



# Asian Journal of Plant Sciences

ISSN 1682-3974

**science**  
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## The Flora of Kuyulu Erosion District (Adıyaman/Turkey)

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**Abstract:** This investigation was carried out between the years of 2002 and 2004 in order to determine the flora of Kuyulu (Turuş) erosion district that is being recovered by TEMA to get the land pasture again. Research area is situated in the province of Adıyaman and within C7 of the grid system and in the region of upper Mesopotamia. In the investigation area, 303 taxa belonging to 45 families and 182 genera were determined. Of all the collected specimens, 25 taxa are localised to Upper Euphrates and 18 taxa are endemic for Turkey.

**Key words:** Flora, Kuyulu (Turuş), Adıyaman, Turkey

### INTRODUCTION

The aim of this research was to determine the flora of Kuyulu erosion district of Adıyaman in the upper Mesopotamia. In this province, one of the most important problems is extensive grazing. The vegetation of the area was extensively destroyed by over grazing activities and that's why the erosion occurred. As a result, plants try to survive under unsuitable conditions. Another negative effect is the widening of agricultural lands.

According to the Flora of Turkey<sup>[1,2]</sup>, some foreign researchers, such as *Kotschy*, *Sintenis*, *Davis* and *Zohary*, have visited Adıyaman and gathered plant specimens.

Some floristic and taxonomic studies were carried out around South East Anatolia<sup>[3-13]</sup>.

In the current research area, Kuyulu Erosion District, Adıyaman, the first floristic excursion was carried out by Ekim and Adıgüzel (unpubl. data, 1999). During this field trip, 41 taxa were recorded by them. However, no regular floristic study has been performed in this research area. As South East Anatolia is one of the less known or almost unknown regions of Turkey, regarding the floristic studies<sup>[14,15]</sup> and as the research area is inside the little known area, it is expected to contribute to the flora of Adıyaman with this study.

The research area, Kuyulu district, is completely located within the west of province of Adıyaman. It is 40 km away from Adıyaman and 80 km from Şanlıurfa. It is very close to the Euphrates River and the Atatürk Dam. The nearest town is Bozova, 30 km far from the research area and the only nearest village is Kuyulu, about 1 km far

from the research area (Fig. 1). The size of the study area is about 125 ha and it comprises some low altitude hills and a stream which is known as Gom. The altitude is between 550-850 m. The bedrock geology of the district is mainly marn and limestone<sup>[16,17]</sup>.

In the study area, soil layer is almost absent, especially on the hill slopes. The soil has been eroded and deposited at the base of hills and stream channels. For this reason, the research area has been protected by TEMA (The Turkish Foundation for Combating Soil Erosion, Reforestation and the Protection of Natural Habitats). The aim of this protection is to gain the area as a pasture land again and to recover the vegetation by planting of adaptable plants.

**Vegetation:** In the research area, steppe vegetation is characterized by Fabaceae, Asteraceae and Poaceae members. *Cerasus microcarpa* (C.A. Mey.) Boiss. subsp. *microcarpa*, *Cerasus microcarpa* (C.A. Mey.) Boiss. subsp. *tortuosa* (Boiss. & Hausskn.) Browicz, *Amygdalus trichamygdalus* (Hand.-Mazz.) Woronow var. *trichamygdalus*, *Jasminum fruticans* L. are shrubs that are widespread at intervals.

There are some cultivated fields, mainly *Pistacia vera*, *Vitis vinifera*, *Triticum sativum*, *Hordeum vulgare*, *Cicer arietinum* and *Nicotiana tobacum*, around the area.

**Climate:** Annual mean temperature is 17.0°C. The maximum mean temperature (M) is 42.6 °C in July. The minimum mean temperature (m) is -9.4°C in January. Annual rainfall is about 835.4 mm<sup>[18]</sup> and the seasonal

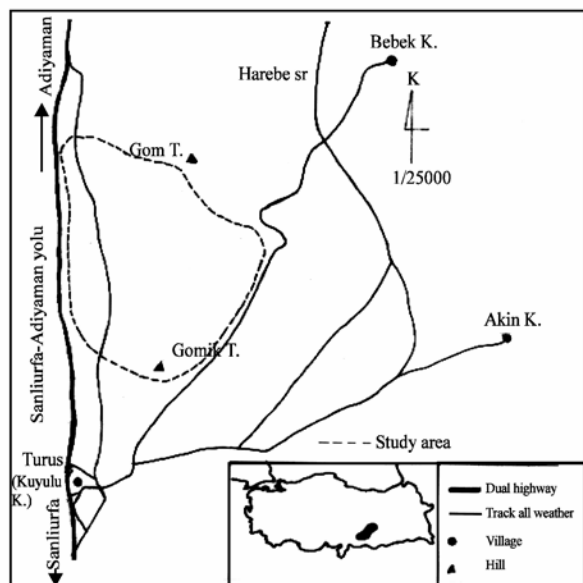


Fig. 1: Geographic map of research area

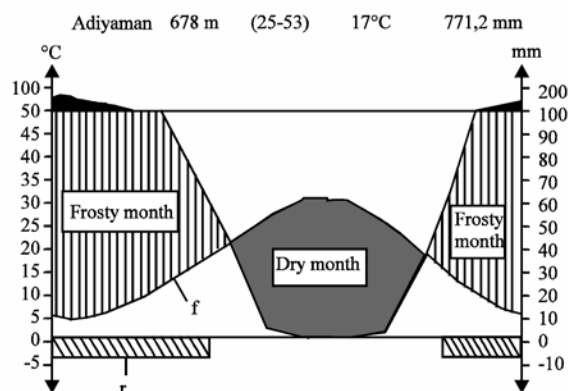


Fig. 2: Ombrothermic diagram of Adiyaman, Turkey

precipitation regime is Winter, Autumn, Spring, Summer (WASS). According to Emberger's PE/M coefficient, Mediterranean climate occurs in the research area and the precipitation-temperature coefficient (Q) is 53. According to data, this area is in semiarid and little rainy bioclimate zone<sup>[19]</sup>. The ombrothermic diagram shows dry and rainy period (Fig. 2).

#### MATERIALS AND METHODS

To constitute research material, 558 plant specimens were gathered from Kuyulu Erosion District between the years 2002 and 2004 during different vegetation seasons. Collector number was given and the specimens were dried

according to standard herbarium methods. The Flora of Turkey and the East Aegean Islands<sup>[1,2]</sup>, Flora Palaestina<sup>[20]</sup> and Flora of Iraq<sup>[21]</sup> were used to identify the plant samples. The species found are listed below. The list of plants is set out according to the order in the Flora of Turkey. In the floristic list of this article, the following details are given: family name, species name and the author(s), habitat of plant, altitude, collection date, collector number, endemism and the phytogeographic region element. The new records for C7 square are indicated with asterisk (\*) in the list.

The area is completely within C7 grid square, Adiyaman province and so C7 Adiyaman, Kuyulu (Turuş) Erosion District has been omitted from the citations.

The endemic species were categorized according to IUCN Red data categories<sup>[22,23]</sup>. These abbreviations are given below: CR: Critically endangered, VU: Vulnerable, LC: Least concern, NT: Near threatened, NE: Not evaluated, DD: Data deficient, EN: Endangered. The following abbreviations are used in the text: Euro-Sib.: Euro-Siberian element, Ir.-Tur.: Irano-Turanian element, Medit.: Mediterranean element, End.: Endemic, TEMA: The Turkish Foundation for Combating Soil Erosion, Reforestation and the Protection of Natural Habitats. The plant samples collected from the region are being kept in the herbarium of Biology Department, Harran University, Şanlıurfa, Turkey.

#### RESULTS

##### THE FLORISTIC LIST:

Pteridophyta *Equisetum arvense* L.

ANGIOSPERMAE

DICOTYLEDONES

**EQUISETACEAE**

Dry stream bed, 25.03.2004, 635 m, Akan 4920 and Çetin.

**RANUNCULACEAE**

***Consolida orientalis*** (Gay) Schröd

Fallow fields, 21.05.2002, 550 m, Akan 3832 and I.Eker;

waste places, 27.05.2003, 600 m, Akan 3910 and I.Eker;

waste places, 02.05.2004, 600 m, Akan 4866, 5094 and Çetin

***Anemone coronaria*** L.

Fallow fields, 21.05.2002, 580 m, Akan 3884 and I.Eker; dry

stream bed, 25.03.2004, 600 m, Akan 4917 and Çetin.

