

## THE WEED FLORA OF THE RECREATION AREAS OF CENTRAL DISTRICTS IN ŞANLIURFA (TÜRKİYE)

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### Abstract

The aim of this study was to determine the weed flora of recreation areas within borders of Eyyübiye, Haliliye and Karaköprü central districts of Şanlıurfa. A field study was carried out in 34 recreation areas within these districts. As a result of the study, 134 plants belonging to 27 families were identified. There were 82 were species, 31 were subspecies and 21 were varieties from these taxa. 109 of them are dicotyledonous and 25 are monocotyledonous. When evaluated in terms of life form, 1 is a phanerophyte, 1 is a chamaephyte, 30 are hemicryptophyte, 2 are cryptophyte (geophyte) and 100 are therophyte. The distribution rates according to phytogeographical regions are as follows: Irano-Turanian elements 13% (17), Mediterranean elements 7% (10), Euro-Siberian elements 5% (7), Eastern Mediterranean elements 4% (5) and unknown elements 71% (95). Considering the number of identified taxa, the first five families are Fabaceae (29), Poaceae (24), Asteraceae (23), Brassicaceae (6), Plantaginaceae (6), Apiaceae (5) and Caryophyllaceae (5).

## Introduction

The term recreation is a combination of the Latin words “re-repeat, again” and “create-creation, renewal” (KALEM 2001). Recreation, as the equivalent of the verb “re-create”, which means to renew something or to regain lost opportunities, includes the meanings of renewal of strength

or spirit, revitalization, regeneration, rest, fun and play (JENSEN and NAYLOR 2000, RÜZGAR 2016). Based on the fact that the word recreation comes from the Latin word “recreatio”, that is, to regain health, in the historical process of defining recreation, it has also been considered as an activity that prepares people for working life. While some definitions refer to recreation as restoration, that is, renewal or improvement, most focus on it as a form of activity (TORKILDSEN 2005). In fact, recreation is an experience of “renewal”; a refreshing change from work and daily routine. The deeper meaning of recreation goes beyond entertainment and hobby. It includes activities of the highest creative, cultural and civil values that enrich our lives and raise the tone of society (JENSEN and NAYLOR 2000). Recreation areas where recreation activities are carried out increase the value of cities and make them livable. Many developed societies consider recreation areas in their urban planning (KARA et al. 2008).

In recent years, public institutions (especially municipalities) have been increasingly trying to create a large number of recreation areas (parks, gardens, recreation areas, sports complexes, etc.) in the city or in the immediate vicinity of the city for urban people to relax, have fun or do various sports activities, etc. During landscaping in recreation areas, ornamental plants, which can relax people with their appearance or sometimes with their scent and give peace of mind, are used. These plants are usually woody plants preferred for their general appearance or other plant parts (flowers, fruits, leaves, etc.). In addition to these perennial woody plants, different ornamental annual herbaceous plants are planted in recreation areas according to the season. However, in these recreation areas, weeds are also seen that disrupt the appearance of the landscape and can also negatively affect the plants in the area.

A weed is generally a plant that is undesirable in a given situation, or in other words “a plant in the wrong place”. For example, they are unwanted plants in human-controlled environments such as farm fields, gardens, lawns and parks. The term weed is also used for any plant that grows or reproduces aggressively or is invasive outside of its natural habitat (RAHMAN and AL MAMUN 2017). Among these weeds, those that can cause problems for human health or cause damage by creating various economical or ecological problems, are called invasive alien species (ÖNEN 2015). Weeds generally have a large number of seeds and these seeds maintain their vitality for a long time. They can also reproduce with their vegetative parts (rhizomes, stolons, etc.). Parts such as wings and feathers in the morphological structure of the seeds enable them to be transported over long distances (YILDIRIM and EKIM 2003).

Various methods such as mowing, manual removal, herbicides are used to control these weeds, which have high ecological adaptation and tolerance. The main factor in the success of these methods is the identification of the weed species to be controlled. Thus, the method of combating weeds that cause various problems can be determined.

In this study, it was tried to determine the weed flora in recreation areas of at least 20 decares or more in Eyyübiye, Haliliye and Karaköprü, the central districts of Şanlıurfa. Information on the current taxonomic status, life forms, phytogeographic regions and worldwide distribution of the plants were given.

## **Material and Method**

In order to identify the foreign weed flora in the recreation areas of the central districts of Eyyübiye, Haliliye, and Karaköprü in Şanlıurfa, periodic visits were made to the recreation areas every month throughout the year. During these visits, the recreation areas were scanned, and at least three samples were collected from plants in the generative stage (flowering-fruiting). The collected plant samples were pressed, dried, and preserved as herbarium samples. These plant samples are stored in the personal herbarium of the second author. Flora of Turkey (DAVIS 1965–1985, DAVIS et al. 1988, GÜNER et al. 2000) was used as the main source for plant identification. In addition, AKIL and KAYA (2013), KAYA et al. (2020) were also utilized.

The taxa identified during the study were listed in alphabetical order. The plant list was created by following the order of family, genus and species name and (if available) subspecies taxon name and author name. BRUMMITT and POWELL (1992) was taken into consideration for the abbreviations of the authors of the taxa. For the current taxonomic status of the plants, GÜNER et al. (2012) was used. Life forms of the plants were determined according to RAUNKIAER (1934).

The field study was conducted in recreation areas of at least 20 acres or more in Eyyübiye, Haliliye and Karaköprü districts. The districts where the recreation areas are located and the list of the areas they cover are given in Table 1.

Table 1

List of recreation areas within the scope of the study

| District  | Number | Recreation areas name                    | Area [m <sup>2</sup> ] |
|-----------|--------|------------------------------------------|------------------------|
| Eyyübiye  | 1.     | Osmanlı Picnic Area                      | 125 021                |
|           | 2.     | Karabakh brotherhood park                | 106 230                |
|           | 3.     | Akabe Picnic Area                        | 104 831                |
|           | 4.     | Balıklığöl Plateau                       | 70 000                 |
|           | 5.     | Eyyüp Cenap Gülpınar Park                | 43 390                 |
|           | 6.     | Kale Eteği Park                          | 40 078                 |
|           | 7.     | Karakoyun Park                           | 36 335                 |
|           | 8.     | Urfa Sport Complex (Football World)      | 35 000                 |
|           | 9.     | Mahmutoğlu Kule Park                     | 32 000                 |
|           | 10.    | Makam Karşısı Çamlık Park                | 29 581                 |
|           | 11.    | Osmanlı 4 <sup>th</sup> Stage Park       | 24 464                 |
| Haliliye  | 12.    | GAP Valley 3rd Stage                     | 224 084                |
|           | 13.    | Cumhuriyet Park                          | 122 914                |
|           | 14.    | Haliliye Nation Garden                   | 120 000                |
|           | 15.    | GAP Vadisi 5 <sup>th</sup> Stage         | 108 829                |
|           | 16.    | GAP Vadisi 4 <sup>th</sup> Stage         | 75 495                 |
|           | 17.    | Selahaddin Eyyubi Park                   | 60 563                 |
|           | 18.    | Fatih Sultan Mehmet Park                 | 60 427                 |
|           | 19.    | GAP Vadisi 2 <sup>nd</sup> Stage         | 43 036                 |
|           | 20.    | Turgut Özal Park                         | 41 643                 |
|           | 21.    | Süleymaniye Streamside                   | 35 581                 |
|           | 22.    | Karşıyaka Park                           | 34 937                 |
|           | 23.    | Hızmalı Park                             | 28 519                 |
|           | 24.    | Necmettin Erbakan Park                   | 22 782                 |
|           | 25.    | Şehitlik Çamlık Park                     | 20 450                 |
| Karaköprü | 26.    | Halil-ür Rahman City Forest              | 1 300 000              |
|           | 27.    | Maşuk 2 <sup>nd</sup> Stage Park         | 40 000                 |
|           | 28.    | Traffic Education Park                   | 30 000                 |
|           | 29.    | Mehmetçik Park                           | 30 000                 |
|           | 30.    | Children's Play World                    | 30 000                 |
|           | 31.    | Akpınar Streamside 1 <sup>st</sup> Stage | 25 583                 |
|           | 32.    | Akpınar Streamside 7 <sup>th</sup> Stage | 22 000                 |
|           | 33.    | Akpınar Streamside 4 <sup>th</sup> Stage | 20 592                 |
|           | 34.    | Maşuk 1 <sup>st</sup> Stage              | 20 000                 |
| Total     |        |                                          | 3 164 565              |

