	1; 8	2017-71; 2017-323	Medit.
	LINACEAE			
251	*Linum bienne* Mill.	1	2017-110	
252	*Linum usitatissimum* L.	55	2018-419	
	LYTHRACEAE			

253	*Lythrum tribracteatum* Salzm. ex Ten.	56	2018-519	
	MALVACEAE			
254	*Malva sylvestris* L.	55	2018-403	
	OLEACEAE			
255	*Phillyrea latifolia* L.	5	2017-286	Medit.
	OROBANCHACEAE			
256	*Orobanche lutea* Baumg.	1; 43; 55	2017-136; 2018-298; 2018-390, 2018-421	
257	*Orobanche ramosa* L.	1; 14; 34	2017-80; 2018-93; 2018-256	
258	*Parentucellia latifolia* (L.) Caruel subsp. *latifolia*	42	2018-290	Medit.
	PAPAVERACEAE			
259	*Fumaria parviflora* Lam.	15; 55	2018-112; 2018-395	
260	*Fumaria vaillantii* Loisel.	14	2018-89	
261	*Glaucium flavum* Crantz	1; 55	2017-135; 2018-376, 2018-392	
262	*Hypecoum pendulum* L.	55	2018-385	
263	*Papaver argemone* L. subsp. *argemone*	1; 13; 37	2017-104; 2018-78; Obs.	
264	*Papaver dubium* L. subsp. *laevigatum* (M.Bieb.) Kadereit	2	2017-253	
265	*Papaver rhoeas* L.	1; 14; 34; 55	2017-107, 2017-131, 2017-134; 2018-90; 2018-233, 2018-241, 2018-249; 2018-407	
266	*Papaver virchowii* Asch. & Sint. ex Boiss.	1	2017-130	
	PLANTAGINACEAE			
267	*Linaria chalepensis* (L.) Mill. var. *chalepensis*	34	2018-236, 2018-262	Medit.
268	**Linaria corifolia* Desf.	55	2018-374	Ir.-Tur.
269	*Linaria genistifolia* (L.) Mill. subsp. *linifolia* (Boiss.) P.H.Davis	13	Obs.	
270	*Plantago albicans* L.	7	2017-309	Medit.
271	*Plantago lanceolata* L.	1; 14; 34; 62	2017-99; 2018-108; 2018-251; 2018-545	
272	*Veronica arvensis* L.	16	2018-156	Euro-Sib.
273	*Veronica chamaedrys* L.	48	2018-314	Euro-Sib.
274	*Veronica hederifolia* L.	16	2018-154	
275	*Veronica praecox* All.	16	2018-149	
276	*Veronica serpyllifolia* L.	1; 56	2017-66; 2018-520	
	PLATANACEAE			
277	*Platanus orientalis* L.	37	Obs.	
	PLUMBAGINACEAE			
278	**Acantholimon ulicinum* (Willd. ex Schult.) Boiss. var. *purpurascens* (Bokhari) Bokhari & J.R.Edm.	7	2017-308	Medit.
	POLYGALACEAE			