Medit. element.

***Adonis annua*** L. emend. Huds.

Slopes, 21.05.2002, 650 m, Akan 3892 and I.Eker; dry

stream bed, 02.05.2004, 610 m, Akan 5035 and Çetin.

Medit. element.

***A. aestivalis*** L. subsp. *aestivalis* (Fisch. ex DC.) Busch

Waste places, 21.05.2002, 700 m, Akan 3883 and I.Eker.

**Ranunculus repens** L.

Side of stream bed, moist place, 25.03.2004, 600 m, Akan 4932 and Çetin.

**R. macrorhynchus** Boiss. subsp. **trigonocarpus** (Boiss.) P.H. Davis

Waste place, 02.05.2004, 750 m, Akan 5091 and Çetin. Ir.-Tur. element.

**R. arvensis** L.

Stream bed, moist place, 21.05.2002, 600 m, Akan 3844 and I.Eker.

**Ceratocephalus falcatus** (L.) Pers.

Waste places, 25.03.2004, 670 m, Akan 4944 and I.Eker.

**Berberidaceae**

*Bongordia chrysogonum* L. Spach

Waste places, 07.04.2004, 800 m, Akan 4982 and Çetin.

**Papaveraceae**

**Glaucium grandiflorum** Boiss. & Huet. var. **grandiflorum**

Slopes, 18.05.2003, 650 m, Akan 4888 and I.Eker. Ir.-Tur. element.

**G. leiocarpum** Boiss.

Fallow fields, 27.05.2003, 600 m, Akan 4787 and I.Eker.

**Roemeria hybrida** (L.) DC. subsp. **hybrida**

Slopes, 21.05.2002, 650 m, Akan 3879 and I.Eker; 02.05.2004, Akan 5102 and Çetin.

**Papaver rhoeas** L.

Waste places, 02.05.2004, 600 m, Akan 5041 and Çetin.

**P. commutatum** Fisch. & C.A. Mey.

Dry stream bed, 02.05.2004, 755 m, Akan 5046 and Çetin.

**P. syriacum** Boiss. & Blanche

Waste places, 27.05.2003, 630 m, Akan 4796, 4853 and I.Eker.

**P. dubium** L.

Fallow fields, 02.05.2004, 735 m, Akan 5041, 5046, 5047 and Çetin.

**P. argemone** L.

Slopes, 07.04.2004, 580 m, Akan 4988 and Çetin.

**Brassicaceae (Cruciferae)**

**Brassica tournefortii** Gouon

Slopes, 23.07.2004, 600 m, Akan 5198 and Çetin.

**Sinapis alba** L.

Fallow fields, 21.05.2002, 650 m, Akan 3882, 07.04.2004, Akan 5018 and Çetin.

**S. arvensis** L.

Stream bed, 22.05.2002, 600 m, Akan 3886, 4114, 02.05.2004, Akan 5131 and Çetin.

**Hirschfeldia incana** (L.) Lagr.-Foss.

Hills, 27.05.2003, 800 m, Akan 4789 and I.Eker.

**Raphanus raphanistrum** L.

Waste places, 02.05.2004, 730 m, Akan 5087 and Çetin.

**Crambe tataria** Sebeók var. **tataria**

Waste places, 18.05.2004, 740 m, Akan 4912 and Çetin. Ir.-Tur. element

**Rapistrum rugosum** (L.) All.

Waste places, 27.05.2003, 600 m, Akan 4832 and I.Eker.

**Cardaria draba** (L.) Desv. subsp. **draba**

Fallow fields, 18.05.2003, 650 m, Akan 4905/a, 07.04.2004, Akan 44995 /b and Çetin.

**Iberis taurica** DC.

Stream bed, 18.05.2003, 650 m, Akan 4896, 07.04.2004, Akan 4995/a, 4986 and Çetin.

**Aethionema carneum** (Banks & Sol.) O. Fedtsch.

Fallow fields, 25.03.2004, 570 m, Akan 4938 and Çetin. Ir.-Tur. element.

**A. arabicum** (L.) Andr.

Waste places, 25.03.2004, 570 m, Akan 4947 and Çetin.

**A. armenum** Boiss.

Waste places, 21.05.2002, 650 m, Akan 3891, Ir.-Tur. element.

**Thlaspi perfoliatum** L.

Slopes, 07.04.2004, 600 m, Akan 4991 and Çetin.

**Neslia apiculata** Fisch., C.A. Mey. & Avé-Lall.

Waste places, 22.05.2002, 640 m, Akan 4164 and I.Eker; 7.04.2004, Akan 5004 and Çetin.

**Alyssum strigosum** Banks & Sol subsp. **strigosum**

Fallow fields, 18.05.2003, 650 m, Akan 4880 and I.Eker.

**Clypeola aspera** (Grauer) Turrill

Waste places, 07.04.2004, 600 m, Akan 4993 and Çetin. Ir.-Tur. element.

**Erophila verna** (L.) Chevall. subsp. **verna**

Dry stream bed, 07.04.2004, 600 m, Akan 4991 /a and Çetin.

**Matthiola longipetala** (Vent.) DC. subsp. **bicornis** (Sibth & Smith) P.W. Ball

Fallow fields, 07.04.2004, 600 m, Akan 4984 and Çetin.

**Chorispora syriaca** Boiss.

Waste places, 18.05.2003, 650 m, Akan 4883/b and I.Eker. Ir.-Tur. element.

**Erysimum hamosum** Blanche ex Post

Waste places, 07.04.2004, 570 m, Akan 4916 and Çetin; Ir.-Tur. element.

**E. repandum** L.

Waste places, 02.05.2004, 700 m, Akan 5061 and Çetin.

**Descurainia sophia** (L.) Webb ex Prantl

Waste places, 02.05.2004, 600-700m, Akan 5139 and Çetin.

**Arabidopsis thaliana** (L.) Heynh.

Fallow fields, 18.05.2003, 650 m, Akan 4883 /a and I.Eker.

**Resedaceae**

**Reseda lutea** L. var. **lutea**

Dry stream bed, 21.05.2002, 650 m, Akan 3904 and I.Eker; waste places, 07.04.2004, 600 m, Akan 4978 and Çetin; waste places, 01.06.2004, 700 m, Akan 5165 and Çetin.

**R. tomentosa** Boiss.

Waste places, 27.05.2003, 600 m, Akan 4851 and I.Eker. End. EN

**Cistaceae**

**Helianthemum kotschyianum** Boiss.

Waste places, 21.05.2002, 650 m, Akan 3898 and I.Eker. Ir.-Tur. element.

**H. nummularium** (L.) Mill. subsp. **lycanoicum** Coode & Cullen

Waste places, 07.04.2004, 600 m, Akan 5008/a and Çetin. End. LC

**H. salicifolium** (L.) Mill.

Waste places, 22.05.2002, 600 m, Akan 4116 and I.Eker.

**Fumana procumbens** (Dun) Gren. & Godr.

Dry stream bed, 21.05.2002, 630 m, Akan 3817 and I.Eker.

#### **Polygalaceae**

**Polygala pruinosa** Boiss. subsp. **pruinosa**

Waste places, 21.05.2002, 670 m, Akan 3854 and I.Eker.

#### **Caryophyllaceae**

**Minuartia formosa** (Fenzl) Mattf.

Side of stream bed, 25.03.2004, 620 m, Akan 4951 and Çetin.

**Cerastium dichotomum** L. subsp. **inflatum** (Link) Cullen

Waste places, 07.04.2004, 600 m, Akan 5012 and Çetin.

**Holosteum umbellatum** L. var. **umbellatum**

Fallow fields, 25.03.2004, 620 m, Akan 4949 and Çetin.

**Dianthus strictus** Banks & Sol. var. **gracilior** (Boiss.) Reeve

Hills, 23.07.2004, 830 m, Akan 5210 and Çetin.

**D. zonatus** Fenzl. var. **zonatus**

Slopes, 23.07.2004, 780 m, Akan 5209 & Çetin.

**Phryna ortegioides** (Fisch. & C.A. Mey.) Pax & Hoffm.

Field, 21.05.2002, 730 m, Akan 3881/c and I.Eker; End. Ir.-Tur. element. NT

**Gypsophila antari** Post and Beauverd

Waste place, 18.05.2003, 650 m, Akan 4893 and I.Eker; Saharo-Arabian Element.

**Vaccaria pyramidata** Medik. var. **grandiflora** (Fisch. ex DC.) Cullen

Field, 07.04.2004, 630 m, Akan 5024 and Çetin.