## Findings and Discussion

This study was conducted in 34 recreation areas of at least 20 acres or more in Eyyübiye (11), Haliliye (14) and Karaköprü (9) districts (Figure 1).

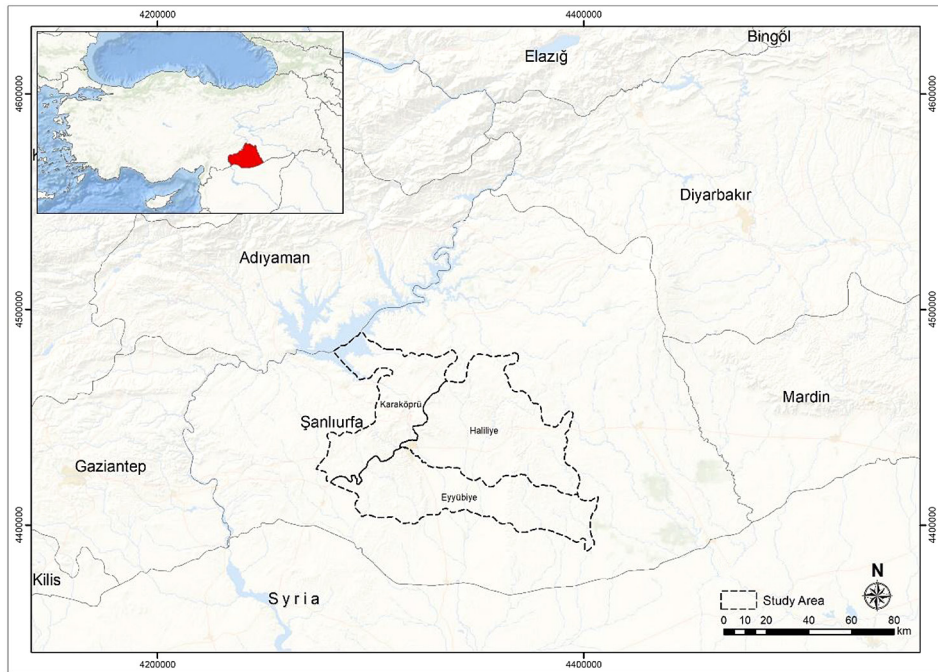


Fig. 1. Study area

As a result of the study, 134 taxa (82 species, 31 subspecies and 21 varieties) belonging to 27 families were identified as natural weeds. According to Önen (2015), *Amaranthus retroflexus*, *Xanthium strumarium* and *Erigeron bonariensis* are considered as invasive weeds. The list of weeds identified in recreation areas is given in Table 2. DAVIS (1965–1985), DAVIS et al. (1988) and GÜNER et al. (2000) were used for life span, life form and flowering periods of the plants.

Table 2

## List of plants identified in the study

| Taxon name                                                                   | Collector number | Recreation areas<br>(see Table 1<br>for number) | LF        | Phytogeo-<br>graphical<br>region | Pheno-<br>logical<br>periods | General distribution                                                             |
|------------------------------------------------------------------------------|------------------|-------------------------------------------------|-----------|----------------------------------|------------------------------|----------------------------------------------------------------------------------|
| 1                                                                            | 2                | 3                                               | 4         | 5                                | 6                            | 7                                                                                |
| <b>Amaranthaceae</b>                                                         |                  |                                                 |           |                                  |                              |                                                                                  |
| <i>Amaranthus albus</i> L.                                                   | AHÇ 21           | 1, 2, 3, 16,<br>18, 22, 27,<br>33, 34           | Th        | –                                | Spr.                         | N. & C. America                                                                  |
| * <i>Amaranthus retroflexus</i> L.                                           | AHÇ 71           | 1, 10, 11, 12,<br>13, 19, 20,<br>21, 22, 23, 24 | Th        | –                                | Spr.                         | N. America                                                                       |
| <i>Salsola kali</i> L.                                                       | AHÇ 286          | 3, 13, 34                                       | Th        | –                                | Aut.-Win.                    | Europe, N. Africa, Asia                                                          |
| <b>Apiaceae</b>                                                              |                  |                                                 |           |                                  |                              |                                                                                  |
| <i>Artemisia squamata</i> L.                                                 | AHÇ 76           | 2, 12, 13, 19,<br>24, 33                        | Th        | –                                | Sum.                         | Georgia, W. & C. Iran,<br>N. Iraq, W. Syria,<br>Syrian Desert, Cyprus            |
| <i>Eryngium creticum</i> Lam.                                                | AHÇ 118          | 1, 2, 3, 13,<br>24, 25, 29                      | H         | E. Medit.                        | Sum.                         | Balkans, W. Syria,<br>Syrian Desert, N. Iraq,<br>Cyprus, N. Egypt                |
| <i>Scandix pecten-<br/>veneris</i> L.                                        | AHÇ 140          | 12, 13, 29, 34                                  | Th        | –                                | Sum.                         | W., C. & S. Europe,<br>Mediterranean area,<br>S.W. Asia                          |
| <i>Scandix stellata</i><br>Banks & Sol.                                      | AHÇ 3            | 1, 2, 13, 29                                    | Th        | –                                | Spr.                         | France, S. Spain,<br>Balkans, N. Africa,<br>Crimea, S.W. Asia                    |
| <i>Tordylium aegyptiacum</i> (L.)<br>Lam.                                    | AHÇ 127          | 12, 16                                          | Th        | E. Medit.                        | Sum.-Aut.                    | Cyprus, W. Syria,<br>Syrian Desert, N. Iraq,<br>Egypt                            |
| <b>Araceae</b>                                                               |                  |                                                 |           |                                  |                              |                                                                                  |
| <i>Eminium spiculatum</i><br>(Blume) Schott                                  | AHÇ 49           | 3, 13                                           | Cr<br>(G) | Ir.-Tur.                         | Spr.                         | Egypt to Iraq                                                                    |
| <b>Asteraceae</b>                                                            |                  |                                                 |           |                                  |                              |                                                                                  |
| <i>Anthemis arvensis</i> L.                                                  | AHÇ 178          | 1, 2, 3, 13, 34                                 | Th        | Euro-Sib.                        | Sum.-Aut.                    | Europe, Caucasus,<br>Iran, N. & S. America,<br>Australia, New Zealand            |
| <i>Carduus pycnocephalus</i> L.<br>subsp. <i>albidus</i> (M.<br>Bieb.) Kazmi | AHÇ 82           | 1, 2, 13, 18,<br>29                             | Th        | –                                | Spr.-Sum.                    | Greece, Crimea,<br>Cyrenaica, N. Egypt,<br>and S.W. Asia<br>eastwards to C. Asia |
| <i>Centaurea balsamita</i> Lam.                                              | AHÇ 33           | 29                                              | Th        | Ir.-Tur.                         | Spr.                         | Anti-Lebanon,<br>Transcaucasia, Iran,<br>Turkestan                               |
| <i>Centaurea hyalolepis</i> Boiss.                                           | AHÇ 9            | 3, 13, 34                                       | H         | Ir.-Tur.                         | Spr.                         | Cyprus, W. Syria,<br>Syrian Desert, S. Iran                                      |

