

## **Assessment Of Endemic Plant Taxa In Kastamonu Province And Classification By Iucn Categories**

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**Abstract:** 235 endemic plant taxa located in the province of Kastamonu in the Euro-Siberian phytogeographic region were classified according to the IUCN categories. Respectively, three families; *Astraceae*, *Fabaceae*, and *Scrophulariaceae* have the most endemic taxons (species, subspecies, and variety) within. In addition, *Astragalus* is the leading genus followed by *Verbascum* and *Hieracium* in terms of richness in endemic taxa. When taxa evaluated according to the IUCN categories; 2 taxa in CR, 21 taxa in FR, 24 taxa in VI, 142 taxa in LC, 28 taxa in NT, and 9 taxa in DD category were identified. Furthermore, six taxa are protected by CITES (Convention on International Trade in Endangered Species).

**Keywords:** CITES, Endemic, Flora, IUCN, Kastamonu.

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### **I. Introduction**

Geographic location and topographical features of Turkey provide a rich biodiversity [1]. Our country with 11 710 taxa, which incorporates almost the entire European continent with a diversity of species, is located the intersection of the substantial biological regions such as the Caucasus, the Mediterranean Basin, and Irano-Turanian zones. With regards to endemism our country is very rich (3649 endemic taxa and endemism rate of 31.82%), because of owning different ecological properties [2].

Kastamonu province is located in the Western Black Sea Region is an important place for biodiversity by means of some characteristics such as changing average elevation between 0-2500 m, rivers within its borders, high mountains, valleys, and changing climate features in short distances. Ilgaz Mountain National Park and Kure Mountains National Park, 3 Nature Parks, 4 Natural Monument, and 4 YHGS (Wildlife Development Area) are located within the borders. In addition, Kure Mountains that is one of 9 hot points which designated as a hot spot of European forests are located in province of Kastamonu.

### **II. Material & Method**

#### **II.I Material:**

Endemic plant taxa within Kastamonu City borders constitute the material of this study. Endemic taxa have been evaluated and determined by using mainly Flora of Turkey [2, 3, 4], including Turkey's Flora additional lists [5, 6] and other studies in the region [7, 8, 9, 10, 11, 12, 13, 14, 15].

#### **II.II Method:**

Endemic taxa that were founded in this study were shown in a table as family, genus, species and sub-species alphabetically. Names belong to plants were given based on "Turkey Plant List (Vascular Plants)" book that was generated with APG III (2009) system [2]. The taxa life form, habitat, flowering time, elevation and phytogeographic zone information are also included. Furthermore, IUCN categories are listed according to "The Red Book of Turkey's Plants" in this article [1].

The abbreviations used in the text and the floristic list are as follows; About IUCN risk categories: CR: critically endangered; DD: data deficient; EN: endangered; LR: low risk; NT: near threatened; VU: vulnerable;

The other abbreviations: E.: East; IUCN: International Union for the Conservation of Nature and Natural Resources; m: meter; mt.: mountain; ssp.: subspecies; var.: variety

### **III. Results & Discussion**

1005 plant taxa are naturally distributed in Kastamonu province. As a result of this research it was determined that 236 of these are endemic taxa. In consequence of this study; 2 taxa in C, 21 taxa in FR, 24 taxa in V, 142 taxa in LC, and 28 taxa in NT were found when they were evaluated according to IUCN categories. Additionally, 9 of 235 endemic taxa were classed as still undefined taxa. The total endemic plant taxa proportions of Kastamonu is shown in Fig. 1.

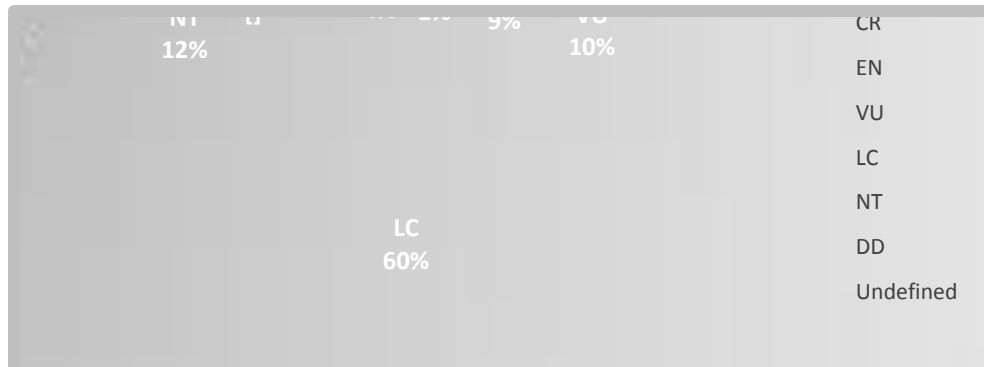


Figure 1. Distribution of endemic taxa according to IUCN categories.

Rich families were identified in terms of having endemic taxa in this article. Asteraceae family takes the first place in the study region as the flora of Turkey. Following families after Asteraceae are indicated in Fig. 2. Genesis that have the most inclusion of endemic taxa were studied out as; Astragalus (19), Verbascum (14), Hieracium (12), Onosma (10), and Festuca (8) respectively. The ratio of this genesis to total endemic taxa is shown in Fig. 3.

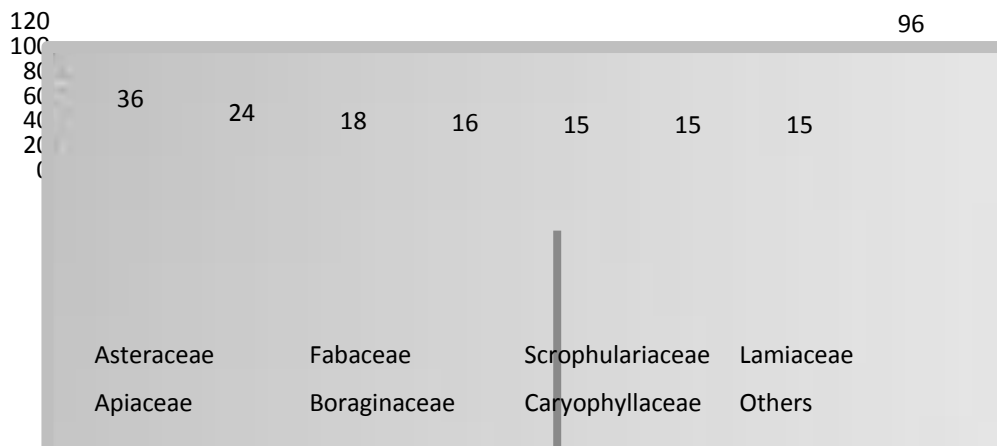


Figure 2. Distribution of endemic taxa with regards to families

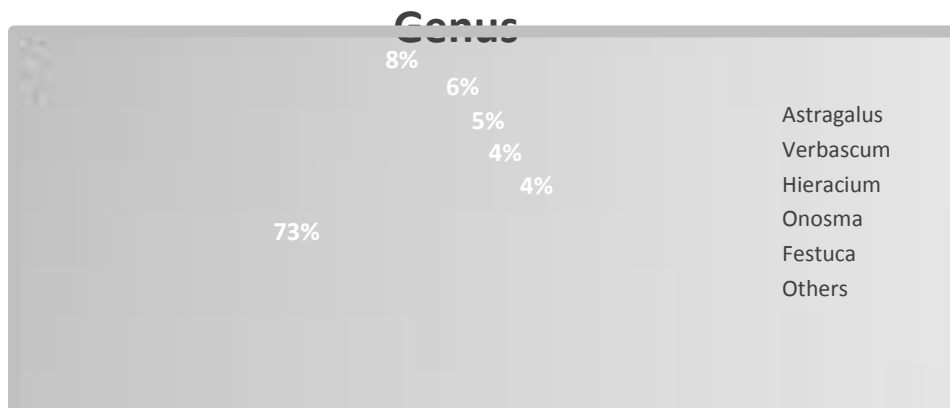


Figure 3. Distribution of endemic taxa with regards to genesis.

When endemic taxa was classified by phytogeographical regions, it was determined that Iran –Turan element plants took the first place, Euro-Siberia element plants took the second with 52 taxa, and then plants of Mediterranean elements come afterwards with 9 taxa (Table 1.). Large number of plants take place in Kastamonu province, where geographically borders lie within Euro-Siberia phytogeographic region, has not

only temperate climate but also continental climate caused by Irano-Turanian element. Mediterranean elements can be seen as a micro climate.

**Table 1.** Distribution of Endemic Taxa by Phytogeographical Regions

Phytogeographical Region	Taxa number	Taxa number	Rate (%)
<b>Euro Siberian</b>	4		22
Euxine	39	52	
Euxine (mt.)	9		
<b>Irano-Turanian</b>	82	82	35
<b>Mediterranean</b>	1		3,8
E. Medit.	6	9	
E. Medit. (mt.)	2		
Subtotal	143	143	60,8
Other	92	92	39,2
Total	235	235	100

Identified edemic taxa and information about them are shown in Table 2.