**V. pyramidata** Medik. var. **oxydonta** (Boiss.) D. Zohary

Waste place, 21.05.2002, 570 m, Akan 3875 and I.Eker; Ir.-Tur. element.

**Silene macrodonta** Boiss.

Hill side, 27.05.2003, 580 m, Akan 4783, 4785 and I.Eker.

#### **Illecebraceae**

**Paronychia kurdica** Boiss. subsp. **kurdica** var. **kurdica**

Waste place, 18.05.2003, 600 m, Akan 4877 and I.Eker.

#### **Polygonaceae**

**Polygonum lapathifolium** L.

Waste place, 23.07.2004, 630 m, Akan 5213/b and Çetin.

**P. aviculare** L.

Waste place, 23.07.2004, 700 m, Akan 5192 and Çetin.

**Rumex dentatus** L. subsp. **halacsyi** (Rech.pat.) Rech.

Field, 29.06.2002, 560 m, Akan 3609 and I.Eker.

#### **Chenopodiaceae**

**Chenopodium murale** L.

Field, 22.05.2002, 600 m, Akan 4137 and I.Eker; waste place, 23.07.2004, 680 m, Akan 5211 and Çetin.

#### **Tamaricaceae**

**Tamarix smyrnensis** Bunge

Dry stream bed, 25.03.2004, 580 m, Akan 4922 and Çetin.

#### **Hypericaceae (Guttiferae)**

**Hypericum retusum** Aucher

Waste place, 27.05.2003, 600 m, Akan 4839 and I.Eker. Ir.-Tur. element.

**H. salsolifolium** Hand.-Mazz.

Waste place, 13.11.2002, 700 m, Akan 4198 and I.Eker; End. Ir.-Tur. element. DD.

**H. capitatum** Choisy var. **capitatum**

Waste place, 01.06.2004, 700 m, Akan 5151 and Çetin. End.? Ir.-Tur. element. VU.

**H. capitatum** Choisy var. **luteum** N. Robson,

Waste place, 21.05.2002, 600 m, Akan 3814, 3849 and I.Eker; Ir.-Tur. element.

**H. perforatum** L.

Hill side, 21.05.2002, 730 m, Akan 3867 and I.Eker.

**H. triquetrifolium** Turra

Waste place, 13.11.2002, 650 m, Akan 4197, 4199 and I.Eker.

#### **Malvaceae**

**Malva parviflora** L.

Hills, 02.05.2004 630 m, Akan 5066 and Çetin.

#### **Linaceae**

**Linum mucronatum** Bertol. subsp. **mucronatum**

Hills, 21.05.2002, 600 m, Akan 3835, 39190 and I.Eker, Hill side, Ir.-Tur. element.

**L. mucronatum** Bertol. subsp. **armenum** (Bordz.) P.H. Davis

Hill, 21.05.2002, 650 m, Akan 3893 and I.Eker; hills, Ir.-Tur. element.

#### **Geraniaceae**

**Geranium dissectum** L.

Waste place, 02.05.2004, 700 m, Akan 5119 and Çetin.

**Erodium cicutarium** (L.) L. Herit subsp. **cutarium**

Waste place, 25.03.2004, 650 m, Akan 4920 and Çetin; fields, 07.04.2004, Akan 4998.

#### **Rutaceae**

**Haplophyllum buxbaumii** (Poir.) G. Don subsp. **buxbaumii**

Waste place, 21.05.2002, 680 m, Akan 3862 and I.Eker.

#### **Anacardiaceae**

**Rhus coriaria** L.

Side of stream bed, 13.11.2002, 700 m, Akan 4195 and I.Eker.

#### **Fabaceae (Leguminosae)**

**Prosopis farcta** (Banks & Sol) Macbride

Waste places, 13.11.2002, 600 m, Akan 4203 and I.Eker.

**Astragalus suberosus** Banks & Sol. subsp. **ancyleus** (Boiss.) V. A. Matthewss

Hills, 02.05.2004, 700 m, Akan 5109 and Çetin. End. **NE**

**Astragalus suberosus** Banks & Sol. Subsp. **suberosus** Hills, 22.05.2002, 600 m, Akan 4132, slopes, 02.05.2004, Akan 5109 and Çetin.

**A. brachystachys** DC.

Slopes, 25.03.2004, 730 m, Akan 4923 and Çetin. Ir.-Tur. element

**A. russelii** Banks & Sol.

Hills, 22.05.2002, 600 m, Akan 4120, 25.03.2004, 600 m, Akan 4913, Ir.-Tur. element.

**A. lycius** Boiss.

Slopes, 21.05.2002, 780 m, Akan 3906 and I. Eker. End. **LC**.

**A. aduncus** Wild.

Hills, 22.05.2002, 780 m, Akan 4124, 27.05.2003, 720 m, Akan 4828, Ir.-Tur. element.

**A. scabrifolius** Boiss.

Slopes, 02.05.2004, 700 m, Akan 5107 and I. Eker. End. Ir.-Tur. element. **Cr**.

**A. elongatus** Wild. subsp. **nucleiferus** ( Boiss.) Chamberlain

Slopes, 22.05.2002, 650 m, Akan 4129 and I. Eker. Ir.-Tur. element.

**Astragalus lamarckii** Boiss.

Slopes, 07.04.2004, 650 m, Akan 5011 and Çetin. End. Ir.-Tur. element. **Lc**.

**Psoralea bituminosa** L.

Fallow fields, 18.05.2003, 600 m, Akan 4909 and I. Eker. Medit. element.

**Vicia cracca** L. subsp. **stenophylla** Vel.

Side of stream bed, 22.05.2002, 600 m, Akan 4109 and I. Eker.

**V. peregrina** L.

Waste places, 07.04.2004, 600 m, Akan 4993 and Çetin; 02.05.2004, Akan 5132 and Çetin.

**V. sativa** L subsp. **sativa**

Waste places, 02.05.2004, 650 m, Akan 5077, 5111 and Çetin.

**V. sativa** L. subsp. **nigra** (L.) Ehrh. var. **nigra**

Waste places, 22.05.2002, 680 m, Akan 4109, 07.04.2004, 600 m, Akan 4992 and Çetin.

**V. sativa** L. subsp. **nigra** (L.) Ehrh. var. **segetalis** ( Thuill.) Ser. ex DC.

Waste places, 27.05.2003, 630 m, Akan 4829 and I. Eker. **Lens montbretii** (Fisch. & C.A. Mey.) P.H. Davis & Plitmann

Side of dry stream bed, 02.05.2004, 640 m, Akan 5093 and Çetin. Ir.-Tur. element.

**L. orientalis** ( Boiss.) Hand.-Mazz.

Dry stream bed, 22.05.2002, 600 m, Akan 4130, 02.05.2004, Akan 5121 and Çetin.

**L. culinaris** Medik.

Waste places, 02.05.2004, 750 m, Akan 5121 and Çetin.

**Lathyrus vinealis** Boiss. & Noë

Waste places, 07.04.2004, 670 m, Akan 4987 and Çetin. Ir.-Tur. element.

**L. cassius** Boiss.

Fallow fields, 21.05.2002, 630 m, Akan 3829 and I. Eker. E. Medit. element.

**L. sativus** L.

Side of stream bed, 07.04.2004, 600 m, Akan 5007, 02.05.2004, Akan 5076 and Çetin.

**Pisum sativum** L. subsp. **elatius** ( M.Bieb.) Aschers & Graebn. var. **pumilio** Meikle

Waste places, 02.05.2004, 630 m, Akan 5123 and Çetin.

**Trifolium campestre** Schreb.

Waste places, 21.05.2002, 600 m, Akan 3824 and I. Eker; 22.05.2002, 550 m, Akan 4106; 27.05.2003, Akan 4833; waste places, 02.05.2004, 650 m, Akan 5085 and Çetin.

**T. glomeratum** L.

Waste places, 02.05.2004, 630 m, Akan 5044 and Çetin

**T. spumosum** L.

Waste places, 02.05.2004, 640 m, Akan 5120 and Çetin. Medit. element.

**T. fragiferum** L. var. **fragiferum**

Fallow fields, 23.07.2004, 700 m, Akan 5191 and Çetin.

**T. resipinatum** L. var. **resipinatum**

Waste places, 21.05.2002, 650 m, Akan 3838 and I. Eker.