cont. Table 2

| 1                                                           | 2       | 3                             | 4  | 5         | 6         | 7                                                                                      |
|-------------------------------------------------------------|---------|-------------------------------|----|-----------|-----------|----------------------------------------------------------------------------------------|
| <i>Centaurea iberica</i> Spreng.                            | AHÇ 35  | 1, 27                         | H  | –         | Spr.      | Balkans, Crimea, S.W. & C. Asia                                                        |
| <i>Centaurea solstitialis</i> L. subsp. <i>solstitialis</i> | AHÇ 88  | 1, 2, 8, 13                   | H  | –         | Sum.      | S. Europe, S. Russia, Crimea, Caucasasia, Lebanon, Iran                                |
| <i>Centaurea virgata</i> Lam.                               | AHÇ 89  | 3                             | H  | Ir.-Tur.  | Sum.      | Bulgaria, Lebanon, Anti-Lebanon, Transcaucasias, N. Iraq, Iran, Afghanistan, Turkestan |
| <i>Chardinia orientalis</i> (L.) Kuntze                     | AHÇ 168 | 2, 13, 19                     | Th | Ir.-Tur.  | Sum.-Aut. | Palestine, Lebanon, Syrian Desert, Transcaucasias, N., N.W. & W. Iran, Transcaspia     |
| <i>Cichorium intybus</i> L.                                 | AHÇ 153 | 1, 2, 3, 10, 17, 25, 30       | H  | –         | Sum.-Aut. | Europe, W. Asia, N. Africa                                                             |
| <i>Cota altissima</i> (L.) J. Gay                           | AHÇ 11  | 3, 13, 34                     | Th | –         | Spr.      | S. Europe, Crimea, Caucasasia, C. Asia                                                 |
| <i>Crepis foetida</i> L. subsp. <i>foetida</i>              | AHÇ 172 | 1, 2, 3, 6, 7, 21, 23, 31, 32 | Th | –         | Sum.-Aut. | W., C. & S. Europe, Cyprus, S. Russia, Caucasasia, Iran, W. Syria                      |
| <i>Crepis pulchra</i> L. subsp. <i>pulchra</i>              | AHÇ 96  | 4, 9, 10, 13, 26, 28          | Th | –         | Sum.      | C. & S. Europe, N. Africa, Cyprus, Caucasasia, Iran, W. Syria, Syrian Desert           |
| <i>Crupina crupinastrum</i> (Moris) Vis.                    | AHÇ 129 | 13, 16                        | Th | –         | Sum.-Aut. | Mediterranean area, Caucasasia, Iran                                                   |
| * <i>Erigeron bonariensis</i> L.                            | AHÇ 86  | 9, 13, 18, 24, 33             | Th | –         | Spr.-Sum. | Temperate regions                                                                      |
| <i>Lactuca serriola</i> L.                                  | AHÇ 146 | 1, 2, 12, 13, 34              | Th | Euro-Sib. | Sum.      | Eurasia & N. Africa                                                                    |
| <i>Notobasis syriaca</i> (L.) Cass.                         | AHÇ 108 | 13                            | Th | Medit.    | Spr.-Sum. | Mediterranean area, N. Iraq, N.W. Iran, Azerbaijan                                     |
| <i>Picnomon acarna</i> (L.) Cass.                           | AHÇ 160 | 13, 15                        | Th | Medit.    | Sum.-Aut. | Mediterranean area, Caucasasia, Iraq, Iran, Afghanistan                                |
| <i>Senecio vernalis</i> Waldst. & Kit.                      | AHÇ 198 | 13                            | Th | –         | Aut.-Win. | C. & E. Europe, Balkans, S. Russia, Crimea, S.W. & C. Asia                             |
| <i>Senecio vulgaris</i> L.                                  | AHÇ 40  | 1, 10, 13, 19                 | Th | –         | Spr.      | Europe, N. Africa, Asia                                                                |
| <i>Silybum marianum</i> (L.) Gaertn. subsp. <i>marianum</i> | AHÇ 116 | 13                            | Th | Medit.    | Sum.      | Mediterranean area, S. & E. Iraq, Iran, Afghanistan                                    |

cont. Table 2

| 1                                                                     | 2       | 3                                           | 4  | 5         | 6         | 7                                                                                                          |
|-----------------------------------------------------------------------|---------|---------------------------------------------|----|-----------|-----------|------------------------------------------------------------------------------------------------------------|
| <i>Sonchus asper</i> (L.) Hill subsp. <i>glaucescens</i> (Jord.) Ball | AHÇ 104 | 1, 2, 3, 13, 17, 18, 20, 32, 33             | Th | –         | Spr.-Sum. | Europe except far north, N. Africa, N. & W. Asia                                                           |
| <i>Taraxacum aleppicum</i> Dahlst.                                    | AHÇ 265 | 1, 2, 3, 4, 6, 7, 9, 10, 22, 23, 25, 26, 28 | H  | E. Medit. | Aut.-Win. | Greece, Crete, Cyprus, W. Syria, Syrian Desert                                                             |
| * <i>Xanthium strumarium</i> L. subsp. <i>strumarium</i>              | AHÇ 211 | 13                                          | Th | -         | Aut.-Win. | World-wide                                                                                                 |
| <b>Boraginaceae</b>                                                   |         |                                             |    |           |           |                                                                                                            |
| <i>Anchusa azurea</i> Mill. var. <i>azurea</i>                        | AHÇ 149 | 13, 16                                      | H  | –         | Sum.      | Eurasia                                                                                                    |
| <i>Heliotropium circinatum</i> Griseb.                                | AHÇ 120 | 29                                          | Th | Ir.-Tur.  | Sum.      | N. Iraq, N. Iran                                                                                           |
| <b>Brassicaceae</b>                                                   |         |                                             |    |           |           |                                                                                                            |
| <i>Capsella bursa-pastoris</i> (L.) Medik                             | AHÇ 208 | 1, 2, 8, 9, 11, 13, 14, 22, 28              | Th | –         | Aut.-Win. | Temperate regions                                                                                          |
| <i>Isatis lusitanica</i> L.                                           | AHÇ 47  | 13                                          | Th | –         | Spr.      | W. Syria, Syrian Desert, Palestine, N. Iraq, Iran, Afghanistan, Greece, N.W. Africa                        |
| <i>Raphanus raphanistrum</i> L. subsp. <i>raphanistrum</i>            | AHÇ 61  | 13, 16                                      | Th | –         | Spr.      | Europe, N. Africa, S.W. & C. Asia                                                                          |
| <i>Sinapis alba</i> L. subsp. <i>alba</i>                             | AHÇ 92  | 1                                           | Th | –         | Spr.-Sum. | W., C. & S. Europe, Cyprus, W. Syria, N. Iraq, W. Iran, N. Africa                                          |
| <i>Sinapis arvensis</i> L.                                            | AHÇ 57  | 1, 13                                       | Th | –         | Spr.      | W., C. & S. Europe, N. Africa, S.W. Asia                                                                   |
| <i>Sisymbrium irio</i> L.                                             | AHÇ 272 | 1, 13, 21                                   | Th | –         | Aut.-Win. | Europe, S.W. Asia and N. Africa                                                                            |
| <b>Caprifoliaceae</b>                                                 |         |                                             |    |           |           |                                                                                                            |
| <i>Scabiosa rotata</i> M. Bieb.                                       | AHÇ 294 | 13, 15                                      | Th | Ir.-Tur.  | Aut.-Win. | N. Balkans, Crimea, C. & N. Iran, N. Iraq, Khorassan, Transcaucasia                                        |
| <i>Valerianella vesicaria</i> (L.) Moench                             | AHÇ 155 | 13, 19                                      | Th | –         | Sum.-Aut. | S. France, Italy, Aegean, Iran, N. Iraq, Palestine, Lebanon, Anti-Lebanon, Syria, Cyprus, C. Asia, Algeria |