Table 2. Identified Endemic Taxa in Kastamonu Province

FAMILY	TAXA	LIFE	FORM	FLORESCENCE (MONTH)	HABITAT	ALTITUDE (M)	IUCN	ELEMENT	CITES	BERN
Pinaceae	<i>Abies nordmanniana</i> ssp. <i>equi-trojani</i>	Perennial	tree	-	Forest	0-1940	NT	Euxine		
Ranunculaceae	<i>Ranunculus kastamonuensis</i> Dönmez	-	-	-	-	-	-	-		
Ranunculaceae	<i>Delphinium davisii</i> Munz.	Annual	Herbaceous	7-8	Hazel and oak scrub, field margins	850-950	NT	-		
Ranunculaceae	<i>Delphinium venulosum</i> Boiss.	Annual	Herbaceous	7-8	Steppe, fallow fields and vineyards	200-1200	LC	Irano-Turanian		
Papaveraceae	<i>Papaver pilosum</i> Sibth. & Sm. ssp. <i>sparsipilosum</i> (Boiss.) Kadereit	Perennial	Herbaceous	7	Rocky slopes	1400-1800	VU	E. Mediterranean		
Papaveraceae	<i>Papaver pilosum</i> Sibth. & Sm. ssp. <i>pilosum</i>	Perennial	Herbaceous	6-9	Rocky slopes	1100-2200	LC	-		
Papaveraceae	<i>Corydalis wendelboi</i> Liden ssp. <i>congesta</i> Liden Zetterl.	Perennial	Herbaceous	4-6	Scrub, screes, slopes, etc.	700-1700	EN	-		
Brassicaceae	<i>Noccaea violascens</i> (Schoust & Kotschy) F.K. Mey	Annual	Herbaceous	4-5	Slopes and screes	300-1800	LC	-		
Brassicaceae	<i>Thlaspi lilacinum</i> Boiss. & Huet	Perennial	Herbaceous	5-7	Dry alpine slopes and meadows	2100-2500	LC	-		
Brassicaceae	<i>Thlaspi jaubertii</i> Hedge	Annual	Herbaceous	4-5	Streamsides, open woodland	300-1200	LC	-		
Brassicaceae	<i>Pseudosempervivum sempervivum</i> (Boiss. & Balansa) Pobed.	Annual	Herbaceous	5-6	Rocky slopes and rock crevices	1370-2100	EN	-		
Brassicaceae	<i>Alyssum bulbotrichum</i> Hausskn. & Bornm.	Annual	Herbaceous	5-6	?	1700-2000	LC	-		
Brassicaceae	<i>Alyssum paphlagicum</i> (Hausskn.) T.R. Dudley	Perennial	Herbaceous	5-6	Open stony places	800-1400	LC	Irano-Turanian		
Brassicaceae	<i>Alyssum pateri</i> Nyar ssp. <i>pateri</i>	Perennial	subshrub	5-6	Pinewoods, macchie, steppe	500-3000	LC	Irano-Turanian		
Brassicaceae	<i>Alyssum peltarioides</i> Boiss. ssp. <i>virgatiforme</i> (Nyar) T.R. Dudley	Perennial	subshrub	6-7	Igneous slopes	900-2600	LC	-		
Brassicaceae	<i>Alyssum virgatum</i> Nyar.	Perennial	Subshrub	5-7	Open places, forests	1400-2100	NT	-		
Brassicaceae	<i>Arabis abietina</i>	Biennial	Herbaceous	6	<i>Abies</i> forests	2100	VU	-		

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	Bornm.		eous					
Brassicaceae	<i>Barbarea trichopoda</i> Hausskn. ex Bornm.	Perennial	Herbac eous	5-6	?	1500- 1750	NT	-
Brassicaceae	<i>Hesperis buschiana</i> Tzvelev	Perennial	Herbac eous	5	?	600- 1200	NT	-
Brassicaceae	<i>Erysimum pseudopurpureum</i> Polatschek	Perennial	Herbac eous	5	?	-1--1	-	-
Cistaceae	<i>Fumana paphlagonica</i> Bornm. & Janch.	Perennial	Scrub	6-8	Especially chalk and gypsum hills	250- 1300	LC	Irano- Turanian
Cistaceae	<i>Helianthemum nummularium</i> (L.) Mill. ssp. <i>lycaonicum</i> Coode & Cullen	Perennial	Subscr ub	5-7	Steppe	800- 1600	LC	-
Caryophyllace ae	<i>Eremogone acerosa</i> (Boiss.) Ikonn	Perennial	Subscr ub	6-8	Stony slopes and scree	1350- 2450	LC	Irano- Turanian
Caryophyllace ae	<i>Minuartia gracilis</i> McNeill	Perennial	Herbac eous	6	rocks	730- 1700	VU	-
Caryophyllace ae	<i>Minuartia mesogitana</i> (Boiss.) Hand.- Mazz. ssp. <i>flaccida</i> McNeill	Annual	Herbac eous	8	Stony places	-1--1	EN	-
Caryophyllace ae	<i>Minuartia corymbulosa</i> (Boiss. & Balansa) MecNeill var. <i>corymbulosa</i>	Perennial	Herbac eous	7-8	Steppe	450- 1400	NT	Irano- Turanian
Caryophyllace ae	<i>Dianthus balansae</i> Boiss.	Perennial	Herbac eous	7-9	Stony slopes, often limestone	1800- 2900	LC	-
Caryophyllace ae	<i>Dianthus kastembeluensis</i> Freyn & Sint.	Perennial	Herbac eous	8	cliffs	50- 1300	LC	Euxine
Caryophyllace ae	<i>Dianthus leucophaeus</i> Sm.	Perennial	Herbac eous	6-9	Mountain sides	1500- 2400	LC	
Caryophyllace ae	<i>Silene olympica</i> Boiss. var. <i>olympica</i>	Perennial	Herbac eous	5-8	Rocky slopes	400- 2200	LC	-
Caryophyllace ae	<i>Silene paphlagonica</i> Bornm.	Perennial	Herbac eous	6	<i>Abies</i> forests	1600	VU	-
Caryophyllace ae	<i>Paronychia anatolica</i> Czeczott ssp. <i>anatolica</i>	Perennial	Herbac eous	5-7	Rocky limestone slopes	900	VU	-
Caryophyllace ae	<i>Paronychia beauverdii</i> Czeczott	Perennial	Herbac eous	6-8	Dry sloping pastures	1000- 1500	LC	Irano- Turanian
Caryophyllace ae	<i>Paronychia paphlagonica</i> Chaudhri ssp. <i>paphlagonica</i>	Perennial	Herbac eous	6-7	Marl hills	1100	EN	-
Caryophyllace ae	<i>Paronychia paphlagonica</i> Chaudhri ssp. <i>caespitosa</i> Chaudhri	Perennial	Herbac eous	6	?	900	EN	-
Caryophyllace ae	<i>Saponaria prostrata</i> Willd. ssp. <i>prostrata</i>	Annual, Biennial and Perennial	Herbac eous	4-7	Fields, disturbed habitats	320- 1300	LC	Irano- Turanian
Caryophyllace ae	<i>Bolanthus thymoides</i> Hub.-Mor.	Perennial	Herbac eous	6-7	Steppe, dry hillsides	1180- 1660	LC	-