**T. tomentosum** L.

Slopes, 02.05.2004, 650 m, Akan 5083 and Çetin.

**T. stellatum** L. var. **stellatum**

Dry stream bed, 21.05.2002, 600 m, Akan 3839, 07.04.2004, Akan 5015 and Çetin.

**T. lucanicum** Gasp.

Waste places, 02.05.2004, 650 m, Akan 5141 and Çetin. Medit. element.

**T. pilulare** Boiss.

Waste places, 02.05.2004, 670 m, Akan 5084 and Çetin.

**Trigonella coelesyriaca** Boiss.

Slopes, 22.05.2002, 780 m, Akan 4123; 02.05.2004, Akan 5064, Ir.-Tur. element.

**T. mesopotamica** Hub.- Mor.

Slopes, 07.04.2004, 730 m, Akan 5014 and Çetin. Ir.-Tur. element.

**T. monantha** C.A. Mey. subsp. **monantha**

Waste places, 02.05.2004, 650 m, Akan 5081 and Çetin. Ir.-Tur. element

**T. monspeliaca** L.

Slopes, 02.05.2004, 750 m, Akan 5080 and Çetin. Medit. element.

**Medicago orbicularis** ( L.) Bartal.

Side of stream bed, 02.05.2004, 600 m, Akan 5129 and Çetin.

**M. sativa** L. subsp. **sativa**

Waste places, 21.05.2002, 700 m, Akan 3858, 01.06.2004, Akan 5154 and Çetin.

**M. minima** (L.) Bartal. subsp. **minima**

Waste places, 22.05.2002, 600 m, Akan 4125 and I. Eker.

**M. rigidula** (L.) All. var. **rigidula**

Fallow fields, 22.05.2002, 600 m, Akan 41280; 02.05.2004, Akan 5025 and Çetin.

**Lotus corniculatus** L. var. **tenuifolius** L.

Side of stream bed, 23.07.2004, 660 m, Akan 5201 and Çetin.

**L. gebelia** var. **gebelia** Vent.

Fallow fields, 21.05.2002, 600 m, Akan 3876; 27.05.2003, Akan 4840,4843 and I. Eker.

**Hymenocarpus circinatus** (L.) Savi

Waste places, 21.05.2002, 640 m, Akan 3881 and I. Eker; Medit. element.

**Coronilla scorpioides** (L.) Koch

Waste places, 22.05.2002, 620 m, Akan 4131 and I. Eker.

**Scorpiurus muricatus** L. var. **subvillosus** (L.) Fiori

Waste places, 27.05.2003, 610 m, Akan 4847 and I. Eker. Medit. element.

**Hedysarum varium** Willd.

Slopes, 21.05.2002, 790 m, Akan 3908 and I. Eker. Ir.-Tur. element.

**H. syriacum** Boiss.

Fallow fields, 21.05.2002, 655 m, Akan 3892 and I. Eker; Ir.-Tur. element.

**H. pestalozzae** Boiss.

Dry stream bed, 26.06.2002, 640 m, Akan 3621 and I. Eker. End. Ir.-Tur. element. LC.

**H. nitidum** Willd.

Waste places, 21.05.2002, 700 m, Akan 3896 and I. Eker. End. Ir.-Tur. element. LC.

**H. pogonocarpum** Boiss.

Waste places, 26.06.2002, 650 m, Akan 3617 and I. Eker. End. LC.

**Onobrychis caput-galli** (L.) Lam.

Fallow fields, 22.05.2002, 630 m, Akan 4127 and I. Eker; waste places, 13.05.2003, 650 m, Akan 4871, 4869 and I. Eker; 02.05.2004, Akan 5086 and Çetin. Medit. element.

**O. armena** Boiss. and E. Huet

Waste places, 02.05.2004, 720 m, Akan 5108 & Çetin. End. LC.

**O. viciifolia** Scop.

Waste places, 13.05.2003, 650 m, Akan 4868; 02.05.2004, 680 m, Akan 5105, 5122.

**O. argyrea** Boiss. subsp. **argyrea**

Slopes, 13.05.2003, 780 m, Akan 4897 and I. Eker; End. Ir.-Tur. element. LC.

**Rosaceae**

**Cerasus microcarpa** (C. A. Mey.) Boiss. subsp.

**microcarpa**

Slopes, 07.04.2004, 800 m, Akan 5010 and Çetin.

**C. microcarpa** (C. A. Mey.) Boiss. subsp. **tortuosa** (Boiss. and Hausskn.) Browicz

Slopes, 25.03.2004, 740 m, Akan 4928 and Çetin; Ir.-Tur. element.

**Amygdalus trichamygdalus** (Hand.-Maz.) Woronow var. **trichamygdalus**

Slopes, 21.05.2002, 730 m, Akan 3860 and I. Eker; slopes, 18.05.2003, 780 m, Akan 4792 and I. Eker; slopes, 27.05.2003, 760 m, Akan 4891 and I. Eker. Ir.-Tur. element.

**Sanguisorba minor** Scop. subsp. **minor**

Side of stream bed, 07.04.2004, 610 m, Akan 5000 and Çetin.

**S. minor** Scop. subsp. **lasiocarpa** (Boiss. & Hausskn.) Hand.-Mazz.

Waste places, 21.05.2002, 650 m, Akan 3826; 18.05.2003, 630 m, Akan 4882 and I. Eker.

**Crataegus aronia** (L.) Bosc ex DC. var. **aronia**

Slopes, 25.03.2004, 700 m, Akan 4927 and Çetin.

**Malus sylvestris** Miller subsp. **orientalis** (A. Uglitzk.) Browicz var. **orientalis**

Slopes, 25.03.2004, 730 m, Akan 4926 and Çetin.

**Potentilla reptans** L.

Dry stream bed, 23.07.2004, 580 m, Akan 5196 and Çetin.

**Apiaceae (Umbelliferae)**

**Echinophora tenuifolia** L. subsp. **sibthorpiana** (Guss.) Tutin

Waste places, 13.11.2002, 650 m, Akan 4200 and I. Eker. Ir.-Tur. element.

**Scandix pecten-veneris** L.

Waste places, 21.05.2002, 650 m, Akan 3905, fallow fields, 22.05.2002, Akan 4117; waste places, 25.03.2004, Akan 4918; side of stream bed, 02.05.2004, Akan 5036.

**Bifora radians** M. Bieb.

Waste places, 21.05.2002, 650 m, Akan 3861, 3816 and I. Eker.

**Pimpinella anisum** L.

Waste places, 21.05.2002, 630 m, Akan 3841 and I. Eker; fallow fields, 27.05.2003, 640 m, Akan 4836, 4867 and I. Eker.

**Bupleurum cappadocicum** Boiss.

Waste places, 21.05.2002, 680 m, Akan 3863 and I. Eker. Ir.-Tur. element.

**Johrenia dichotoma** DC. subsp. **sintensis** Bornm.

Waste places, 01.06.2004, 700 m, Akan 5153 and Çetin. End. EN.

**Pastinaca pimpinellifolia** M. Bieb.

Fallow fields, 27.05.2003, 680 m, Akan 4778 and I. Eker.

**Torilis arvensis** (Huds.) Link subsp. **arvensis**

Fallow fields, 22.05.2002, 675 m, Akan 4850 and I. Eker.

**T. arvensis** (Huds.) Link subsp. **elongata** (Hoffmanns.)

and Link) Cannon

Waste places, 02.05.2004, 700 m, Akan 5057 and Çetin. Medit. element.

**T. leptophylla** (L.) Rchb.

Dry stream bed, 22.05.2002, 600 m, Akan 4118 and I. Eker; fallow fields, 02.05.2004, 660 m, Akan 5033, 5037, 5058 and Çetin.

**T. tenella** (Delile) Rchb.

Waste places, 02.05.2004, 660 m, Akan 5124 and Çetin.

**Artemisia squamata** L.

Dry stream bed, 27.05.2003, 620 m, Akan 4781 and I. Eker.

**Valerianaceae**

**Valerianella vesicaria** (L.) Moench

Side of stream bed, 22.05.2002, 630 m, Akan 4136, 02.05.2004, 670 m, Akan 5036.

**Morinaceae**

**Morina persica** L.

Slopes, 21.05.2002, 730 m, Akan 3914 and I. Eker; waste places, 18.05.2003, 650 m, Akan 4862; slopes, 27.05.2003, Akan 4873 and I. Eker; Ir.-Tur. element.