cont. Table 2

| 1                                                            | 2       | 3                                    | 4  | 5        | 6         | 7                                                                                                 |
|--------------------------------------------------------------|---------|--------------------------------------|----|----------|-----------|---------------------------------------------------------------------------------------------------|
| <b>Caryophyllaceae</b>                                       |         |                                      |    |          |           |                                                                                                   |
| <i>Cerastium dichotomum</i> L.<br>subsp. <i>dichotomum</i>   | AHÇ 187 | 13, 15, 16                           | Th | –        | Aut.-Win. | Spain, N.W. Africa, Greece, Cyprus, W. Syria, Caucasasia, Iran, Syrian Desert, Turkestan, Arabia  |
| <i>Holosteum umbellatum</i> L.<br>subsp. <i>umbellatum</i>   | AHÇ 19  | 13, 19, 29                           | Th | –        | Spr.      | Iran, Afghanistan, W. Syria, Syrian Desert, Cyprus                                                |
| <i>Polycarpon tetraphyllum</i> (L.) L.                       | AHÇ 58  | 13                                   | Th | –        | Spr.-Sum. | W. & C. Europe, Mediterranean area, Georgia, Syrian Desert, N. Iran, Arabia, Sinai                |
| <i>Spergularia rubra</i> (L.) J. Presl & C. Presl            | AHÇ 125 | 13                                   | Th | –        | Sum.-Aut. | Widespread in North hemisphere, Australia                                                         |
| <i>Stellaria media</i> (L.) Vill.<br>subsp. <i>media</i>     | AHÇ 27  | 1, 2, 5, 6, 8, 9, 13, 14, 17, 26, 28 | Th | –        | Spr.      | W. Syria, Syrian Desert                                                                           |
| <b>Convolvulaceae</b>                                        |         |                                      |    |          |           |                                                                                                   |
| <i>Calystegia sepium</i> (L.) R. Br.<br>subsp. <i>sepium</i> | AHÇ 42  | 13                                   | H  | –        | Spr.-Sum. | N. & S. hemispheres (temperate parts)                                                             |
| <i>Convolvulus arvensis</i> L.                               | AHÇ 50  | 13, 30, 32, 33                       | H  | –        | Spr.      | Temperate and Subtropical regions                                                                 |
| <b>Euphorbiaceae</b>                                         |         |                                      |    |          |           |                                                                                                   |
| <i>Chrozophora tinctoria</i> (L.) A. Juss.                   | AHÇ 165 | 13, 16                               | Th | –        | Sum.-Aut. | Mediterranean area, Socotra, S.W. & C. Asia                                                       |
| <i>Euphorbia aleppica</i> L.                                 | AHÇ 220 | 3, 29, 34                            | Th | –        | Aut.-Win. | Mediterranean area, Crimea, Caucasasia, N. Iraq, W. Iran                                          |
| <i>Euphorbia helioscopia</i> L.<br>subsp. <i>helioscopia</i> | AHÇ 169 | 21, 33                               | Th | –        | Sum.-Aut. | Europe, N. Africa & Asia                                                                          |
| <b>Fabaceae</b>                                              |         |                                      |    |          |           |                                                                                                   |
| <i>Alhagi maurorum</i> Medik. subsp. <i>maurorum</i>         | AHÇ 219 | 13                                   | Th | Ir.-Tur. | Aut.-Win. | W. Caucasasia, W. Siberia, N. Iran, C. & E. Asia                                                  |
| <i>Astragalus asterias</i> Steven                            | AHÇ 121 | 13                                   | Th | Ir.-Tur. | Sum.-Aut. | Armenia, Azerbaijan, Caucasus, C. Asia, Iran, N. Iraq, Syrian Desert, W. Syria, Arabia, N. Africa |
| <i>Astragalus guttatus</i> Banks & Sol.                      | AHÇ 81  | 13, 20                               | Th | Ir.-Tur. | Sum.      | Syrian Desert, W. Iran                                                                            |

cont. Table 2

| 1                                                             | 2       | 3          | 4  | 5        | 6         | 7                                                                                                           |
|---------------------------------------------------------------|---------|------------|----|----------|-----------|-------------------------------------------------------------------------------------------------------------|
| <i>Astragalus hamosus</i> L.                                  | AHÇ 62  | 13, 18, 20 | Th | –        | Spr.      | Mediterranean area, S. Russia, Crimea, Caucasus, Syrian Desert, N. & N.W. Iran, Arabia                      |
| <i>Coronilla scorpioides</i> (L.) W.D.J. Koch                 | AHÇ 54  | 13, 20     | Th | –        | Spr.      | C. & S. Europe, Caucasus, N. Africa, W. Syria, S. Iran                                                      |
| <i>Cullen jaubertianum</i> (Fenzl) C.H. Stirt.                | AHÇ 80  | 32         | H  | Ir.-Tur. | Sum.      | Syrian Desert                                                                                               |
| <i>Hippocrepis unisiliquosa</i> L. subsp. <i>unisiliquosa</i> | AHÇ 223 | 1, 13      | Th | –        | Aut.-Win. | Mediterranean area, S.W. Asia                                                                               |
| <i>Hymenocarpus circinnatus</i> (L.) Savi                     | AHÇ 6   | 13         | Th | Medit.   | Spr.      | S. Europe, Cyprus, W. Syria, Syrian Desert, N. Africa                                                       |
| <i>Lathyrus cicera</i> L.                                     | AHÇ 79  | 13, 15     | Th | –        | Sum.      | Greece, Crimea, N. Africa, Cyprus, W. Syria, Syrian Desert, N. Iraq, N. & N.W. Iran, Transcaucasia, C. Asia |
| <i>Medicago coronata</i> (L.) Bartal.                         | AHÇ 29  | 13         | Th | Medit.   | Spr.      | S. Europe, N. Africa, Cyprus, W. Syria, Syrian Desert, N. Iraq, Azerbaijan                                  |
| <i>Medicago polymorpha</i> L. var. <i>polymorpha</i>          | AHÇ 46  | 13, 23, 25 | Th | –        | Spr.-Sum. | Old World                                                                                                   |
| <i>Medicago lupulina</i> L.                                   | AHÇ 226 | 13, 22     | H  | –        | Aut.-Win. | Europe, N., N.W. & W. Iran, W. Syria, Caucasus, Turkestan                                                   |
| <i>Medicago minima</i> (L.) L. var. <i>minima</i>             | AHÇ 68  | 13         | Th | –        | Spr.-Sum. | Europe (except the North), Asia, N. Africa, Macaronesia & the Cape, America                                 |
| <i>Medicago radiata</i> L.                                    | AHÇ 295 | 13, 24     | Th | Ir.-Tur. | Aut.-Win. | S. Russia, Palestine, Iran, N. Iraq, Armenia, Turkestan                                                     |
| <i>Medicago rigidula</i> (L.) All. var. <i>rigidula</i>       | AHÇ 99  | 13         | Th | –        | Sum.      | S. Europe, N.W. Africa, S.W. Asia eastwards to Afghanistan                                                  |
| <i>Medicago sativa</i> L. subsp. <i>sativa</i>                | AHÇ 193 | 13         | H  | –        | Aut.-Win. | Europe to C. Asia, N. Africa                                                                                |
| <i>Melilotus indicus</i> (L.) All.                            | AHÇ 292 |            | Th | –        | Aut.-Win. | Eurasia                                                                                                     |