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Polygonaceae	<i>Rumex gracilescens</i> Rech.f.	Perennial	Herbac eous	4-6	Meadows	1900- 2500	NT	-
Celastraceae	<i>Eounymus latifolius</i> Mill ssp. <i>cauconis</i> Coode& Cullen	Perennial	Scrub or small tree	?	Forests	?	NT	-
Linaceae	<i>Linum flavum</i> L. ssp. <i>scabrinerve</i> (P.H. Davis) P.H. Davis	Perennial	Herbac eous	5-6	Calcareous steppe, hillsides, fallow fields, and roadsides	500- 1000	LC	Irano- Turanian
Linaceae	<i>Linum olympicum</i> Boiss.	Perennial	Subscr ub	6-8	Rocky limestone slopes, screes, ledges, edge of <i>Pinus</i> <i>brutia</i> forest	800- 2400	LC	-
Linaceae	<i>Linum hirsutum</i> L. ssp. <i>pseudo- anatolicum</i> Davis	Perennial	Subscr ub	6-7	Steppe, fallow fields, open oak scrub and <i>Pinus nigra</i> forest	500- 2000	LC	Irano- Turanian
Geraniaceae	<i>Erodium</i> <i>birandianum</i> İlarşlan & E. Yurdakol	Perennial	Herbac eous	7	Subalpine, limestone rocks	1900	EN	Euxine
Geraniaceae	<i>Geranium ibericum</i> Cav ssp. <i>jubatatum</i> (Hand.- Mazz.)	Perennial	Herbac eous	7-8	Rocky igneous slopes, meadows, scrub	1900- 3000	LC	Euxine
Fabaceae	<i>Astragalus listoniae</i> Boiss.	Perennial	Herbac eous	6-7	Under <i>Pinus</i> and <i>Quercus</i>	1700	VU	Irano- Turanian
Fabaceae	<i>Astragalus nabelekii</i> Czeczott	Perennial	Herbac eous	7	?	2400	DD	-
Fabaceae	<i>Astragalus leucothrix</i> Frey & Bornm.	Perennial	Herbac eous	6	Open rocky places	600- 2300	LC	Irano- Turanian
Fabaceae	<i>Astragalus micropterus</i> Fisch.	Perennial	Scrub	6-7	Stony places	850- 1860	LC	Irano- Turanian
Fabaceae	<i>Astragalus albifolius</i> Frey & Sint.	Perennial	Scrub	7-8	Mountains	1200	LC	Irano- Turanian
Fabaceae	<i>Astragalus baibutensis</i> Bunge	Perennial	Scrub	6-7	Mountainous districts	500- 2130	LC	Irano- Turanian
Fabaceae	<i>Astragalus panduratus</i> Bunge	Perennial	Herbac eous	-	?	-1--1	EN	Irano- Turanian
Fabaceae	<i>Astragalus dipsaceus</i> Bunge	Perennial	Herbac eous	6	Upland regions	600- 1320	LC	Irano- Turanian
Fabaceae	<i>Astragalus macrocephalus</i> Willd. ssp. <i>macrocephalus</i>	Perennial	Herbac eous	6-8	Gravelly hillslopes, steppe etc.	600- 1100	NT	Irano- Turanian
Fabaceae	<i>Astragalus karamasicus</i> Boiss. & Balansa	Perennial	Herbac eous	6-7	Steppe, waste ground	450- 2060	LC	Irano- Turanian
Fabaceae	<i>Astragalus amoenus</i> Fenzl	Perennial	Herbac eous	5-7	Alpine meadows, etc.	900- 2300	LC	-
Fabaceae	<i>Astragalus syringus</i> D.F. Chamb.	Perennial	Herbac eous	6	Calcareous marl	900- 1600	EN	-
Fabaceae	<i>Astragalus humillimus</i> Freyn & Sint.	Perennial	Herbac eous	6	<i>Pinus</i> forests	1300- 1800	LC	Euxine (Mt.)

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Fabaceae	<i>Astragalus sigmoideus</i> Bunge	Perennial	Herbaceous	5-6	Cliffs, sandstone slopes, fields	400-1200	LC	-
Fabaceae	<i>Astragalus kastamonuensis</i> D.F. Chamb. & V.A. Matthews	Perennial	Herbaceous	6	?	-1--1	CR	Irano-Turanian
Fabaceae	<i>Astragalus lycius</i> Boiss.	Perennial	Herbaceous	5-6	Limestone slopes, quercus macchie, etc.	400-1800	LC	-
Fabaceae	<i>Astragalus hirsutus</i> Vahl.	Perennial	Herbaceous	6-7	Under <i>Pinus</i> and in grassland, calcareous scree	800-3200	LC	-
Fabaceae	<i>Astragalus condensatus</i> Ledeb.	Perennial	Scrub	5-7	Steppe, woods, etc.	900-3000	LC	Irano-Turanian
Fabaceae	<i>Astragalus coodei</i> Chamb. & Matthews	Perennial	Herbaceous	6	Rocky slopes under <i>Pinus</i>	1300-1600	LC	-
Fabaceae	<i>Vicia freyniana</i> Bornm.	Perennial	Herbaceous	6-7	Coniferous forest, sub alpine meadows, streamsides	1350-2130	LC	Euxine
Fabaceae	<i>Lathyrus czechottianus</i> Bössler	Perennial	Herbaceous	6-7	Open forests, rocky slopes, eroded banks	1150-2200	LC	-
Fabaceae	<i>Trifolium aureum</i> Pollich ssp. <i>barbulatum</i> Freyn & Sint	Annual	Herbaceous	7	Igneous slopes, edges of forest	1100-2000	LC	-
Fabaceae	<i>Trifolium caudatum</i> Boiss.	Perennial	Herbaceous	5-8	Woods and forest clearings, pastures, etc.	600-1600	LC	-
Fabaceae	<i>Trifolium elongatum</i> Willd.	Perennial	Herbaceous	6-8	Meadows, forest clearings, steppe	300-2350	LC	-
Rosaceae	<i>Potentilla umbrosa</i> Steven ssp. <i>decrescens</i> Sojak	Perennial	Herbaceous	6-8	Wet places, alpine pastures	1800-2000	EN	Euxine
Rosaceae	<i>Crataegus tanacetifolia</i> (Poir.) Pers.	Perennial	Scrub	6	Rocky limestone slopes in <i>Pinus</i> or <i>Quercus</i> forest	800-1800	LC	-
Rosaceae	<i>Crataegus x bornmuelleri</i> Zabel ex K.I. Chr. & Ziel.	Perennial	Scrub	5-6	rocky, igneous slopes, <i>Pinus</i> or <i>Quercus</i> forests	800-1800	-	-
Crassulaceae	<i>Sempervivum gillianiae</i> Muirhead	Perennial	Herbaceous	7-8	Rocky limestone slopes	1800-2100	LC	Euxine (Mt.)
Apiaceae	<i>Eryngium bithynicum</i> Boiss.	Annual or Biennial	Herbaceous	6-9	Steppe, fallow fields, eroded banks	100-1400	LC	Irano-Turanian
Apiaceae	<i>Seseli resinsum</i>	Perennial	Herbaceous	7-8	Limestone	0-600	VU	-

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	Freyne & Sint.	or Monocarpic	erous		cliffs near the sea; rocks and mixed forest			
Apiaceae	<i>Seseli paphlagonicum</i> Pimenov & Kljuykov	-	-	-	-	-	-	-
Apiaceae	<i>Prangos denticulata</i> Fisch. & C.A: Mey	Perennial	Herbaceous	-	-	500-1000	DD	Irano-Turanian
Apiaceae	<i>Bupleurum sulphureum</i> Fenzl	Annual	Herbaceous	6-7	Steppe, dry open habitats, on calcareous soil, secondarily as a segetal weed	400-1500	LC	Irano-Turanian
Apiaceae	<i>Bupleurum setaceum</i> Boiss. & Balansa	Annual	Herbaceous	8-9	Scrub vegetation at low altitudes	-1--1	LC	E. Mediterranean
Apiaceae	<i>Ferulago pauciradiata</i> Boiss. & Heldr.	Perennial	Herbaceous	6-7	Mountain steppe	200-1850	LC	Irano-Turanian
Apiaceae	<i>Ferulago platycarpa</i> Boiss. & Bal.	Perennial	Herbaceous	5-6	Mountain slopes	900-2250	LC	Irano-Turanian
Apiaceae	<i>Peucedanum palimbioides</i> Boiss.	Perennial	Herbaceous	7-8	Dry eroded slopes, vineyards, etc.	400-1300	LC	Irano-Turanian
Apiaceae	<i>Peucedanum graminifolium</i> Boiss.	Perennial	Herbaceous	7	Grassy places	800	EN	-
Apiaceae	<i>Pastinaca armena</i> Fisch. & C.A. Mey	Biennial or Perennial	Herbaceous	7	Alpine meadows	1620-2000	VU	-
Apiaceae	<i>Malabaila pastinacifolia</i> Boiss. & Balansa	Biennial	Herbaceous	6-8	Roadsides, steppe	1200-1770	LC	Irano-Turanian
Apiaceae	<i>Heracleum paphlagonicum</i> Czeczott	Perennial	Herbaceous	6-7	By streams in mixed forest ( <i>Abies</i> , <i>Pinus nigra</i> , <i>Fagus orientalis</i> etc.)	1200-1750	LC	Euxine?
Apiaceae	<i>Stenotaenia macrocarpa</i> Freyne & Sint.	Biennial	Herbaceous	7	Meadows and woods	-1--1	-	-
Apiaceae	<i>Scaligeria lazica</i> Boiss.	Perennial	Herbaceous	7-8	Damp deciduous or coniferous forests, stony places	500-1900	NT	Euxine
Caprifoliaceae	<i>Lonicera orientalis</i> Lam.	Perennial	Scrub	5-7	Coniferous or deciduous forest, amongst Scrub	500-2790	LC	-
Caprifoliaceae	<i>Cephalaria paphlagonica</i> Bobrov	Perennial	Herbaceous	7-8	Rocks and bare slopes	250-700	NT	-
Caprifoliaceae	<i>Knautia byzantina</i> Fritsch	Annual	Herbaceous	5-6	Fields, slopes	0-1300	NT	-
Caprifoliaceae	<i>Scabiosa columbaria</i> L. ssp. <i>paphlagonica</i>	Perennial	Herbaceous	7-8	Open woodland,	1400-2200	LC	Euxine (Mt.)