279	*Polygala anatolica* Boiss. & Heldr.	36; 50	Obs.; 2018-319, 2018-321	
280	*Polygala supina* Schreb. subsp. *supina*	8	2017-315	
	POLYGONACEAE			
281	*Polygonum salebrosum* Coode & Cullen	5; 7; 62	2017-289; 2017-312; 2018-546	Medit.
282	*Rumex crispus* L.	4	2017-280	
	PRIMULACEAE			
283	*Anagallis arvensis* L. var. *caerulea* (L.) Gouan	58	Obs.	
284	**Cyclamen alpinum* Dammann ex Spreng.	16	Obs.	Medit.
	RANUNCULACEAE			
285	*Adonis aestivalis* L. subsp. *aestivalis*	34	2018-243	
286	*Adonis flammea* Jacq.	1	2017-108	
287	*Anemone ranunculoides* L. subsp. *ranunculoides*	43; 46	2018-293; Obs.	Euro-Sib.
288	*Ceratocephala falcata* (L.) Pers.	17	2018-159	
289	*Delphinium peregrinum* L.	2	2017-237	Medit.
290	*Nigella arvensis* L. var. *involucrata* Boiss.	59	2018-539	
291	*Ranunculus arvensis* L.	14; 34	2018-95; 2018-232	
292	*Ranunculus repens* L.	33	2018-216	
293	*Ranunculus trichophyllus* Chaix ex Vill.	32; 56	2018-206; Obs.	
	RESEDACEAE			
294	*Reseda lutea* L. var. *nutans* Boiss.	1; 18	2017-126; 2018-167	
	ROSACEAE			
295	*Crataegus monogyna* Jacq. var. *monogyna*	1; 15; 33	2017-86; 2018-131; 2018-217	
296	*Pyrus elaeagnifolia* Pall. subsp. *elaeagnifolia*	18; 58	Obs.; 2018-527	
297	*Rosa canina* L.	1; 8; 18; 55	2017-95; 2017-325; Obs.; 2018-377	
298	*Rubus sanctus* Schreb.	2	2017-255	
299	*Sanguisorba minor* L. subsp. *lasiocarpa* (Boiss. & Hausskn.) Nordborg	1; 33; 34; 62	2017-56; Obs.; 2018-247; Obs.	
	RUBIACEAE			
300	*Asperula stricta* Boiss. subsp. *stricta*	7	2017-311	Medit.
301	*Crucianella latifolia* L.	2; 15	2017-246; Obs.	Medit.
302	*Cruciata taurica* (Pall. ex Willd.) Ehrend.	1; 3; 18; 26; 40; 41; 51	2017-48; 2017-273; 2018-169; 2018-196; 2018-285; Obs.; 2018-329	Ir.-Tur.
303	*Galium album* Mill. subsp. *amani* Ehrend. & Schönb.-Tem.	13; 15	2018-84; 2018-136	
304	*Galium aparine* L.	1; 13; 14; 18	2017-83; 2018-86; Obs.; 2018-165	

305	*Galium odoratum* (L.) Scop.	15	2018-130	Euro-Sib.
306	*Galium verum* L. subsp. *verum*	2	2017-244	Euro-Sib.
307	*Rubia tenuifolia* d'Urv. subsp. *tenuifolia*	74	2018-565	Medit.
308	*Sherardia arvensis* L.	34	2018-226	Medit.
	SANTALACEAE			
309	*Thesium bergeri* Zucc.	1; 33; 34	2017-38; 2018-218; 2018-225	Medit.
	SAXIFRAGACEAE			
310	*Saxifraga cymbalaria* L.	26; 29	2018-197; Obs.	
	SCROPHULARIACEAE			
311	*Scrophularia canina* L. subsp. *bicolor* (Sm.) Greuter	15; 37	2018-143; 2018-276	Medit.
312	**Verbascum cariense* Hub.-Mor.	1; 36; 51; 52	2017-67, 2017-74; Obs.; 2018-332; Obs.	Medit.
313	*Verbascum lasianthum* Boiss. ex Benth.	1; 4	2017-64; 2017-278	
314	*Verbascum sinuatum* L. subsp. *sinuatum* var. *sinuatum*	59	2018-537	Medit.
315	**Verbascum trapifolium* (Stapf) Hub.-Mor.	74	2018-566	Medit.
	TAMARICACEAE			
316	*Tamarix parviflora* DC.	1; 4; 56	2017-65; 2017-275; 2018-518	Medit.
	THYMELAEACEAE			
317	*Daphne sericea* Vahl subsp. *sericea*	15; 16; 54	2018-141; Obs.; 2018-336	Medit.
	VIOLACEAE			
318	**Viola heldreichiana* Boiss.	21; 30	2018-180; Obs.	Medit.
319	*Viola kitaibeliana* Roem. & Schult.	46; 50	Obs.; 2018-325	
	MONOCOTYLEDONAE			
	AMARYLLIDACEAE			
320	*Allium hirtovaginatum* Kunth	73	2018-561	Medit.
321	*Allium scorodoprasum* L. subsp. *rotundum* (L.) Stearn	2	2017-238	
322	*Allium stamineum* Boiss.	2	2017-252	Medit.
	ARACEAE			
323	*Dracunculus vulgaris* Schott	14; 18	Obs.; Obs.	Medit.
	ASPARAGACEAE			
324	*Asparagus aphyllus* L. subsp. *aphyllus*	1	2017-90	
325	*Muscari armeniacum* Leichtlin ex Baker	23	Obs.	
326	*Muscari comosum* (L.) Mill.	1; 40	2017-63; 2018-287	Medit.
327	*Muscari neglectum* Guss. ex Ten.	15; 21	2018-115; Obs.	
328	**Muscari racemosum* Mill.	1; 5; 13; 26; 27; 29	2017-40, 2017-76; 2017-291; 2018-81; Obs.; 2018-199; 2018-203	Medit.
329	**Muscari sandrasicum* Karlén	16; 48; 49	Obs.; 2018-315; Obs.	Medit.