cont. Table 2

| 1                                                                                                        | 2       | 3                                | 4  | 5        | 6         | 7                                                                                                                              |
|----------------------------------------------------------------------------------------------------------|---------|----------------------------------|----|----------|-----------|--------------------------------------------------------------------------------------------------------------------------------|
| <i>Pisum sativum</i> L.<br>subsp. <i>elatius</i><br>(M. Bieb.) Asch.<br>& Graebn.<br>var. <i>elatius</i> | AHÇ 102 | 1, 2, 21                         | Th | Medit.   | Sum.      | S. Europe, Crimea,<br>N. Africa, Cyprus, W.<br>Syria, Caucasias, N. Iran                                                       |
| <i>Prosopis farcta</i><br>(Banks & Sol.)<br>J.F. Macbr.                                                  | AHÇ 269 | 13                               | Ch | –        | Aut.-Win. | Arabia, Egypt, Sinai,<br>Cyprus, Iran, Syrian<br>Desert, TransCaucasia,<br>Afghanistan, C. Asia                                |
| <i>Scorpiurus</i><br><i>subvillosus</i> L.<br>var. <i>subvillosus</i>                                    | AHÇ 43  | 13                               | Th | Medit.   | Spr.      | Mediterranean area,<br>Crimea, Transcaucasia,<br>Syrian Desert, N. Iraq,<br>S. Iran, E. Africa                                 |
| <i>Trifolium</i><br><i>campestre</i> Schreb.<br>subsp. <i>campestre</i><br>var. <i>campestre</i>         | AHÇ 156 | 9, 10, 12, 13,<br>18, 25         | Th | –        | Sum.-Aut. | Europe, Mediterranean<br>area, N. Iraq, Caucasias,<br>Iran                                                                     |
| <i>Trifolium repens</i> L.<br>var. <i>repens</i>                                                         | AHÇ 98  | 1, 10, 13, 18,<br>23, 30, 31, 32 | H  | –        | Sum.      | Temperate Eurasia                                                                                                              |
| <i>Trifolium</i><br><i>resupinatum</i> L.<br>var. <i>resupinatum</i>                                     | AHÇ 131 | 1, 2, 18, 20                     | Th | –        | Sum.-Aut. | W. Syria N. Iraq, W.<br>Iran, Egypt.                                                                                           |
| <i>Trifolium</i><br><i>stellatum</i> L.<br>var. <i>stellatum</i>                                         | AHÇ 90  | 13                               | Th | –        | Sum.      | W. Europe, Mediterra-<br>nean area, N. Iraq, W.<br>Syria, W. Iran                                                              |
| <i>Trifolium</i><br><i>tomentosum</i> L.<br>var. <i>tomentosum</i>                                       | AHÇ 143 | 13                               | Th | –        | Sum.      | S. Europe, W. Syria,<br>Cyprus, Egypt, N. Iran                                                                                 |
| <i>Trigonella</i><br><i>caelesyriaca</i> Boiss.                                                          | AHÇ 87  | 13, 15                           | Th | Ir.-Tur. | Spr.-Sum. | W. Syria, Syrian<br>Desert, N. Iraq                                                                                            |
| <i>Trigonella</i><br><i>spruneriana</i> Boiss.                                                           | AHÇ 77  | 13, 16                           | Th | Ir.-Tur. | Spr.-Sum. | Greece, W. Syria, Iraq,<br>N.W. & W. Iran,<br>Transcaucasia                                                                    |
| <i>Vicia monantha</i><br>Retz. subsp.<br><i>monantha</i>                                                 | AHÇ 221 | 13                               | Th | –        | Aut.-Win. | Mediterranean area,<br>S.W. Asia                                                                                               |
| <i>Vicia sativa</i> L.<br>subsp. <i>nigra</i> (L.)<br>Ehrh. var. <i>nigra</i>                            | AHÇ 159 | 2, 13, 31                        | Th | –        | Sum.-Aut. | Cosmopolitan                                                                                                                   |
| <b>Geraniaceae</b>                                                                                       |         |                                  |    |          |           |                                                                                                                                |
| <i>Erodium</i><br><i>ciconium</i> (L.)<br>L'Hér.                                                         | AHÇ 130 | 13                               | Th | –        | Sum.      | Mediterranean area, N.<br>Africa, C. & S. Russia,<br>Crimea, Cyprus, W.<br>Syria, Syrian Desert, N.<br>Iraq, Iran, Afghanistan |