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	(Bornm.) V.A. Matthews				roadsides			
Asteraceae	<i>Inula helenium</i> L. ssp. <i>orgyalis</i> (Boiss.) Grierson	Perennial	Herbaceous	7-9	Stream or lakesides, often in forests or scrub	1000-2560	NT	Euxine
Asteraceae	<i>Helichrysum arenarium</i> (L.) Moench ssp. <i>aucheri</i> (Boiss.) P.H. Davis & Kupicha	Perennial	Herbaceous	5-8	Dry calcareous or sandy soils; steppe, banks	250-3200	LC	Irano-Turanian
Asteraceae	<i>Helichrysum arenarium</i> (L.) Moench ssp. <i>erzincanicum</i> (Boiss.) P.H. Davis & Kupicha	Perennial	Herbaceous	5-8	Dry calcareous or sandy soils; steppe, banks	250-3200	VU	Irano-Turanian
Asteraceae	<i>Doronicum bithynicum</i> J.R Edm. ssp. <i>sparsipilosum</i> J.R. Edm.	Perennial	Herbaceous	6-8	<i>Abies</i> woodland, shady rocky slopes	1630-2200	LC	Euxine (Mt.)
Asteraceae	<i>Doronicum bithynicum</i> J. R. Edmondson ssp. <i>bithynicum</i>	Perennial	Herbaceous	6-8	Rocky slopes and juniperus scrub	1450-2200	NT	Euxine
Asteraceae	<i>Turanecio hypochionaeus</i> (Boiss.) Hamzaoglu	Perennial	Herbaceous	5-8	Rocky or grassy slopes	1300-2900	LC	-
Asteraceae	<i>Tephrosieris integrifolia</i> (L.) Holub ssp. <i>karsiana</i> (V.A. Matthews) B.Nord	Perennial	Herbaceous	6-7	Water meadows, stream-sides	1900-2200	VU	Euxine (Mt.)
Asteraceae	<i>Anthemis sintenisii</i> Freyn	Annual	Herbaceous	5-7	In steppe, fields and on rocks	300-1525	LC	Irano-Turanian
Asteraceae	<i>Tripleurospermum rosellum</i> (Boiss. & Orph.) Hayek var. <i>album</i> E. Hossain	Perennial	Herbaceous	4-6	Limestone rocks, bare ground, etc.	400-2150	VU	-
Asteraceae	<i>Tripleurospermum repens</i> ( Freyn & Sint. ) Bornm.	Perennial	Herbaceous	5-6	In fields	1600-1900	LC	-
Asteraceae	<i>Cousinia stapfiana</i> Freyn & Sint.	Perennial	Herbaceous	5-10	Calcareous steppe, vineyards, fallow fields	660-1100	LC	Irano-Turanian
Asteraceae	<i>Cirsium sintenisii</i> Freyn	Biennial	Herbaceous	7-9	Open banks in <i>Abies</i> forest, edge of field, roadside in <i>Pinus</i> forest	1300-1700	NT	-
Asteraceae	<i>Cirsium pubigerum</i> DC. var. <i>paphlagonicum</i> Petr.	Perennial	Herbaceous	6-9	By streams, rarely in forests	1400-3000	EN	-
Asteraceae	<i>Centaurea consanguinea</i> DC.	Perennial	Herbaceous	6-8	Steppe, dry and rocky slopes	0-1600	LC	Irano-Turanian
Asteraceae	<i>Centaurea drabifolia</i>	Perennial	Herbaceous	6-8	Rocks, rocky	1300-	LC	-

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	<i>Sm. ssp. cappadocica</i> (DC.) Wagenitz		eous		slopes, scree	1600		
Asteraceae	<i>Centaurea tossiensis</i> Freyn & Sint.	Perennial	Herbac eous	7	?	-1--1	VU	-
Asteraceae	<i>Cyanus pichleri</i> (Boiss.) Holub ssp. <i>extrarosularis</i> ( Hayek & Siehe) Wagenitz & Greuter	Perennial	Herbac eous	6-7	Steppe, stony slopes and rocks	750- 3100	LC	-
Asteraceae	<i>Scorzonera pygmaea</i> Sibth. & Sm. ssp. <i>nutans</i> (Czeczott) D.F. Chamb.	Perennial	Herbac eous	6-8	<i>Pinus</i> woods, limestone rocks, etc.	1950- 2400	LC	-
Asteraceae	<i>Scorzonera</i> <i>tomentosa</i> L.	Perennial	Herbac eous	6-8	Steppe, rocky slopes, cliffs	800- 2600	LC	Irano- Turanian
Asteraceae	<i>Tragopogon aureus</i> Boiss.	Perennial	Herbac eous	6-9	Rocky slopes, steppe, field margins	1700- 2300	LC	-
Asteraceae	<i>Hieracium tossianum</i> (Zahn) P.D. Sell & C. West	Perennial	Herbac eous	7	Coniferous woodland	-1--1	DD	Euxine
Asteraceae	<i>Hieracium</i> <i>subsilvularum</i> (Zahn) P.D. Sell & C. West	Perennial	Herbac eous	6	?	-1--1	DD	Euxine?
Asteraceae	<i>Hieracium</i> <i>artabirensis</i> (Zahn) Üksip	Perennial	Herbac eous	7-8	Coniferous woodland	1000- 1800	LC	Euxine
Asteraceae	<i>Hieracium</i> <i>karagoellense</i> (Zahn) P.D. Sell & C. West	Perennial	Herbac eous	7	Coniferous woods	-1-2200	LC	-
Asteraceae	<i>Hieracium</i> <i>lasiochaetum</i> (Bornm. & Zahn) P.D. Sell & C. West	Perennial	Herbac eous	6-7	Rocky Scrub and forest, cliff crevices, and steppe	800- 2200	LC	-
Asteraceae	<i>Hieracium</i> <i>paphlagonicum</i> Freyn & Sint.	Perennial	Herbac eous	7	Rocky places and forests	300- 400	LC	-
Asteraceae	<i>Hieracium</i> <i>bornmuelleri</i> Freyn	Perennial	Herbac eous	6-8	Forest, pasture and rocky places	500- 2000	LC	-
Asteraceae	<i>Hieracium</i> <i>tuberculatum</i> Freyn & Sint.	Perennial	Herbac eous	7-8	?	-1--1	EN	-
Asteraceae	<i>Hieracium</i> <i>praelongipes</i> Zahn	Perennial	Herbac eous	7-8	Coniferous woods	-1--1	DD	Euxine
Asteraceae	<i>Hieracium</i> <i>karakolense</i> (Bornm. & Zahn) P.D. Sell & C. West	Perennial	Herbac eous	6	<i>Abies</i> forest	1800	DD	Euxine
Asteraceae	<i>Hieracium</i> <i>macrogonum</i> (Zahn) P.D. Sell & C. West	Perennial	Herbac eous	-	Coniferous woodland	-1--1	EN	Euxine
Asteraceae	<i>Hieracium ovalifrons</i> (Woronow & Zahn) Juxip.	Perennial	Herbac eous	7-7	Coniferous woodland	950- 2200	LC	Euxine
Asteraceae	<i>Lactuca variabilis</i> Bornm.	Perennial	Herbac eous	6-8	Rocky limestone slopes and cliffs, in shade	1400- 2200	LC	-