330	**Ornithogalum alpigenum* Stapf	46	2018-311	Medit.
331	*Ornithogalum narbonense* L.	55	2018-375	Medit.
332	*Ornithogalum nutans* L.	17	2018-160	Medit.
333	*Ornithogalum umbellatum* L.	1; 7	2017-62; 2017-299	
334	*Prospero autumnale* (L.) Speta	61; 62	2018-544; Obs.	Medit.
	CYPERACEAE			
335	*Carex hirta* L.	33	2018-214	Euro-Sib.
336	*Eleocharis palustris* (L.) Roem. & Schult. subsp. *palustris*	1; 61; 71	2017-85; Obs.; Obs.	
337	*Scirpoides holoschoenus* (L.) Soják subsp. *holoschoenus*	2; 57; 61	2017-262; 2018-521; 2018-543	
	IRIDACEAE			
338	*Gladiolus illyricus* W.D.J.Koch	1; 55	2017-54; 2018-408	Medit.
	JUNCACEAE			
339	*Juncus effusus* L. subsp. *effusus*	33	2018-212	
	LILIACEAE			
340	*Tulipa armena* Boiss.	23	2018-186	
341	*Tulipa sylvestris* L. var. *sylvestris*	23; 28; 43; 49; 51	Obs.; 2018-202; 2018-294; 2018-317; 2018-330	
	ORCHIDACEAE			
342	*Cephalanthera epipactoides* Fisch. & C.A.Mey.	19; 20; 33; 38	Obs.; 2018-178; 2018-208; 2018-278	Medit.
343	*Cephalanthera rubra* (L.) Rich.	33	2018-207	
344	*Limodorum abortivum* (L.) Sw. var. *abortivum*	19; 35	Obs.; 2018-263	
345	*Orchis anatolica* Boiss.	16; 20; 28; 30	2018-152; Obs.; Obs.; 2018-204	Medit.
	POACEAE			
346	*Aegilops geniculata* Roth	1; 2	2017-128; Obs.	Medit.
347	*Aegilops triuncialis* L. subsp. *triuncialis*	55	2018-371	
348	*Avena barbata* Pott ex Link subsp. *barbata*	1	2017-96	Medit.
349	*Bromus racemosus* L.	2	2017-257	Euro-Sib.
350	*Bromus sterilis* L.	14	2018-110	
351	*Bromus tectorum* L.	1; 34	2017-127; 2018-252	
352	*Calamagrostis epigeios* (L.) Roth	2	2017-258	Euro-Sib.
353	*Crypsis alopecuroides* (Piller & Mitterp.) Schrad.	61	2018-540	
354	*Cynodon dactylon* (L.) Pers. var. *dactylon*	58	2018-529	
355	*Echinaria capitata* (L.) Desf.	1; 37	2017-119; 2018-275	
356	*Hordeum murinum* L. subsp. *murinum*	1	2017-97	
357	*Micropyrum tenellum* (L.) Link	33	2018-213	Medit.
358	*Phragmites australis* (Cav.) Trin. ex Steud.	57	Obs.	Euro-Sib.
359	*Poa bulbosa* L.	19; 40	2018-170; 2018-286	
360	*Poa pratensis* L.	14	2018-104	

361	*Setaria viridis* (L.) P.Beauv.	59	Obs.
	POTAMOGETONACEAE		
362	*Zannichellia palustris* L. subsp. *palustris*	56	2018-517
	TYPHACEAE		
363	*Typha angustifolia* L.	2	2017-266