cont. Table 2

| 1                                                                | 2       | 3                   | 4  | 5         | 6         | 7                                                                                   |
|------------------------------------------------------------------|---------|---------------------|----|-----------|-----------|-------------------------------------------------------------------------------------|
| <i>Erodium cicutarium</i> (L.) L'Hér. subsp. <i>cuticularium</i> | AHÇ 284 | 13, 29              | Th | –         | Aut.-Win. | Europe, N. Africa, S.W. Asia                                                        |
| <i>Geranium libanoticum</i> Schenk                               | AHÇ 70  | 13, 19              | H  | –         | Spr.      | Lebanon, Iran                                                                       |
| <i>Geranium rotundifolium</i> L.                                 | AHÇ 85  | 13                  | Th | –         | Sum.      | Eurasia (except N), N. Africa                                                       |
| <b>Lamiaceae</b>                                                 |         |                     |    |           |           |                                                                                     |
| <i>Lamium amplexicaule</i> L. subsp. <i>amplexicaule</i>         | AHÇ 66  | 5, 13, 25           | Th | Euro-Sib. | Spr.      | Temperate Eurasia                                                                   |
| <i>Marrubium vulgare</i> L.                                      | AHÇ 254 | 13                  | H  | –         | Aut.-Win. | Eurasia, N. Africa                                                                  |
| <b>Malvaceae</b>                                                 |         |                     |    |           |           |                                                                                     |
| <i>Malva neglecta</i> Wallr.                                     | AHÇ 53  | 1, 2, 7, 21, 31, 32 | Th | –         | Spr.-Sum. | Europe, N.W. Africa, S.W. Asia                                                      |
| <i>Malvella sherardiana</i> (L.) Jaub. & Spach                   | AHÇ 163 | 13                  | H  | –         | Aut.-Win. | Greece, Bulgaria, Spain, Crimea, Caucasus, W. Syria, Syrian Desert, N. Iran, Cyprus |
| <b>Oxalidaceae</b>                                               |         |                     |    |           |           |                                                                                     |
| <i>Oxalis corniculata</i> L.                                     | AHÇ 36  | 17, 21              | H  | –         | Spr.      | Cosmopolitan                                                                        |
| <b>Papaveraceae</b>                                              |         |                     |    |           |           |                                                                                     |
| <i>Fumaria asepalae</i> Boiss.                                   | AHÇ 117 | 34                  | Th | Ir.-Tur.  | Sum.      | Armenia, N., W. & C. Iran, W. Syria, Syrian Desert                                  |
| <i>Hypecoum pseudograndiflorum</i> Petrovič                      | AHÇ 133 | 13                  | Th | –         | Sum.-Aut. | Albania, Bulgaria, Greece, Serbia, Kosova                                           |
| <b>Phyllanthaceae</b>                                            |         |                     |    |           |           |                                                                                     |
| <i>Andrachne telephioides</i> L.                                 | AHÇ 195 | 13, 34              | H  | –         | Aut.-Win. | Mediterranean area, S. to Somalia, S.W. Asia, E. to N.W. India                      |
| <b>Plantaginaceae</b>                                            |         |                     |    |           |           |                                                                                     |
| <i>Linaria chalcensis</i> (L.) Mill. var. <i>chalcensis</i>      | AHÇ 106 | 13                  | Th | E. Medit. | Sum.      | S. Europe (from France eastwards), S.W. Asia, Egypt                                 |
| <i>Plantago lanceolata</i> L.                                    | AHÇ 65  | 1, 2, 13, 24        | H  | –         | Spr.-Sum. | Europe, N. Africa, Asia                                                             |

cont. Table 2

| 1                                                                       | 2       | 3                             | 4  | 5         | 6         | 7                                                                                                     |
|-------------------------------------------------------------------------|---------|-------------------------------|----|-----------|-----------|-------------------------------------------------------------------------------------------------------|
| <i>Plantago major</i> L.<br>subsp. <i>major</i>                         | AHÇ 103 | 1, 2, 13, 15,<br>16           | H  | –         | Spr.-Sum. | Temperate Eurasia &<br>N. America                                                                     |
| <i>Veronica<br/>anagalloides</i><br>Guss. subsp.<br><i>anagalloides</i> | AHÇ 51  | 1, 13, 21                     | Th | –         | Spr.-Sum. | Europe, N. Africa,<br>Caucasia, Iran,<br>Afghanistan, C. Asia                                         |
| <i>Veronica persica</i><br>Poir.                                        | AHÇ 135 | 13                            | Th | –         | Sum.      | Caucasia, S.W. Asia,<br>Europe, N. Africa, C.<br>Asia, Japan, America,<br>New Zealand                 |
| <i>Veronica polita</i> Fr.                                              | AHÇ 185 | 13                            | Th | –         | Aut.-Win. | Temperate Eurasia,<br>N. Africa                                                                       |
| <b>Poaceae</b>                                                          |         |                               |    |           |           |                                                                                                       |
| <i>Aegilops<br/>triuncialis</i> L.<br>subsp. <i>triuncialis</i>         | AHÇ 114 | 13                            | Th | –         | Sum.      | S. Europe & N. Africa,<br>S.W. Asia eastwards to<br>Transcaucasia                                     |
| <i>Alopecurus<br/>arundinaceus</i> Poir.                                | AHÇ 139 | 1, 2                          | H  | Euro-Sib. | Sum.      | Temperate Eurasia                                                                                     |
| <i>Alopecurus<br/>myosuroides</i> Huds.<br>var. <i>myosuroides</i>      | AHÇ 148 | 1, 5, 13,                     | Th | Euro-Sib. | Sum.-Aut. | Eurasia, N. Africa                                                                                    |
| <i>Avena sterilis</i> L.<br>subsp. <i>sterilis</i>                      | AHÇ 128 | 13, 16                        | Th | –         | Sum.-Aut. | C. Europe, S. Russia,<br>Crimea, Caucasasia,<br>Mediterranean area,<br>S.W. & E. Asia                 |
| <i>Bromus japonicus</i><br>Thunb. subsp.<br><i>japonicus</i>            | AHÇ 230 | 13                            | Th | –         | Aut.-Win. | Eurasia, N. Africa                                                                                    |
| <i>Catabrosa<br/>aquatica</i> (L.)<br>P. Beauv.                         | AHÇ 136 | 1                             | H  | –         | Sum.-Aut. | Temperate Eurasia, N.<br>America                                                                      |
| <i>Chrysopogon<br/>gryllus</i> (L.) Trin.<br>subsp. <i>gryllus</i>      | AHÇ 44  | 1                             | H  | –         | Spr.-Sum. | S. Europe, Crimea, W.<br>Syria, Caucasasia, N.<br>Iraq, Iran                                          |
| <i>Cornucopiae<br/>cucullatum</i> L.                                    | AHÇ 122 | 1, 3                          | Th | E. Medit. | Sum.-Aut. | Italy, Sicily, Greece,<br>Aegean, W. Syria,<br>Syrian Desert, N. Iraq                                 |
| <i>Cynodon<br/>dactylon</i> (L.) Pers.<br>var. <i>dactylon</i>          | AHÇ 48  | 1, 2, 7, 9, 18,<br>20, 29, 34 | H  | –         | Spr.-Sum. | Africa, Asia, Europe                                                                                  |
| <i>Echinaria<br/>capitata</i> (L.) Desf.                                | AHÇ 275 | 13,                           | Th | –         | Aut.-Win. | S. Europe, Cyprus, W.<br>Syria, Transcaucasia,<br>Iraq, N., N.W & W.<br>Iran, N.W. Africa, C.<br>Asia |
| <i>Echinochloa crus-<br/>galli</i> (L.) P. Beauv.                       | AHÇ 112 | 1, 13                         | Th | –         | Sum.      | Mediterranean area,<br>Caucasia, S.W., C. & E.<br>Asia, N. America                                    |