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of <i>Pinus-Abies</i> forest								
Asteraceae	<i>Crepis macropus</i> Boiss. & Heldr.	Perennial	Herbaceous	6-7	Chalk or shaly rocks or slopes, steppe, fieldsides	750-1600	LC	Irano-Turanian
Asteraceae	<i>Crepis armena</i> DC.	Perennial	Herbaceous	6-7	Limestone rocky slopes	1950-3400	LC	Irano-Turanian
Asteraceae	<i>Jurinea pontica</i> Hausskn. et Freyn ex Hausskn.	Perennial	Herbaceous	6-8	Woods, steppe, fields and slopes	50-1450	LC	Irano-Turanian
Campanulaceae	<i>Campanula ajugifolia</i> Schult.	Biennial or Monocarpic	Herbaceous	7-8	Limestone and schistose rock crevices	800-2300	LC	Irano-Turanian
Campanulaceae	<i>Campanula troegerae</i> Damboldt	Perennial	Herbaceous	6	Rock crevices	610	EN	Euxine
Campanulaceae	<i>Campanula grandis</i> Fisch. & C.A. Mey. ssp. <i>grandis</i>	Perennial	Herbaceous	6-8	Meadows	200-1200	LC	Euxine
Campanulaceae	<i>Campanula pterocaula</i> Hausskn.	Biennial	Herbaceous	6	Forests	1300	LC	Euxine
Campanulaceae	<i>Asyneuma ilgazense</i> Yıldız & Kit Tan	Perennial	Herbaceous	6	<i>Pinus</i> forest, rubbles	2000	VU	Euxine (Mt.)
Campanulaceae	<i>Asyneuma rigidum</i> (Willd.) Grossh. ssp. <i>sibthorpiantum</i> (Roemer & Schultes) Damboldt	Perennial	Herbaceous	7-8	Forests, meadows, rocky slopes	1500-2200	LC	E. Mediterranean (Mt.)
Campanulaceae	<i>Asyneuma rigidum</i> (Willd.) Grassh. ssp. <i>graminifolium</i> Hub.-Mor.	Perennial	Herbaceous	7	Mountain steppe	2300	EN	Irano-Turanian
Campanulaceae	<i>Jasione supina</i> Sieber ex Spreng. ssp. <i>pontica</i> (Boiss.) Damboldt	Perennial	Herbaceous	7-8	Alpin pastures, rocky slopes, screes	2000-2800	LC	Euxine (Mt.)
Apocynaceae	<i>Vincetoxicum fuscatum</i> Rchb. f. ssp. <i>boissieri</i> (Kusnezov) Browicz	Perennial	Herbaceous	5-6	<i>Quercus</i> forest, rocky slopes, river valleys	400-1450	LC	Irano-Turanian
Convolvulaceae	<i>Convolvulus holosericeus</i> M. Bieb. ssp. <i>macrocalycinus</i> Hausskn. & bornm. ex Bornm.	Perennial	Scrub	5-7	<i>Pinus brutia</i> woodland, macchie, dry steppe, sandy, rocky, eroded, shaly clay and calcareous hills, chalky fields	250-1700	NT	Irano-Turanian
Convolvulaceae	<i>Convolvulus cataonicus</i> Boiss. & Hausskn. ex Boiss.	Perennial	Scrub	6-8	<i>Astragalus</i> steppe, marl hills, fields	900-1530	LC	Irano-Turanian
Boraginaceae	<i>Paracaryum calycinum</i> Boiss. & Balansa	Biennial	Herbaceous	5-6	Open limestone slopes, steppe	400-2050	LC	Irano-Turanian
Boraginaceae	<i>Paracaryum paphlagonicum</i> (Bornm.) R.R. Mill	Biennial	Herbaceous	5-6	Gypsum hills, banks, eroded slopes	600-1300	LC	Irano-Turanian

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Boraginaceae	<i>Echium orientale</i> L.	Biennial	Herbaceous	6-7	Clearings in <i>Fagus</i> and <i>Abies</i> forest, scrub	850-1550	LC	Euxine
Boraginaceae	<i>Onosma paphlagonica</i> Bornm.	Perennial	Herbaceous	6-7	<i>Pinus-Abies</i> forest, subalpine meadows	2000-2100	VU	Euxine
Boraginaceae	<i>Onosma bracteosa</i> Hausskn. & Bornm.	Perennial	Herbaceous	5-7	Fallow fields, mountain steppe, limestone rocks, steppe	300-2100	LC	Irano-Turanian
Boraginaceae	<i>Onosma lineariloba</i> Hausskn. ex Riedl	Perennial	Herbaceous	6	Mountain slopes	-1--1	DD	-
Boraginaceae	<i>Onosma stenoloba</i> Hausskn. ex Riedl	Perennial	Herbaceous	6	Rocks, steppe on low hills	1300-1600	LC	Irano-Turanian
Boraginaceae	<i>Onosma mutabilis</i> Boiss. & Hausskn.	Perennial	Herbaceous	5-8	Screes, limestone cliffs, eroding shale banks, steppe	1000-2740	LC	-
Boraginaceae	<i>Onosma angustissima</i> Hausskn. & Bornm.	Perennial	Herbaceous	6-8	steppe	800-1600	LC	Irano-Turanian
Boraginaceae	<i>Onosma armena</i> DC.	Perennial	Herbaceous	5-7	Loam, sandy, gravely and clayey soils, <i>Artemisia</i> steppe, stony meadows, rocky limestone slopes	60-3000	LC	-
Boraginaceae	<i>Onosma isaurica</i> Boiss. & Heldr.	Perennial	Herbaceous	5-9	Rocky slopes, scree, <i>Pinus</i> and <i>Quercus</i> woodland, steppe	300-3000	LC	Irano-Turanian
Boraginaceae	<i>Onosma bornmulleri</i> Hausskn.	Perennial	Herbaceous	4-7	Sandy, shaly, igneous and limestone slopes <i>Pinus brutia</i> wood, <i>Quercus</i> scrub	60-2750	LC	Irano-Turanian
Boraginaceae	<i>Onosma intertextum</i> Hub.-Mor.	Perennial	Herbaceous	5-7	<i>Quercus</i> woodland, scrub	1150-1670	NT	Irano-Turanian
Boraginaceae	<i>Nonea monticola</i> (Rech.f.)Selvi & Bigazzi	Perennial	Herbaceous	5-7	Rocky pastures, roadsides, under scrubs	1300-2500	LC	-
Boraginaceae	<i>Anchusa leptophylla</i> Roemer & Schlt. ssp. <i>incana</i> (Ledeb.) Chamb.	Biennial or Perennial	Herbaceous	6-7	Rocky slopes, sandy steppe	800-3000	LC	Irano-Turanian
Scrophulariaceae	<i>Verbascum freynii</i> (Sint.) Murb.	Biennial	Herbaceous	6-7	Subalpine <i>Pinus nigra</i> forest	1400-1600	VU	Euxine
Scrophulariaceae	<i>Verbascum</i>	Biennial	Herbaceous	6-8	Coniferous	1050-	LC	Euxine

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Scrophulariaceae	<i>eriocarpum</i> (Freyn & Sint.) Bornm.		Herbaceous		forest, <i>Quercus</i> Scrub, steppe	2150		
Scrophulariaceae	<i>Verbascum stachydifolium</i> Boiss. & Heldr. var. <i>adpersum</i> (Freyn & Sint.) Murb.	Biennial	Herbaceous	6-8	Steppe, wheat fields	830-1040	VU	Irano-Turanian
Scrophulariaceae	<i>Verbascum bithynicum</i> Boiss.	Biennial	Herbaceous	5-9	Meadows, roadsides, coniferous and deciduous forest	10-1400	NT	Euro-Siberian
Scrophulariaceae	<i>Verbascum myrianthum</i> Boiss.	Biennial or Perennial	Herbaceous	7-8	Bushy and stepic slopes	400-650	EN	Euro-Siberian
Scrophulariaceae	<i>Verbascum abieticola</i> Bornm.	Biennial	Herbaceous	6-8	Coniferous and deciduous forest	1050-2150	LC	Euxine
Scrophulariaceae	<i>Verbascum pseudovarians</i> Hub. – Mor.	Biennial	Herbaceous	6	Hedges and metamorphic rocks, shaly banks	610-730	VU	Euxine
Scrophulariaceae	<i>Verbascum tossiense</i> Freyn & Sint.	Biennial	Herbaceous	5-7	<i>Quercus</i> scrub, steppe, vineyards	80-1700	LC	Irano-Turanian
Scrophulariaceae	<i>Verbascum insulare</i> Boiss. & Heldr.	Biennial	Herbaceous	6-8	<i>Pinus</i> forest, <i>Quercus</i> Scrub, steppe, lava rubble, corn and fallow fields	650-2300	LC	Irano-Turanian
Scrophulariaceae	<i>Verbascum bracteosum</i> Freyn & Sint.	Biennial	Herbaceous	6	-	-1--1	DD	Irano-Turanian
Scrophulariaceae	<i>Verbascum kastamunicum</i> Murb.	Biennial	Herbaceous	6-8	<i>Pinus</i> forest, steppe	1000-1300	LC	Irano-Turanian
Scrophulariaceae	<i>Verbascum inaequale</i> Freyn & Sint.	Biennial	Herbaceous	7	Waste places	1750-1750	VU	-
Scrophulariaceae	<i>Verbascum spectabile</i> M. Bieb. ssp. <i>isandrum</i> Hub.-Mor.	Biennial	Herbaceous	5-8	Rocky limestone slopes, <i>Quercus</i> Scrub, pastures	300-1990	EN	Euxine
Scrophulariaceae	<i>Verbascum armenum</i> Boiss. & Kotschy var. <i>occidentale</i> Hub.-Mor.	Biennial	Herbaceous	6-8	Riversides, pastures, <i>Pinus nigra</i> forest	1600-2600	LC	Irano-Turanian
Scrophulariaceae	<i>Scrophularia luridiflora</i> Fisch. & C.A. Mey.	Perennial or Biennial	Herbaceous	7	Stony fields, flushes in <i>Quercus</i> scrub	750-2000	VU	Irano-Turanian
Scrophulariaceae	<i>Scrophularia paphlagonica</i> R.R. Mill	Biennial	Herbaceous	7-8	Walls	-	DD	Euxine
Scrophulariaceae	<i>Scrophularia libanotica</i> Boiss. ssp. <i>libanotica</i> var. <i>oligantha</i> Heywood	Perennial	Herbaceous	4-7	Rocky slopes and crevices (usually limestone)	200-3050	LC	Irano-Turanian