**Dipsacaceae**

**Cephalaria setosa** Boiss. & Hohen

Waste places, 21.05.2002, 650 m, Akan 3885; hills, 27.05.2003, Ir.-Tur. element.

**Scabiosa argentea** L.

Waste places, 13.11.2002, 700 m, Akan 4204 and I. Eker; hills, 01.06.2004, 760 m, Akan 5169 and Çetin; dry stream bed, 23.07.2004, 630 m, Akan 5190 and Çetin.

**S. calocephala** Boiss.

Waste places, 18.05.2003, 650 m, Akan 4887 and I. Eker. Ir.-Tur. element.

**S. persica** Boiss.

Waste places, 27.05.2003, 590 m, Akan 4805, 4824 and I. Eker. Ir.-Tur. element.

**S. rotata** M. Bieb.

Fallow fields, 21.05.2002, 600-650 m, Akan 3921 and I. Eker. Ir.-Tur. element.

**Pteroccephalus plumosus** (L.) Coulter

Waste places, 21.05.2002, 570 m, Akan 3845 and I. Eker, 27.05.2003, 600 m, Akan 4782.

**Asteraceae (Compositae)**

**Xanthium strumarium** L. subsp. **cavanillesii** (Schow)

D. Lave & P. Dansereau

Fallow fields, 13.11.2002, 670 m, Akan 4201 and I. Eker.

**Inula graveolens** (L.) Desf.

Waste places, 23.07.2004, 710 m, Akan 5217 and Çetin. Medit. element

**Filago pyramidata** L.

Slopes, 21.05.2002, 810 m, Akan 3917 and I. Eker; hills, 02.05.2004, 790 m, Akan 5072.

**Evax anatolica** Boiss. & Heldr.

Slopes, 27.05.2003, 780 m, Akan 4784 and I. Eker. Ir.-Tur. element.

**E. palaestina** Boiss.

Slopes, 21.05.2002, 825 m, Akan 3818 and I. Eker; dry stream bed, 18.05.2003, 650 m, Akan 4890 and I. Eker; slopes, 02.05.2004, 765 m, Akan 5039 and Çetin. Ir.-Tur. element.

**Senecio vulgaris** L.

Waste places, 02.05.2004, 630 m, Akan 5104 and Çetin.

**S. vernalis** Waldst. & Kit.

Waste places, 21.05.2002, 650 m, Akan 3846, 27.05.2003, 600 m, Akan 4861; 25.03.2004, 575 m, Akan 4939 and Çetin; Fallow fields, 07.04.2004, 600 m, Akan 5002.

**Anthemis pauciloba** Boiss. var. **pauciloba**

Waste places, 02.05.2004, 700 m, Akan 5114 and Çetin.

**A. haussknechtii** Boiss. & Reut.

Slopes, 02.05.2004, 760 m, Akan 5043, 5095 and Çetin.

**A. altissima** L.

Waste places, 21.05.2002, 650 m, Akan 3828 and I. Eker; waste places, 22.05.2002, 675 m, Akan 3853 and I. Eker; fallow fields, 27.05.2003, 630 m, Akan 4162 and I. Eker.

**A. biebersteinii** Afan

Waste places, 21.05.2002, 600 m, Akan 3837, 3871, 27.05.2003, 640 m, Akan 4159 and I. Eker; dry stream bed, 02.05.2004, 610 m, Akan 4806, 5106 and Çetin. Ir.-Tur. element.

**Gundelia tournefortii** L. var. **armata** Freyn and Sint.

Slopes, 27.05.2003, 760 m, Akan 4791 and I. Eker; slopes, 02.05.2004, Akan 5087, 5089.

**Cousinia stenocephala** Boiss.

Waste places, 01.06.2004, 680 m, Akan 5167 and Çetin. Ir.-Tur. element.

**Notobasis syriaca** (L.) Cass.

Waste places, 18.05.2003, 660 m, Akan 4900, 4879 and I. Eker. Medit. element.

**Carduus pycnocephalus** L. subsp. **breviphyllarius** P.H. Davis

Waste places, 21.05.2002, 650 m, Akan 3889; 18.05.2003, 650 m, Akan 4830 and I. Eker; slopes, 27.05.2003, 760 m, Akan 4906; waste places, 07.04.2004, 640 m, Akan 5003.

**Serratula cerinthifolia** (Sm.) Boiss.

Slopes, 27.05.2003, 730 m, Akan 4818; 07.04.2004, 620 m, Akan 5013/b and 5149.

**Centaurea virgata** Lam.

Fallow fields, 21.05.2002, 650 m, Akan 3608 and I. Eker; slopes, 22.05.2002, 780 m, Akan 3869 and I. Eker; waste places, 29.06.2002, 650 m, Akan 4163. Ir.-Tur. element.

**C. solstitialis** L. subsp. **solstitialis**

Waste places, 27.05.2003, 640 m, Akan 4831 and I. Eker.

**C. iberica** Trevir. ex Spreng.

Waste places, 21.05.2002, 570 m, Akan 3920 and I. Eker; 07.04.2004, 650 m, Akan 4980.

**C. hyalolepis** Boiss.

Fallow fields, 27.05.2003, 625 m, Akan 4852 and I. Eker. Ir.-Tur. element.



- C. iberica** Trevir ex Spreng.  
Waste places, 01.06.2004, 745 m, Akan 5161 and Çetin.
- C. urvillei** DC. subsp. **urvillei**  
Slopes, 18.05.2003, 730 m, Akan 4881, 4899 and I.Eker; waste places, 02.05.2004, 650 m, Akan 5088, 5117 and Çetin. E. Medit. element.
- C. urvillei** DC. subsp. **nimrodii** ( Boiss. & Hausskn.) Wagenitz  
Waste places, 01.06.2004, 730 m, Akan 5149 and Çetin. Ir.-Tur. element.
- C. triumfettii** All.  
Slopes, 01.06.2004, 740 m, Akan 5144 and Çetin.
- C. depressa** M. Bieb.  
Slopes, 21.05.2002, 780 m, Akan 3907 and I.Eker; waste places, 22.05.2002, 650 m, Akan 4157 and I.Eker; waste places, 18.05.2003, 650 m, Akan 4820 and I.Eker.
- Crupina crupinastrum** (Moris) Vis.  
Slopes, 21.05.2002, 790 m, Akan 3902 and I.Eker; waste places, 22.05.2002, 700 m, Akan 3916 and I.Eker; waste places, 27.05.2003, 640 m, Akan 4158 and I.Eker.
- Chardinia orientalis** (L.) O. Kuntze  
Waste places, 21.05.2002, 630 m, Akan 3843, 3880 and I.Eker; fallow fields, 22.05.2002, 660 m, Akan 4161, 4182 and I.Eker; Ir.-Tur. element.
- Echinops viscosus** DC. subsp. **viscosus**  
Slopes, 27.05.2003, 800 m, Akan 4776 and I. Eker.
- E. orientalis** Trautv.  
Waste places, 02.05.2004, 700 m, Akan 5042 and Çetin. Ir.-Tur. element
- Cichorium intybus** L.  
Dry stream bed, 21.05.2002, 650 m, Akan 3881 and I.Eker.
- Scorzonera papposa** DC.  
Slopes, 21.05.2002, 810 m, Akan 3819, 3816 and I. Eker; Ir.-Tur. element.
- S. pseudolanata** Grossheim  
Waste places, 07.04.2004, 610 m, Akan 5016 and Çetin. Ir.-Tur. element.
- S. kotschyi** Boiss.  
Waste places, 21.05.2002, 640 m, Akan 3821 and I.Eker; fallow fields, 27.05.2003, 580 m, Akan 3918 and I.Eker; slopes, 02.05.2004, 780 m, Akan 5115, 4817. Ir.-Tur. element.
- Tragopogon longirostris** Bisch. ex Sch. Bip. var. **longirostris**.  
Waste places, 27.05.2003, 630 m, Akan 4825 and I.Eker; 07.04.2004, 660 m, Akan 4985.
- T. buphthalmoides** ( DC.) Boiss. var. **buphthalmoides**  
Waste places, 21.05.2002, 650 m, Akan 3823, 3901 and I.Eker.
- Picris strigosa** M. Bieb.  
Side of stream bed, 13.11.2002, 640 m, Akan 4194 and I. Eker. Ir.-Tur. element.
- Rhagadiolus angulosus** (Jaub. & Spach) Kupicha  
Side of stream bed, 07.04.2004, 620 m, Akan 5013/b and Çetin.
- Lactuca serriola** L.  
Dry stream bed, 23.07.2004, 610 m, Akan 5206 and Çetin.
- Taraxacum sintenisii** Dahlst.  
Waste places, 25.03.2004, 650 m, Akan 4910 and Çetin.
- Crepis foetida** L. subsp. **rhoeadifolia** (M. Bieb.) Celak.  
Waste places, 21.05.2002, 650 m, Akan 3874, 3888 and I.Eker.
- C. foetida** L. subsp. **commutata** (Spreng.) Babç.  
Fallow fields, 18.05.2003, 670 m, Akan 4813 and I.Eker; 27.05.2003, 680 m, Akan 4886.
- C. sancta** (L.) Babç.  
Waste places, 25.03.2004, 660 m, Akan 4940 and Çetin.
- C. micrantha** Czernov  
Waste places, 21.05.2002, 650 m, Akan 3847 and I.Eker.
- Primulaceae**  
**Androsace maxima** L.  
Side of stream bed, 25.03.2004, 620 m, Akan 4946 and I.Eker.
- Oleaceae**  
**Jasminum fruticans** L.  
Slopes, 18.05.2003, 790 m, Akan 4822 and I.Eker; hills, 27.05.2003, 820 m, Akan 4864, 4878 and I.Eker; slopes, 07.04.2004, 790 m, Akan 5019 and Çetin. Medit. element.
- Apocynaceae**  
**Vinca herbacea** Waldst. and Kit.  
Slopes, 25.03.2004, 690 m, Akan 4934 and Çetin.
- Gentianaceae**  
**Blackstonia perfoliata** (L.) Hudson subsp. **perfoliata**  
Waste places, 23.07.2004, 700 m, Akan 5215 and Çetin.
- Centaurium tenuiflorum** (Hoffmanns. & Link) Fritsch subsp. **acutiflorum** (Schott) Zeltner  
Waste places, 23.07.2004, 720 m, Akan 5215 and Çetin. Medit. element.
- Convolvulaceae**  
**Convolvulus dorycnium** L. subsp. **oxysepalus** (Boiss.) Rech. Fil.  
Slopes, 01.06.2004, 760 m, Akan 5157 and Çetin. E. Medit. element.
- C. holosericeus** M. Bieb. subsp. **holosericeus**.  
Waste places, 21.05.2002, 650 m, Akan 3820 and I.Eker; fallow fields, 27.05.2003, 600 m, Akan 4815, 4837 and I.Eker; slopes, 02.05.2004, 700 m, Akan 5034 and I.Eker.
- C. stachydifolius** Choisy  
Waste places, 02.05.2004, 660 m, Akan 5134 and Çetin. Ir.-Tur. element.
- Boraginaceae**  
**Heliotropium circinatum** Griseb., Spic.  
Slopes, 23.07.2004, 740 m, Akan 5205 and Çetin. Ir.-Tur. element.