cont. Table 2

| 1                                                                                       | 2       | 3                    | 4  | 5         | 6         | 7                                                                                                           |
|-----------------------------------------------------------------------------------------|---------|----------------------|----|-----------|-----------|-------------------------------------------------------------------------------------------------------------|
| <i>Hordeum murinum</i> L. subsp. <i>leporinum</i> (Link) Arcang.                        | AHÇ 94  | 1, 2, 13             | Th | –         | Sum.      | Europe                                                                                                      |
| <i>Lolium persicum</i> Boiss. & Hohen.                                                  | AHÇ 151 | 1, 2, 3, 12, 13, 25  | Th | Ir.-Tur.  | Sum.-Aut. | Caucasia, Iran, Iraq, Afghanistan, Baluchistan, England, N. America, N.W. China                             |
| <i>Lolium perenne</i> L.                                                                | AHÇ 78  | 1, 2, 3, 15, 16, 34  | H  | Euro-Sib. | Spr.-Sum. | Temperate Eurasia                                                                                           |
| <i>Phalaris paradoxa</i> L.                                                             | AHÇ 52  | 1, 13                | Th | Medit.    | Spr.      | Mediterranean area, S.W. Asia                                                                               |
| <i>Phleum exaratum</i> Griseb. subsp. <i>exaratum</i>                                   | AHÇ 18  | 1, 13                | Th | –         | Spr.      | Italy, Balkans, W. Syria, N; Iraq, Iran, Transcaspia                                                        |
| <i>Phragmites australis</i> (Cav.) Steud.                                               | AHÇ 38  | 1                    | H  | Euro-Sib. | Spr.      | Temperate Eurasia                                                                                           |
| <i>Poa annua</i> L.                                                                     | AHÇ 150 | 1, 2, 12, 13, 19, 27 | Th | –         | Sum.      | Cosmopolitan                                                                                                |
| <i>Polypogon monspeliensis</i> (L.) Desf.                                               | AHÇ 84  | 1, 13                | Th | –         | Sum.      | W. Europe, Mediterranean area, Caucasias, Asia                                                              |
| <i>Rostraria cristata</i> (L.) Tzvelev var. <i>cristata</i>                             | AHÇ 60  | 13                   | Th | –         | Spr.-Sum. | Mediterranean area, Crimea, Caucasias, N. Iraq, N. Iran, Arabia, Afghanistan, W. Pakistan                   |
| <i>Setaria glauca</i> (L.) P. Beauv.                                                    | AHÇ 152 | 13                   | Th | –         | Sum.-Aut. | S. & southern C. Europe, Mediterranean area, Caucasias, S.W., C. & E. Asia, N. America                      |
| <i>Sorghum halepense</i> (L.) Pers. var. <i>alepense</i>                                | AHÇ 1   | 13                   | H  | –         | Spr.      | Mediterranean area, S.W. & C. Asia                                                                          |
| <i>Taeniatherum caput-medusae</i> (L.) Nevski subsp. <i>crinitum</i> (Schreb.) Melderis | AHÇ 75  | 13                   | Th | Ir.-Tur.  | Spr.-Sum. | Balkans, N. Africa, Transcaucasias, Crimea, Iran, Iraq, Cyprus, W. Syria, Afghanistan, C. Asia, W. Pakistan |
| <i>Vulpia myuros</i> (L.) C.C. Gmel.                                                    | AHÇ 69  | 1                    | Th | –         | Spr.-Sum. | Mediterranean area, W. & C. Europe, S. Russia, Caucasias, S.W. Asia eastwards to Pakistan                   |

cont. Table 2

| 1                                                                    | 2       | 3         | 4      | 5      | 6         | 7                                                                                     |
|----------------------------------------------------------------------|---------|-----------|--------|--------|-----------|---------------------------------------------------------------------------------------|
| <b>Polygonaceae</b>                                                  |         |           |        |        |           |                                                                                       |
| <i>Polygonum aviculare</i> L.                                        | AHÇ 176 | 1, 13, 20 | Th     | –      | Sum.-Aut. | Cosmopolitan                                                                          |
| <i>Rumex pulcher</i> L. subsp. <i>pulcher</i>                        | AHÇ 95  | 1, 2, 13  | H      | –      | Spr.-Sum. | Most of Europe, N. Africa, Syrian Desert, N. & N.W. Iran, Arabia                      |
| <b>Portulacaceae</b>                                                 |         |           |        |        |           |                                                                                       |
| <i>Portulaca oleracea</i> L.                                         | AHÇ 144 | 13        | Th     | –      | Sum.-Aut. | Europe, S.W. Asia                                                                     |
| <b>Ranunculaceae</b>                                                 |         |           |        |        |           |                                                                                       |
| <i>Ranunculus arvensis</i> L.                                        | AHÇ 232 | 1, 13     | Th     | –      | Aut.-Win. | Europe, S.W. Asia, N. Africa, Turkestan                                               |
| <i>Ranunculus millefolius</i> Banks & Sol. subsp. <i>millefolius</i> | AHÇ 174 | 1         | Cr (G) | –      | Sum.-Aut. | N. Iraq, Syrian Desert, Cyprus; N.W. Iran                                             |
| <b>Rubiaceae</b>                                                     |         |           |        |        |           |                                                                                       |
| <i>Galium aparine</i> L.                                             | AHÇ 74  | 1         | Th     | –      | Spr.      | Europe, N., W. & C. Asia, N. America                                                  |
| <i>Galium tricornutum</i> Dandy                                      | AHÇ 64  | 1, 2, 13  | Th     | Medit. | Spr.      | S.W. & C. Europe, Caucasia, Iraq, Iran, C. Asia to Kashmir, Tibet                     |
| <b>Tamaricaceae</b>                                                  |         |           |        |        |           |                                                                                       |
| <i>Tamarix smyrnensis</i> Bunge                                      | AHÇ 134 | 1         | Ph     | –      | Sum.-Aut. | Caucasia, Iran, N. Iraq, Transcaspia, Afghanistan, Balkans, W. Syria, Romania, Crimea |
| <b>Urticaceae</b>                                                    |         |           |        |        |           |                                                                                       |
| <i>Urtica pilulifera</i> L.                                          | AHÇ 192 | 13        | Th     | Medit. | Aut.-Win. | S. Europe, N. Africa, S.W. Asia                                                       |
| <b>Verbenaceae</b>                                                   |         |           |        |        |           |                                                                                       |
| <i>Phyla canescens</i> (Kunth) Greene                                | AHÇ 210 | 13        | H      | –      | Aut.-Win. | C. & S. America, Mediterranean Europe, Cyprus, Lebanon, Egypt                         |
| <b>Zygophyllaceae</b>                                                |         |           |        |        |           |                                                                                       |
| <i>Tribulus terrestris</i> L.                                        | AHÇ 22  | 1, 13     | Th     | –      | Spr.      | S. Europe, S.W. Asia                                                                  |

Abbreviations: AHÇ – Ahmet Hamdi Çiçek; LF – life form; Ch – Chamaephyte; Cr (G) – Cryptophyte (Geophyte); H – Hemicyptophyte; Ph – Phanerophyte; Th – Therophyte; Ir.-Tur. – Irano-Turanian; Medit. – Mediterranean; E. Medit. – East Mediterranean; Euro-Sib. – Euro-Siberian; Aut. – Autumn; Spr. – Spring; Sum. – Summer; Win. – Winter; \* Invasive weed

When the plants are evaluated according to the family they belong to, Fabaceae (29), Poaceae (24), Asteraceae (23), Brassicaceae (6), Plantaginaceae (6), Apiaceae (5) and Caryophyllaceae (5) ranking emerges (Figure 2).

When the plants are evaluated in terms of the phytogeographical region to which they belong, the order is like Irano-Turanian (17), Mediterranean (10), Euro-Siberian (7) and Eastern Mediterranean (5). For the remaining 95 plants, there is no phytogeographical region evaluation (Figure 3).