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Scrophulariaceae	<i>Scrophularia serratifolia</i> Hub.-Mor. ex Lall.	Perennial	Herbaceous	6	Igneous slopes	1900	EN	Irano-Turanian
Plantaginaceae	<i>Chaenorhinum litorale</i> (Bernh.) Fritsch ssp. <i>pterosporum</i> (Fisch. & C.A. Mey.) P.H. Davis	Annual	Herbaceous	7-9	Valley, screes, sandy soil and on serpentine	1000-1650	LC	E. Mediterranean
Plantaginaceae	<i>Digitalis lamarckii</i> Ivanina	Perennial	Herbaceous	5-8	Open <i>Pinus</i> and <i>Quercus</i> forest, rocky or shaly slopes, steppe, often on southern exposures in the rain shadows	0-1500	LC	Irano-Turanian
Plantaginaceae	<i>Veronica kopgeciensis</i> A. Öztürk & M.A. Fisch.	Perennial	Herbaceous	6-7	Wet meadows	1300-2400	VU	-
Plantaginaceae	<i>Veronica thymoides</i> P.H. Davis ssp. <i>hasandaghensis</i> M.A. Fisch.	Perennial	Woody Herbaceous	5-7	Open coniferous forest, alpine cushion steppes, scree	1200-3400	LC	Irano-Turanian
Plantaginaceae	<i>Veronica thymoides</i> P.H. Davis ssp. <i>pseudocinerea</i> M.A. Fisch.	Perennial	Woody Herbaceous	5-7	Open coniferous forest, alpine cushion steppes, scree	1200-3400	LC	Irano-Turanian
Plantaginaceae	<i>Veronica caespitosa</i> Boiss. var. <i>caespitosa</i>	Perennial	Woody Herbaceous	5-8	Rocks, scree, bare soil, alpine cushion steppe	2000-3100	LC	E. Mediterranean
Plantaginaceae	<i>Veronica fuhsii</i> Freyn. & Sint.	Perennial	Woody Herbaceous	5-6	Rocky slopes, alpine pastures	1300-2100	LC	-
Plantaginaceae	<i>Linaria genistifolia</i> (L.) Mill. ssp. <i>confertiflora</i> (Boiss.) P.H. Davis	Perennial	Herbaceous	5-8	Dry rocky slopes (calcareous and igneous) phrygana, pastures, fallow fields	200-2000	LC	Irano-Turanian
Plantaginaceae	<i>Linaria corifolia</i> Desf.	Perennial	Herbaceous	5-8	Steppe, rocky often calcareous slopes (rarely with <i>Pinus brutia</i> or <i>P. sylvestris</i> ), screes, fallow fields, other open habitats (rarely dunes)	0-2200	LC	Irano-Turanian
Acanthaceae	<i>Acanthus dioscoridis</i> L. var. <i>brevicaulis</i>	Perennial	Herbaceous	5-8	Rocky igneous slopes, cliffs,	1300-2200	EN	-

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	(Freyn) E. Hossain				dry chalky loam, hills, fallow fields, steppe			
Lamiaceae	<i>Scutellaria salviifolia</i> Benth.	Perennial	Herbaceous	5-8	stony slopes, clearings in <i>Pinus</i> and <i>Abies</i> forest, <i>Quercus</i> scrub, macchie	400-1900	LC	-
Lamiaceae	<i>Phlomis russeliana</i> (Sims.) Lag. ex Benth.	Perennial	Herbaceous	5-9	Coniferous and deciduous forest and clearings, <i>Corylus</i> scrub	300-1700	LC	Euxine(Mt.)
Lamiaceae	<i>Marrubium heterodon</i> (Benth.) Boiss. & Balansa	Perennial	Herbaceous	6-8	Slopes	2300-3700	LC	E. Mediterranean (Mt.)
Lamiaceae	<i>Marrubium trachyticum</i> Boiss.	Perennial	Herbaceous	5-7	Slopes, fields	900-1200	NT	Irano-Turanian
Lamiaceae	<i>Marrubium globosum</i> Montbret & Aucher ex Benth. ssp. <i>globosum</i>	Perennial	Herbaceous	4-8	Rocky slopes	800-2500	LC	Irano-Turanian
Lamiaceae	<i>Sideritis germanicopolitana</i> Bornm. ssp. <i>germanicopolitana</i>	Perennial	Herbaceous	6-8	<i>Pinus</i> woods, rocky limestone slopes	100-2000	LC	-
Lamiaceae	<i>Sideritis germanicopolitana</i> Bornm. ssp. <i>viridis</i> Hausskn. ex Bornm.	Perennial	Herbaceous	6-8	<i>Pinus</i> woods, rocky limestone slopes	400-2000	LC	-
Lamiaceae	<i>Sideritis galatica</i> Bornm.	Perennial	Herbaceous	7-9	<i>Pinus nigra</i> forest, dry slopes	1000-1400	NT	-
Lamiaceae	<i>Stachys cretica</i> L. ssp. <i>anatolica</i> Rech. f.	Perennial	Herbaceous	5-9	limestone slopes, steppe, flat meadows	100-2900	LC	Irano-Turanian
Lamiaceae	<i>Stachys iberica</i> M. Bieb. ssp. <i>iberica</i> var. <i>densipilosa</i> R. Bhattacharjee	Perennial	Woody Herbaceous	5-8	Sloping limestone screes	800-2200	LC	Irano-Turanian
Lamiaceae	<i>Satureja amani</i> P.H. Davis	Perennial	Scrub	8-9	-	1220-1980	CR	E. Mediterranean
Lamiaceae	<i>Thymus leucostomus</i> Hausskn. & Velen.	Perennial	subscrub	5-7	Dry rocky ground, abandoned vineyards	670-1600	NT	Irano-Turanian
Lamiaceae	<i>Salvia hypargeia</i> Fisch. & C.A. Mey.	Perennial	Herbaceous	6-7	Limestone slopes and banks, with <i>Pinus brutia</i> , fallow fields	800-2000	LC	Irano-Turanian
Lamiaceae	<i>Salvia tobeyi</i> Hedge	Perennial	Herbaceous	6	Subalpine meadows, grassy slopes	1700-2100	VU	-
Lamiaceae	<i>Salvia cyanescens</i>	Perennial	Herbaceous	6-9	Limestone and	400-	LC	Irano-

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	Boiss. & Balansa		Herbaceous		igneous slopes, shale banks, <i>Pinus nigra</i> forest, gravel river beds, fallow fields, vineyards	2300		Turanian	
Lamiaceae	<i>Salvia dichroantha</i> Stapf	Perennial	Herbaceous	7-9	Steppe, clearings in forest, fallow fields, roadsides	810-1800	LC	Irano-Turanian	
Euphorbiaceae	<i>Euphorbia erythron</i> Boiss. & Heldr.	Perennial	Herbaceous	5-7	Mountain ridges and screes, often on limestones	1400-2300	LC	Irano-Turanian	+
Euphorbiaceae	<i>Euphorbia cardiophylla</i>	Perennial	Herbaceous	3-6	Open <i>Pinus</i> forest, <i>Abies cilicica</i> forest, <i>Quercus</i> scrub, rocky slopes, screes, steppe, field margin	20-2100	LC	-	+
Euphorbiaceae	<i>Euphorbia anacamperos</i> Boiss. var. <i>anacamperos</i>	Perennial	Herbaceous	3-8	Rocky slopes (sometimes in <i>Pinus brutia</i> or <i>Quercus</i> forest, mountain stppes, phrygana, lake and stream sides	600-1900	LC		
Fagaceae	<i>Quercus macranthera</i> Fisch. & C.A. Mey. ex Hohen ssp. <i>sypirensis</i> (K. Koch) Menitsky	Perennial	Small tree	8-10	Dry slopes with <i>Quercus pubescens</i> , <i>Pinus nigra</i> , <i>P. sylvestris</i> , <i>Populus tremula</i> , <i>Juniperus communis</i> ssp. <i>nana</i>	1000-1900	LC	-	
Rubiaceae	<i>Asperula nitida</i> Sm. ssp. <i>subcapitellata</i> Ehrend.	Perennial	Subshrub or Herbaceous	6-7	Limestone rocks	1800-2300	NT	Irano-Turanian	
Rubiaceae	<i>Asperula pestalozzae</i> Boiss.	Perennial	Subshrub	7-8	Rocky slopes and steppes, limestone, sandstone, marl and clay	300-2300	LC	Euxine	
R	<i>Asperula lilaciflora</i> Boiss. ssp. <i>phrygia</i> (Bornm.) Schönb.–Tem.	Perennial	Subshrub	6-7	Steppe hills, <i>Quercus</i> and <i>Pinus</i> forest	300-1400	LC	-	
Rubiaceae	<i>Asperula cymulosa</i>	Perennial	Herbaceous	5-9	Deciduous	100-	VU	E.	