**H. bovei** Boiss.

Waste places, 23.07.2004, 700 m, Akan 5204 and Çetin. E. Medit. element.

**Myosotis ramosissima** Rochel ex Schult. subsp. **ramosissima**

Waste places, 25.03.2004, 625 m, Akan 4945 and Çetin.

**Anchusa azurea** Mill. var. **azurea**

Side of stream bed, 02.05.2004, 625 m, Akan 5133 and Çetin.

**A. strigosa** Labill.

Slopes, 21.05.2002, 820 m, Akan 3822 and I.Eker; fallow fields, 27.05.2003, 625 m, Akan 4788; waste places, 07.04.2004, 625 m, Akan 5009 and Çetin.

**Alkanna hirsutissima**(Bertol) DC.

Slopes, 27.05.2003, 760 m, Akan 4854, 4841 and I. Eker. Ir.-Tur. element.

**A. megacarpa** DC.

Slopes. 21.05.2002, 780 m, Akan 3864 and I.Eker; waste places, 25.03.2004, 650 m, Akan 4919 and I. Eker; End. Ir.-Tur. element. LC.

**Scrophulariaceae**

**Verbascum orientale** (L.) All.

Waste places, 23.07.2004, 700 m, Akan 5193 and Çetin. Medit. element.

**V. tenue** Murb.

Waste places, 21.05.2002, 650 m, Akan 3877 and I.Eker. End. Ir.-Tur. element. VU

**Scrophularia striata** Boiss.

Fallow fields, 07.04.2004, 640 m, Akan 4976 and Çetin.

**Kickxia lanigera** (Desf.) Hand.-Mazz.

Waste places, 23.07.2004, 670 m, Akan 5212 and Çetin. Medit. element.

**Veronica reuterana** Boiss.

Dry stream bed, 23.07.2004, 620 m, Akan 5219 and Çetin.

**V. hispidula** Boiss. & E. Huet subsp. **hispidula**

Side of stream bed, 25.03.2004, 610 m, Akan 4948 and Çetin. Ir.-Tur. element.

**V. anagallis-aquatica** L.

Side of stream bed, 07.04.2004, 610 m, Akan 5020/a and Çetin.

**V. orientalis** Miller subsp. **orientalis**

Slopes, 07.04.2004, 780 m, Akan 5020, 5051 and Çetin; 02.05.2004, Akan 5137.

**Parentucellia latifolia** (L.) Caruel subsp. **flaviflora** (Boiss.) Hand.-Mazz.

Waste places, 25.03.2004, 600 m, Akan 4950 and I.Eker; fallow fields, 07.04.2004, 640 m, Akan 4983 and Çetin; 02.05.2004, 630 m, Akan 5075. Medit. element.

**Verbenaceae**

**Vitex pseudo-negundo** (Hausskn. Ex Bornm.) Hand.-Mazz.

Side of stream bed, 25.03.2004, 580 m, Akan 4924 and Çetin. Ir.-Tur. element.

**Verbena officinalis** L.

Slopes, 23.07.2004, 770 m, Akan 5221 and Çetin.

**Lamiaceae (Labiatae)**

**Teucrium orientale** L. var. **orientale**

Slopes, 21.05.2002, 760 m, Akan 2952 and I.Eker; hills, 22.05.2002, 800 m, Akan 3830 and I.Eker; hills, 18.05.2003, 790 m, Akan 4816; 27.05.2003, 760 m, Akan 4894.

**T. polium** L.

Slopes, 22.05.2002, 710 m, Akan 4107 and I.Eker; side of stream bed, 27.05.2003, 630 m, Akan 4799 and I.Eker; waste places, 02.05.2004, 680 m, Akan 5068 and Çetin.

**Scutellaria orientalis** L. subsp. **haussknechtii** (Boiss.) J.R. Edm.

Slopes, 27.05.2003, 710 m, Akan 4801; 23.07.2004, 760 m, Akan 5152 and Çetin; waste places, 01.06.2004, 700 m, Akan 5199 and Çetin. End. Ir.-Tur. element. LC.

**Lamium aleppicum** Boiss. & Hausskn.

Side of stream bed, 02.05.2004, 590 m, Akan 5045 and Çetin. Ir.-Tur. element.

**Marrubium vulgare** L.

Waste places, 21.05.2002, 650 m, Akan 3865 and I.Eker.

**Stachys obscura** Boiss. & Ball

Slopes, 07.04.2004, 600 m, Akan 4990 and Çetin. E. Medit.

**Sideritis libanotica** Labill. subsp. **kurdica** (Bornm.) Hub.-Mor.

Slopes, 01.06.2004, 700 m, Akan 5146 and Çetin. Ir.-Tur. element

**Thymus leucotrichus** A.D.Hall var. **leucotrichus**

Slopes, 27.05.2003, 680 m, Akan 4795 and I.Eker. E. Medit. element.

**Thymbra spicata** L. var. **spicata**

Hills, 01.06.2004, 700 m, Akan 5166 and Çetin. E. Medit. element.

**Mentha pulegium** L.

Moist place, 23.07.2004, 580 m, Akan 5200 and Çetin.

**M. longifolia** (L.) Huds. subsp. **typhoides** (Briq.) Harley var. **typhoides**

Moist place, 21.05.2002, 580 m, Akan 3857 and I.Eker.

**Ziziphora capitata** L.

Slopes, 21.05.2002, 740 m, Akan 3833 and I.Eker; slopes, 18.05.2003, 730 m, Akan 4848 and I.Eker; fallow fields, 27.05.2003, 640 m, Akan 4904 and I.Eker; Ir.-Tur. element.