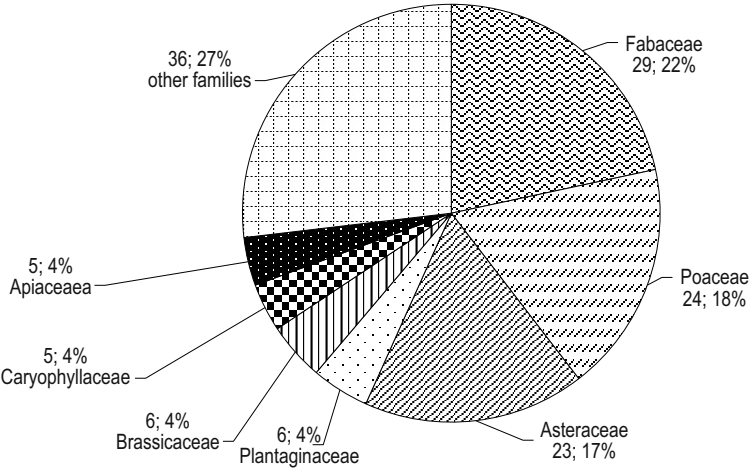


Fig. 2. Distribution of identified plants by families

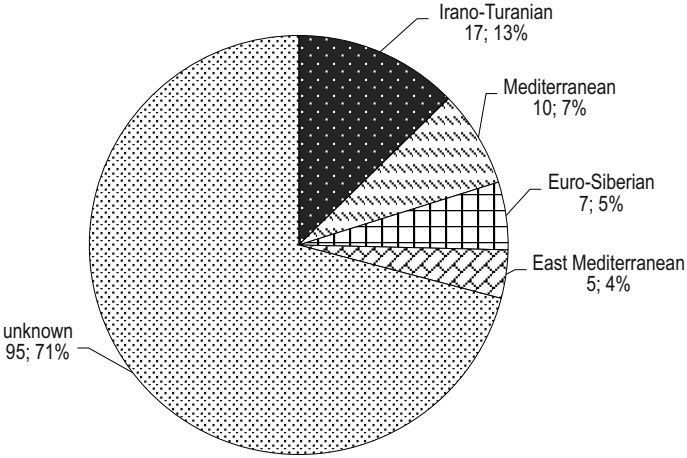


Fig. 3. Distribution of taxa according to phytogeographic regions

When the plants in the recreation areas were evaluated according to RAUNKIAER'S (1934) life forms, 100 of them were therophyte, 30 of them were hemicryptophyte, 1 of them was chamaephyte, 1 of them was phanerophyte and 2 of them were cryptophyte (geophyte) (Figure 4).

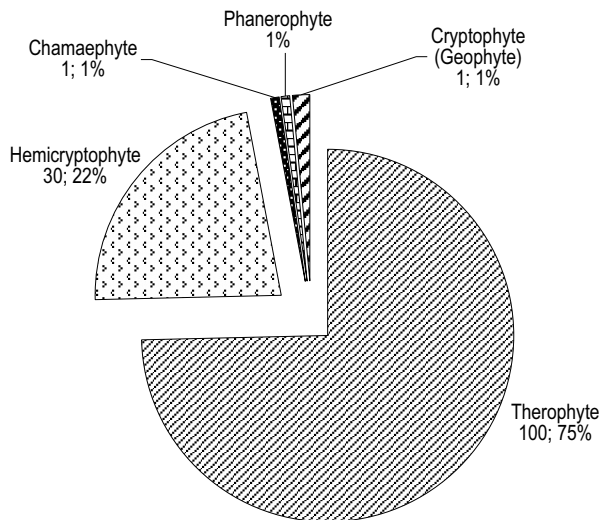


Fig. 4. Distribution of plants according to life forms

When an assessment was made based on the number of species identified in recreational areas, it was observed that Cumhuriyet Park and Ottoman Picnic Area in particular harbored significantly more species than other recreational areas in terms of foreign weeds. One of the most important reasons for this is that both recreational areas are surrounded by natural areas, allowing the diaspora of species in these areas to enter the recreational areas. Additionally, the absence of landscape design or the presence of damaged areas within these recreational areas is another contributing factor. Another reason is that weed control efforts are not being carried out at an adequate level. The low number of species in other recreational areas is generally attributed to their surroundings being enclosed by urban areas and the lack of effective control measures (mowing or removal) against these invasive weeds that disrupt the landscape (Figure 5).

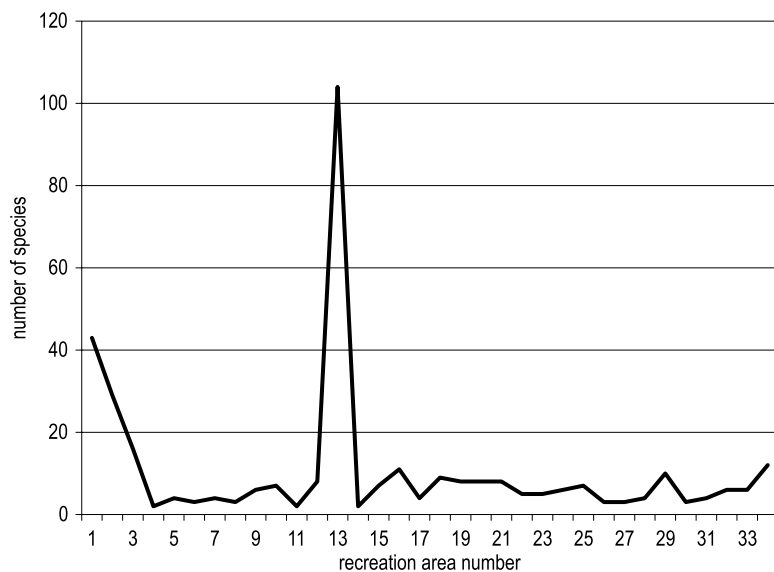


Fig. 5. Comparison of recreational areas in terms of number of types

## Conclusion and Suggestions

This study covers the recreation areas located in Eyyübiye, Haliliye and Karaköprü districts, which are the central districts of Şanlıurfa. Some of these recreation areas are completely in the middle of concrete structures in the city centre and there is no ruderal or natural area around them. Some of the recreation areas are located in urban areas with partial construction and still surrounded by ruderal and natural areas.

It was determined that the weeds detected in the recreation areas consisted of plants remaining from the habitat before the areas were transformed into recreation areas and plants that were transported by different means, such as birds, insects, fertilisation, etc. and were identified as in the area.

The natural (rural) areas and constructions around the recreation areas may cause changes in the composition of the weed flora. In the recreation areas located between the buildings in the city centre, the weed composition is composed of ruderal plants and plants which have been transported to the area in various ways. On the other hand, in the recreation areas where there are still natural areas around, it was determined that there are many plants belonging to the steppe vegetation in addition to the plants mentioned above. These steppe plants are seen in the parts bordering the recreation areas, especially around the fences. In addition, these steppe

plants are also found in places where the recreation areas have not yet been organised or organised but deterioration is seen.

In recreation areas, which are urban areas created by humans for various purposes, the recognition of the plants and animals that we live together in the city in general allows the problems that may arise from them to be combated without harming the environment. By using this information, the relevant units of public institutions and organisations will have the opportunity to intervene at an early stage, especially in species that are considered invasive among weeds. This will enable efficient use of resources, i.e. preventing loss of time, labour and budget.

In order to better understand the events that may occur in the context of human and environment and to recognise urban areas in all aspects, such studies should continue increasingly. Obtaining new information will provide important benefits in the management of urban areas. It is hoped that this study will serve as a resource for researchers working on the determination of the ecology of urban areas.

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