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	(Post.) Post.		eous		forests and clearings	1600		Mediterranean	
Rubiaceae	<i>Galium fissurense</i> Ehrend. & Schönbn. – Tem.	Perennial	Herbaceous	5-8	Rocks	30-2200	LC	Euxine	
Rubiaceae	<i>Galium bornmuelleri</i> Hausskn. ex Bornm.	Perennial	Herbaceous	5-6	Among rocks	400-1500	VU	-	
Amaryllidaceae	<i>Allium phrygium</i> Boiss.	Perennial	Herbaceous	8	<i>Artemisia santonicum</i> steppe, roadsides	900-1850	LC	Irano-Turanian	
Amaryllidaceae	<i>Allium olympicum</i> Boiss.	Perennial	Herbaceous	7-8	<i>Abies</i> and <i>Pinus</i> forests, stunted <i>Juniperus</i> scrubs, alpine pastures, above tree line	1300-2800	LC	Euxine	
Amaryllidaceae	<i>Allium kastambulense</i> Kollmann	Perennial	Herbaceous	6-7	Rocky slopes, limestone cliffs, on ledges, sandy clay	40-1250	NT	Euxine	
Amaryllidaceae	<i>Allium ilgazense</i> N. Özhatay	Perennial	Herbaceous	7-8	<i>Abies nordmanniana</i> , <i>Pinus nigra</i> , <i>Pinus sylvestris</i> forests, rocky places, rarely limestone soils	1450-2000	LC	Euxine	
Amaryllidaceae	<i>Galanthus plicatus</i> Bieb. ssp. <i>byzantinus</i> (Baker) D.A Webb	Perennial	Herbaceous	1-4	Open turf or margins of <i>Abies</i> and <i>Fagus</i> forests in deep leaf-mould	45-1100	-	Euxine	+
Asparagaceae	<i>Ornithogalum wiedemannii</i> Boiss. var. <i>reflexum</i> (Freyne & Sint.) Speta	Perennial	Herbaceous	5-6	Roadsides, open rocky places	1250-2600	LC	Euxine	
Asparagaceae	<i>Ornithogalum kuereanum</i> Speta	Perennial	Herbaceous	5-6	?	-1--1	EN	Euxine	
Asparagaceae	<i>Bellevalia clusiana</i> Griseb.	Perennial	Herbaceous	4-5	Marshy ground, fallow fields, wheat fields	850-1200	LC	Irano-Turanian	
Asparagaceae	<i>Hyacinthella micrantha</i> (Boiss.) Chouard	Perennial	Herbaceous	3-5	On limestone, open sunny, stony ground, grazed ground	600-1500	NT	Irano-Turanian ?	
Asparagaceae	<i>Muscari bourgaei</i> Baker	Perennial	Herbaceous	5-7	Mountain pastures, stony slopes, on calcareous and igneous substrata	1500-3000	LC	Mediterranean	

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Asparagaceae	<i>Muscari aucheri</i> (Boiss.) Baker	Perennial	Herbaceous	4-6	Stony slopes and limestones scree, mountain pastures, flushes, sometimes with <i>Pinus sylvestris</i> and <i>Juniperus communis</i> ssp. <i>nana</i>	1000-3000	LC	-	
Iridaceae	<i>Iris kerneriana</i> Asch. & Sint. ex Baker	Perennial	Herbaceous	5-7	Dryish turf or scrub, in open <i>Pinus</i> forest	1150-2350	LC	Euro-Siberian ?	
Iridaceae	<i>Iris schachtii</i> Markgr.	Perennial	Herbaceous	5-6	Light mixed woodland or scrub, open stony hills	1200-1700	LC	Irano-Turanian	
Iridaceae	<i>Crocus ancyrensis</i> (Herb.) Maw	Perennial	Herbaceous	2-4	open rocky places, in Scrub and in <i>Pinus</i> forest	1000-1600	LC	Irano-Turanian	
Iridaceae	<i>Crocus speciosus</i> Bieb. ssp. <i>ilgazensis</i> Mathew	Perennial	Herbaceous	9-10	Alpine turf and clearings in <i>Abies</i> forest	1600-1750	NT	Euro-Siberian	
Orchidaceae	<i>Epipactis tremolsii</i> C. Pau ssp. <i>turcica</i> (Kreutz) Kreutz	Perennial	Herbaceous	5-7	Dry grassland, open pinewoods, phrygana, oak scrub, waste land, scree slopes, hazel plantations, on calcareous, rarely on basic soils	300-1500	-	-	+
Orchidaceae	<i>Dactylorhiza nieschalkiorum</i> H. Baumann & Künkele	Perennial	Herbaceous	6-8	Wet and marshy places by streams and springs, boggy lakesides, open marshy forest	1000-1700	LC	-	+
Orchidaceae	<i>Dactylorhiza saccifera</i> (Brongn.) Soo ssp. <i>bithynica</i> (H. Baumann) Kreutz	Perennial	Herbaceous	6-7	Open conifer woods, roadside ditches, flooded forest, damp scree slopes, wet places, on moderately damp soils	800-1200	-	Euxine	+
Orchidaceae	<i>Dactylorhiza urvilleana</i> (Steudel) Baumann & Künkele ssp. <i>ilgazica</i> (Kreutz) Kreutz	Perennial	Herbaceous	5-8	Spring flushes and wet places with ruderal vegetation, often on the	0-1800	-	-	+

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					borders of open mixed woodland, on acid to base-rich soils				
Orchidaceae	<i>Dactylorhiza osmanica</i> (K. L.) Soo var. <i>osmanica</i>	Perennial	Herbaceous	6-7	Damp places, wet meadows, forest sides, rivers	550-2400	LC	Irano-Turanian	+
Poaceae	<i>Festuca woronowi</i> Hack. ssp. <i>turcica</i> Markgr.	Perennial	Herbaceous	7	Limestone rocks	1800-2500	NT	Euxine (Mt.)	
Poaceae	<i>Festuca longipanicula</i> Markgr.-Dann.	Perennial	Herbaceous	6-7	<i>Pinus nigra</i> forest, streamsides, damp steppe, often on andesite or limestone	700-1700	NT	Irano-Turanian	
Poaceae	<i>Festuca ziganensis</i> (St.-Yves) Markgr.-Dann.	Perennial	Herbaceous	6-7	Streams, fens, sometimes on serpentine	1050-2300	VU	-	
Poaceae	<i>Festuca glaucispicula</i> Markgr.-Dann.	Perennial	Herbaceous	6	<i>Pinus nigra</i> , <i>P. sylvestris</i> forest, alpine meadows, limestone rocks, truff, sandy steppe	1020-1900	LC	-	
Poaceae	<i>Festuca pinifolia</i> (Hack. Ex Boiss.) var. <i>phrygia</i> (St.-Yves) Markgr.-Dann.	Perennial	Herbaceous	6-7	Stony igneous slopes and screes	1900-2900	LC	-	
Poaceae	<i>Festuca ilgazensis</i> Markgr.-Dann.	Perennial	Herbaceous	6	Limestone rocks	2100-2100	EN	-	
Poaceae	<i>Festuca paphlagonica</i> (St.-Yves) Markgr.-Dann.ssp. <i>paphlagonica</i>	Perennial	Herbaceous	6-7	Rocks and mineral-rich soils (siliceous)	1660-2400	LC	Euxine	
Poaceae	<i>Festuca cyllenica</i> Boiss. & Heldr. ssp. <i>uluana</i> Markgr.-Dannenb	Perennial	Herbaceous	6-7	Rocky subalpine meadows	1700-2350	NT	Euxine	

As noted in the Methods section, taxon names listed in the above table have been rearranged List of Turkey Plants book. During this rearrangement, some of plants changes their names and some of them are removed out of being endemic. Information of changing names of plants in Table 3, while changing state of endemic taxa are listed in Table 4.