**Salvia multicaulis** Vahl

Slopes, 21.05.2002, 720 m, Akan 3815 and I.Eker; slopes, 25.03.2004, 730 m, Akan 3894 and I.Eker; side of stream bed, 27.05.2003, 600 m, Akan 4803, 4858. Ir.-Tur. element.

**S. viridis** L.

Slopes, 21.05.2002, 690 m, Akan 3834, 3855 and I.Eker; 18.05.2003, 610 m, Akan 4874, 4902; 07.04.2004, 690 m, Akan 4991; 01.06.2004, 700 m, Akan 5147. Medit. element.

**S. virgata** Jacq.

Waste places, 25.03.2004, 650 m, Akan 4914 and Çetin; Ir.-Tur. element.

**Plantaginaceae**

**Plantago lanceolata** L.

Dry stream bed, 21.05.2002, 600 m, Akan 3856 and I.Eker; side of stream bed, 22.05.2002, 600 m, Akan 4134 and I.Eker; moist place, 07.04.2004, 590 m, Akan 4979.

**P. lagopus** L.

Moist place, 23.07.2004, 600 m, Akan 5203 and Çetin. Medit. element.

**Euphorbiaceae**

**Andrachne telephioides** L.

Waste places, 22.05.2002, 630 m, Akan 4137/b and I.Eker; fallow fields, 18.05.2003, 650 m, Akan 4907 and I.Eker; waste places, 02.05.2004, 700 m, Akan 5029 and Çetin.

**Euphorbia petiolata** Banks & Sol.

Waste places, 23.07.2004, 700 m, Akan 5213 and Çetin. Ir.-Tur. element.

**E. microsphaera** Boiss.

Slopes, 18.05.2003, 780 m, Akan 4885 and I.Eker. Ir.-Tur. element.

**E. falcata** L. subsp. **falcata** var. **falcata**

Fallow fields, 13.11.2002, 710 m, Akan 4193; 23.07.2004, 730 m, Akan 5214 and Çetin.

**E. cheiradenia** Boiss. & Hohen

Waste places, 21.05.2002, 650 m, Akan 3897 and I.Eker; waste places, 18.05.2003, 650 m, Akan 4804, 4835 and I.Eker; slopes, 27.05.2003, 760 m, Akan 4859, 4889 and I.Eker.

**Salicaceae**

**Salix acmophylla** Boiss.

Side of stream bed, 23.07.2004, 600 m, Akan 5197 and Çetin. Ir.-Tur. element.

**Rubiaceae**

**Asperula stricta** Boiss. subsp. **latibracteata** (Boiss.) Ehrend.

Slopes, 27.05.2003, 780 m, Akan 4795, 4856 and I.Eker; waste places, 01.06.2004, 700 m, Akan 5145 and Çetin. End. Ir.-Tur. element. **LC**.

**A. orientalis** Boiss. and Hohen.

Waste places, 07.04.2004, 600 m, Akan 5001; 23.07.2004, Akan 5195. Ir.-Tur. element.

**Galium spurium** L. subsp. **spurium**

Side of stream bed, 25.03.2004, 570 m, Akan 4942 and Çetin. Euro.-Sib. element.

**G. tricornutum** Dandy

Waste places, 02.05.2004, 600 m, Akan 5138, 5101 and Çetin. Medit. element

**Callipeltis cucullaria**(L.) Steven

Waste places, 27.05.2003, 600 m, Akan 4786 and I.Eker. Ir.-Tur. element.

**Cruciata taurica** (Pall. ex Willd.) Ehrend.

Slopes, 21.05.2002, 650 m, Akan 3895 and I.Eker; waste places, 25.03.2004, 600 m, Akan 4915 and Çetin; 07.04.2004, 610 m, Akan 4981 and Çetin. Ir.-Tur. element.

**Monocotyledones**

**Araceae**

**Arum maculatum** L.

Fallow fields, 25.03.2004, 600 m, Akan 4931 and Çetin.

**Liliaceae**

**Allium pallens** L. subsp. **pallens**

Waste places, 23.07.2004, 700 m, Akan 5208 and Çetin.

**A. scorodoprassum** L. subsp. **rotundum** (L.) Stern

Waste places, 21.05.2002, 650 m, Akan 3851, 3870 and I.Eker; fallow fields, 18.05.2003, 650 m, Akan 4849 and I.Eker; waste places, 27.05.2003, 680 m, Akan 4875 and I.Eker.

**A. dictyoprasum** C.A. Meyer ex Kunth

Fallow fields, 23.07.2004, 700 m, Akan 5207 and Çetin.

**Ornitogalum narbonense** L.

Slopes, 25.03.2004, 660 m, Akan 4929/a and Çetin. Medit. element.

**Muscari comosum** (L.) Mill.

Side of stream bed, 27.05.2003, 600 m, Akan 4832 and I.Eker; waste places, 02.05.2004, 600 m, Akan 5130 and Çetin. Medit. element.

**M. armeniacum** Leichtlin ex Baker

Fallow fields, 21.05.2002, 590 m, Akan 3850 and I.Eker.

**M. neglectum** Guss.

Waste places, 25.03.2004, 600 m, Akan 4935 and Çetin; 07.04.2004, Akan 4999.

**Hyacinthella nervosa** (Bertol.) Chouard

Waste places, 25.03.2004, 630 m, Akan 4936 and Çetin. Ir.-Tur. element.

**Gagea fibrosa** (Desf.) Schult. & Schult. fil.

Slopes, 25.03.2004, 660 m, Akan 4929 and Çetin.

**Colchicum serpentinum** Woronow ex Miscz.

Waste places, 27.05.2003, 650 m, Akan 4794 and I.Eker.

**Amaryllidaceae**

**Ixiolirion tataricum** (Pallas) Herbert subsp. **montanum** (Labill) Takht & Fed.

Waste places, 30.04.2002, 575 m, Akan 2928 and I.Eker. Ir.-Tur. element.

**Iridaceae**

**Iris persica** L.

Side of stream bed, 21.05.2002, 600 m, Akan 3900 and I.Eker; side of stream bed, 25.03.2004, 600 m, Akan 4930 and Çetin. Ir.-Tur. element.

**Crocus pallasii** Goldb. subsp. **turcicus** Mathew.

Waste places, 21.05.2002, 700 m, Akan 3887, 3912; 25.03.2004, 650 m, Akan 4925.

**Gladiolus atroviolaceus** Boiss.

Fallow fields, 18.05.2003, 640 m, Akan 4876 and I.Eker. Ir.-Tur. element.

**Juncaceae**

**Juncus bufonius** L.

Moist place, 21.05.2002, 580 m, Akan 3852 and I.Eker.

**Poaceae (Gramineae)**

**Trachynia distachya** (L.) Link

Waste places, 02.05.2004, 700 m, Akan 5112 and Çetin. Medit. element.

**Aegilops umbellulata** Zhuk.

Fallow fields, 02.05.2004, 700 m, Akan 5096 and Çetin. Ir.-Tur. element.

**A. triuncialis** L. subsp. **triuncialis**

Waste places, 22.05.2002, 680 m, Akan 4147 and IEker.

**A. biuncialis** Vis.

Waste places, 21.05.2002, 650 m, Akan 3911 and IEker; fallow fields, 18.05.2003, 640 m, Akan 4898 and IEker; Side of stream bed, 02.05.2004, 620 m, Akan 5125 and Çetin.

**Triticum aestivum** L.

Waste places, 27.05.2003, 600 m, Akan 4826 and IEker.

**Hordeum murinum** L. subsp. **glaucum** ( Steudel ) Tzvelev

Waste places, 21.05.2002, 650 m, Akan 3909; 27.05.2003, 600 m, Akan 4814 and IEker.

**H. bulbosum** L. var. **bulbosum**

Waste places, 21.05.2002, 650 m, Akan 3866, 3913 and IEker; fallow fields, 22.05.2002, 630 m, Akan 4150 and IEker; waste places, 27.05.2003, 600 m, Akan 4807 and IEker.

**H. spontaneum** C. Koch.

Waste places, 02.05.2004, 700 m, Akan 5127 and Çetin. Ir.-Tur. element.

**Taeniatherum caput-medusae** (L.) Nevski subsp. **crinitum** (Schreb.) Melderis

Waste places, 02.05.2004, 610 m, Akan 5028 and Çetin. Ir.-Tur. element.

**Bromus lanceolatus** Roth

Waste places, 27.05.2003, 610 m, Akan 4811 and IEker.