**Table 3.** Changing Names According to Turkey Plant List (Vascular Plants)

Earlier Name (Flora of Turkey)	New Name (Turkey Plant List (Vascular Plants))
<i>Abies nordmanniana</i> ssp. <i>bornmuelleriana</i> (Mattf.) Coode & Cullen	<i>Abies nordmanniana</i> (Steven) Spach ssp. <i>equi-trojani</i> (Asc. & Sint. Ex Boiss.) Coode & Cullen
<i>Pastinaca armena</i> ssp. <i>dentata</i> (Freyn & Sint.) Chamberlain	<i>P. armena</i> Fisch. & C.A. Mey
<i>Anthemis melanoloma</i> Trautv. ssp. <i>melanoloma</i>	<i>Cota melanoloma</i> (Trautv.) Holub ssp. <i>melanoloma</i>
<i>Centaurea pichleri</i> ssp. <i>extrarosularis</i> (Hayek & Siehe) Wagenitz	<i>Cyanus pichleri</i> (Boiss.) Holub ssp. <i>extrarosularis</i> (Hayek & Siehe) Wagenitz & Greuter
<i>Cicerbita variabilis</i> (Bornm.) Bornm.	<i>Lactuca variabilis</i> Bornm.
<i>Senecio hypochionaeus</i> Boiss. var. <i>ilkasiensis</i> (Freyn & Sint.) Bornm.	<i>Turanecio hypochionaeus</i> (Boiss.) Hamzaoglu
<i>Nonea pulla</i> ssp. <i>monticola</i> Rech.F.	<i>Nonea monticola</i> (Rech.f.)Selvi& Bigazzi
<i>Erysimum eginense</i> Hausskn. ex Bornm.	<i>E. smyrnaeum</i> Boiss. & Balansa
<i>Erysimum thyrsoideum</i> ssp. <i>ponticum</i> (Hausskn. & Bornm.) Cullen	<i>E. uncinatifolium</i> Boiss.
<i>Thlaspi violascens</i> Schott & Kotschy	<i>Noccaea violascens</i> (Schott & Kotschy) F.K. Mey
<i>Cochlearia sempervivum</i> Boiss. & Balansa	<i>Pseudosempervivum sempervivum</i> (Boiss. & Balansa) Pobed.
<i>Campanula argaea</i> Boiss. & Balansa	<i>C. ajugifolia</i> Schult.
<i>Campanula latiloba</i> A. DC. ssp. <i>latiloba</i>	<i>Campanula grandis</i> Fisch. & C.A. Mey. ssp. <i>grandis</i>
<i>Lonicera caucasica</i> Pall. ssp. <i>orientalis</i> (Lam.) D.F. Chamb. & D.G. Long	<i>Lonicera orientalis</i> Lam.
<i>Astragalus amasiensis</i> (Freyn) Bornm.	<i>Astragalus densifolius</i> Lam. ssp. <i>amasiensis</i> (Freyn) Aytaç & Ekin
<i>Astragalus barba-jovis</i> DC. var. <i>candicans</i> Sirj.	<i>Astragalus barba-jovis</i> DC.
<i>Astragalus pseudocaspicus</i> Fisch.	<i>Astragalus caspicus</i> M. Bieb. ssp. <i>pseudocaspicus</i> (Fisch.) Zarre
<i>Astragalus squalidus</i> Boiss. & Noe	<i>Astragalus amoenus</i> Fenzl
<i>Astragalus xylobasis</i> var. <i>angustus</i> (Freyn & Sint.) Freyn & Bornm.	<i>Astragalus xylobasis</i> freyn & Bornm.
<i>Trifolium barbulatum</i> (Freyn & Sint.) Zohary	<i>Trifolium aureum</i> Pollich ssp. <i>barbulatum</i> Freyn & Sint
<i>Potentilla umbrosa</i> Steven	<i>Potentilla umbrosa</i> Steven ssp. <i>decrescens</i> Sojak
<i>Lamium leucolophum</i> Hausskn. ex R.R. Mill	<i>Lamium album</i> L. ssp. <i>crinitum</i> (Montbret & Aucher ex Benth.) Mennema
<i>Lamium maculatum</i> var. <i>villosifolium</i> R.R. Mill	<i>Lamium maculatum</i> L.
<i>Lamium armenum</i> ssp. <i>sintenisii</i> R.R. Mill	<i>Lamium garganicum</i> L. ssp. <i>striatum</i> (Sm.) Hayek var. <i>armenum</i> (Boiss.) Mennema
<i>Delphinium bithynicum</i> P.H. Davis	<i>Delphinium davisii</i> Munz.
<i>Epipactis turcica</i> Kreutz	<i>Epipactis tremolsii</i> C. Pau ssp. <i>turcica</i> (Kreutz) Kreutz
<i>Dactylorhiza bithynica</i> H. Baumann	<i>Dactylorhiza saccifera</i> (Brongn.) Soo ssp. <i>bithynica</i> (H. Baumann) Kreutz
<i>Dactylorhiza ilgazica</i> Kreutz	<i>Dactylorhiza urvilleana</i> (Steudel) Baumann & Künkele ssp. <i>ilgazica</i> ( Kreutz) Kreutz
<i>Senecio integrifolius</i> (L.) Clairv. ssp. <i>karsianus</i> Matthews	<i>Tephroses integrifolia</i> (L.) Holub ssp. <i>karsiana</i> (V.A. Matthews) B.Nord
<i>Trifolium pannonicum</i> Jacq. ssp. <i>elongatum</i> (Willd.) Zoh.	<i>Trifolium elongatum</i> Willd.
<i>Papaver apokrinomenon</i> Fedde.	<i>Papaver pilosum</i> Sibth. & Sm. ssp. <i>pilosum</i>
<i>Colchicum bornmuelleri</i> Freyn.	<i>Colchicum speciosum</i> Steven
<i>Arenaria acerosa</i> Boiss.	<i>Eremogone acerosa</i> (Boiss.) Ikonn.
<i>Veronica lysimachioides</i> Boiss.	<i>Veronica anagallis-aquatica</i> L.

**Table 4.** List of Taxa That Removed Out From Endemism Category According to Turkey Plant List (Vascular Plants) Book

Taxon Name	IUCN Category
<i>Ranunculus dissectus</i> Bieb. ssp. <i>sibthorpii</i>	LC
<i>Heracleum platytaenium</i> Boiss.	LC
<i>Anthemis melanoloma</i> Trautv. ssp. <i>melanoloma</i>	LC
<i>Draba rigida</i> Willd. var. <i>rigida</i>	LC
<i>Erysimum eginense</i> Hausskn. ex Bornm.	VU
<i>Erysimum thyrsoideum</i> ssp. <i>ponticum</i> (Hausskn. & Bornm.) Cullen	LC
<i>Dianthus anatolicus</i> Boiss.	LC
<i>Astragalus densifolius</i> Lam. ssp. <i>amasiensis</i> (Freyn) Aytaç &	LC

Ekim	
<i>Astragalus barba-jovis</i> DC.	-
<i>Astragalus brachypterus</i> Fisch.	-
<i>Astragalus anthylloides</i> Lam.	-
<i>Astragalus macrocephalus</i> Willd. ssp. <i>macrocephalus</i>	LR (NT)
<i>Astragalus caspicus</i> M. Bieb. ssp. <i>pseudocaspicus</i> (Fisch.) Zarre	-
<i>Astragalus strigillosus</i> Bunge	-
<i>Astragalus xylobasis</i> Freyn & Bornm.	LC
<i>Astragalus wiedemannianus</i> F.B. Fisch.	-
<i>Lamium album</i> L. ssp. <i>crinitum</i> (Montbret & Aucher ex Benth.) Mennema	DD
<i>Lamium maculatum</i> L.	LC
<i>Lamium garganicum</i> L. ssp. <i>striatum</i> (Sm.) Hayek var. <i>armenum</i> (Boiss.) Mennema	VU
<i>Amblyopyrum muticum</i> (Boiss.) Eig. var. <i>loliaceum</i> (Jaub & Spach) Eig. .	LC
<i>Delphinium ilgazense</i> P.H. Davis	EN
<i>Verbascum cheiranthifolium</i> Boiss. var. <i>asperulum</i> (Boiss.) Murb.	LC
<i>Verbascum ponticum</i> (Boiss.) Kuntze	LC
<i>Alcea apterocarpa</i> (Fenzl) Boiss.	LC
<i>Epipactis pontica</i> Taubenheim	LC
<i>Veronica multifida</i> L.	LC
<i>Onobrychis armena</i> Boiss. & Huet.	LC
<i>Colchicum speciosum</i> Steven	LC
<i>Sempervivum armenum</i> Boiss. & Huet. var. <i>armenum</i>	LC
<i>Veronica anagallis-aquatica</i> L.	LC

#### IV. Conclusion

235 taxa, which spreads within Kastamonu province and may be endangered or considered, have been identified and determined by their IUCN categories. The percentage of endemic taxa was found 23,3% within 1005 species which grow in the study region.

As a result of this research, it was found that 2 taxa in CR category, 21 taxa in FR category, 24 taxa in VI category, 142 taxa in LC category, 28 taxa in NT category, and 9 taxa in DD category according to IUCN categories. In addition, 9 taxa was discovered that have not yet been determined in this work. Furthermore, six taxa are protected by CITES (Convention on International Trade in Endangered Species).

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