**B. danthoniae** Trin.

Fallow fields, 02.05.2004, 700 m, Akan 5098, 4148, 4780 and Çetin.

**B. tectorum** L.

Waste places, 21.05.2002, 650 m, Akan 3840 and IEker; fallow fields, 22.05.2002, 600 m, Akan 4146, 4151 and IEker; fallow fields, 27.05.2003, 600 m, Akan 4834 and IEker.

**B. sterilis** L.

Fallow fields, 02.05.2004, 680 m, Akan 5026, 5063, 5099, 5113 and Çetin.

**Avena eriantha** Durieu

Waste places, 02.05.2004, 600 m, Akan 5038, 5126/a and Çetin.

**A. sterilis** L. subsp. **sterilis**

Waste places, 21.05.2002, 600 m, Akan 3848, 3859 and IEker; fallow fields, 22.05.2002, 650 m, Akan 4142, 4141 and IEker; waste places, 27.05.2003, 640 m Akan 4863.

**A. sterilis** L. subsp. **ludoviciana** (Durieu) Gillet et Magne Side of stream bed, 02.05.2004, 610 m, Akan 5126 and Çetin.

**Arrhenatherum palaestinum** Boiss.

Dry stream bed, 27.05.2003, 600 m, Akan 4793, 4798 and IEker. E. Medit. element.

**Rostraria cristata** (L.) Tzvelev var. **cristata**

Waste places, 21.05.2002, 650 m, Akan 3890; 22.05.2002, 600 m, Akan 4152 and IEker.

**Lolium rigidum** Gaudin var. **rigidum**

Dry stream bed, 22.05.2002, 580 m, Akan 4143, 4144; 02.05.2004, 640 m, Akan 5040.

**L. subulatum** (Banks & Sol.) Eig

Waste places, 23.07.2004, 600 m, Akan 5220 and Çetin.

**Vulpia ciliata** Dumort. subsp. **ciliata**

Dry stream bed, 22.05.2002, 620 m, Akan 4149 and IEker.

**Poa bulbosa** L.

Waste places, 22.05.2002, 620 m, Akan 4153, 4154 and IEker; dry stream bed, 02.05.2004, 600 m, Akan 5031, 5100 and Çetin.

**Dactylis glomerata** L. subsp. **hispanica** (Roth) Nyman

Waste places, 07.04.2004, 630 m, Akan 5017; 02.05.2004, 610 m, Akan 5140 and Çetin.

**Cynosurus effusus** Link

Waste places, 01.06.2004, 700 m, Akan 5162 and Çetin. Medit. element.

**Echinaria capitata** (L.) Desf.

Waste places, 21.05.2002, 650 m, Akan 3831 and IEker; dry stream bed, 22.05.2002, 600 m, Akan 4145 and IEker; slopes, 07.04.2004, 790 m, Akan 5005; 02.05.2004, Akan 5056.

**Melica persica** Kunth subsp. **persica**

Fallow fields, 22.05.2002, 620 m, Akan 4138 and IEker.

**Stipa holosericea** Trin.

Waste places, 21.05.2002, 650 m, Akan 3894 and IEker; slopes, 22.05.2002, 750 m, Akan 4155 and IEker. Ir.-Tur. element.

**Cynodon dactylon** (L.) Pers. var. **villosus** Regel

Dry stream bed, 23.07.2004, 600 m, Akan 5202 and Çetin.

**Phragmites australis** (Cav.) Trin. Ex Steudel

Moist place, 23.07.2004, 590 m, Akan 5194 and Çetin.

**Chrysopogon gryllus** (L.) Trin. subsp. **gryllus**

Waste place, 21.05.2002, 650 m, Akan 3827, 3862 and IEker; fallow fields, 22.05.2002, 620 m, Akan 4140, 4150 and IEker; waste places, 27.05.2003, 600 m, Akan 4800.

**DISCUSSION**

During the floristic study, 558 plant specimens belonging to 45 families, 182 genera, 303 taxa were collected. Of all 303 taxa, one species belongs to Pteridophyta, while the rest (302 taxa) belong to Spermatophyta. On the other hand, forty six taxa of Angiospermae belong to Monocotyledones, while the rest (257 taxa) belongs to Dicotyledones.

The endemism rate is 5.9% in our research area. The Endemism rate is 2.4% for Ceylanpınar State Farm<sup>[5]</sup>, 5.7% for Karacadağ mountain (Şanlıurfa-Diyarbakır)<sup>[12]</sup>. From these data, it can be concluded that our research area is parallel to the other floristic investigations carried out in the region. Climatic, topographic and ecological features are homogeneous in the research area. These factors are some reasons for the low endemism rate in the floristic surveys of South East Anatolia.

The distribution of the species according to the floristic regions, Irano-Turanian elements with the rate of 26.7% have been preceeding. Mediterranean elements with the rate of 10.2% have been found. Only one species belongs to Euro-Siberian element, while the other one belongs to Saharo-Arabian element. The 30.6% of determined species are widespread, while the 30.8% of taxa are unknown phytogeographic region. Moreover, Irano-Turanian elements are dominant, with the rate of 29.9% on Ceylanpınar State Farm<sup>[5]</sup> and a rate of 35% on Karacadağ Mountain<sup>[12]</sup>. The vast number of Irano-Turanian elements can be explained by the fact that the study area lies wholly within the Irano-Turanian phytogeographic region.

Concerning the number of taxa, Fabaceae, with 53 taxa, is the largest family in the research area. Following Fabaceae, families with the highest number of species are Asteraceae (45), Poaceae (30), Brassicaceae (23) and Lamiaceae (15). Fabaceae is also the most common family on Karacadağ Mountain<sup>[12]</sup>, Ceylanpınar State Farm<sup>[5]</sup>

Concerning the number of species, the major genera in this region are as follows: *Centaurea* (9), *Trifolium* (9), *Astragalus* (8), *Hypericum* (6), *Vicia* (5), *Hedysarum* (5), *Papaver* (5), *Trigonella* (4) and *Medicago* (4). The genus *Astragalus* ranks the first on Ceylanpınar State Farm<sup>[5]</sup>, but the genus *Trifolium* ranks the first on Karacadağ<sup>[12]</sup>.

According to IUCN Red Data Book categories<sup>[22-23]</sup>, *Astragalus scabrifolius* is CR; *Johrenia dichotoma* subsp. *sintensisii* and *Reseda tomentosa* are EN; *Verbascum tenue* and *Hypericum capitatum* var. *capitatum* are VU; *Hypericum salsolifolium* is DD; *Astragalus lycius*, *Hedysarum pestalozzae*, *H. nitidum*, *H. pogonocarpum*, *Onobrychis armena*, *O. argyrea* subsp. *argyrea*, *Alkanna megacarpa*, *Scutellaria orientalis* subsp. *haussknechtii*, *Helianthemum nummularium* subsp. *lycanoicum* are LC and *Phryna ortegioides* is NT.

*Astragalus scabrifolius* is Critically Endengared (CR) according to Red Data Book of Turkish Plants. As to our observations about this species in the research area, the range of *Astragalus scabrifolius* population is narrow and small. According to Robson<sup>[24]</sup>, *Hypericum capitatum* var.

*capitatum* is endemic taxon to Turkey, but as the type specimen was collected from Syria it can not be endemic<sup>[25]</sup>. However, the taxon is not included in the Flora of Syria, Palestine and Sinai<sup>[26]</sup>. That's why the endemic situation of this taxon is not clear. The threat category proposed by Ekim *et al.*<sup>[23]</sup> for this taxon should remain as Vulnerable (VU) because it has small distribution area and it is not abundant in its habitat. Among the endemic plants, *Johrenia dichotoma* subsp. *sintensisii* and *Reseda tomentosa* are Endangered (EN) according to Ekim *et al.*<sup>[23]</sup>. Although the study area has been protected by TEMA, these two endangered taxa should still remain in its EN category due to the scarcity of population in its habitat.

Of all the collected specimens, 69 taxa are new records for the C7 square<sup>[1,2,5,11,27-36]</sup>.

## ACKNOWLEDGEMENTS

We are grateful to Dr. Mehmet Koyuncu and Ismail Eker for identification of some geophytes, to Dr. Murat Ekici for checking new floristic records, to Melek Coşkun for drawing the map, to Jeologist Nedret Özel for providing literature, to Nazmiye Gürel for checking English grammar and to TEMA (issue: 275.10.03/10.03.-210) for logistics support.

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