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# Comparing Some Plants Grown in Van and Çanakkale (Turkey)

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## Abstract

Van is located in the coast of Lake Van in Eastern Anatolia of Turkey in Iranian-Turanian floral region where terrestrial climate is dominated. The area is exciting in terms of historical past and natural richness. Çanakkale is located in Marmara region of Turkey and schrub and forest vegetation is dominant in Çanakkale. Çanakkale is interesting due to historical places, natural richness, very nice landscape and view. In the present study plant grown in Van and Çanakkale were compared. The plant samples were identified by using 'Flora of Turkey' (Davis, 1965-1988). Plant samples were collected, pressed according to herbarium technics and deposited in the VANF Herbarium. In general, cosmopolite plants are grown in both Çanakkale and Van provinces. In Çanakkale mediterranean climate is dominant, therefore schrub plants are dominat in the area whereas scrubs are not dominant in Van. Pinus brutia and Pinus nigra forests are seen in Kazdağları especially in Ayazma region. The natural distribution of Pinus nigra is not seen in Van, however this plant can cultivated in this city. Some of the plants given in the present study are endemic for the regions. The geographical distribution, common and different plant taxa of the cities are given in this study. this study suggests that such field studies should be planned in future covering the other parts of the Turkey, in order to contribute to floristic studies as well as helping botanist, agronomists, farmers and related study areas.

**Keywords:** Çanakkale; Flora; Plant; Van; Turkey.

## 1. Introduction

Biodiversity contains the differences in genes, species and ecosystems and is the most important natural richness of a country [1]. By reason of great diversity in geology, geomorphology, topography and climate Turkey has the reachest flora in the temperate zone. Turkey hosts more than 13.00 plant taxa with about 33% endemic to Turkey. Besides with its rich flora, Turkey is very rich in habitat and landscape diversity [2]. Turkey is located in the subtropic zone, bordering the Black Sea, between Bulgaria and Georgia, and bordering the Aegean Sea and the Mediterranean Sea, between Greece and Syria. The area of Turkey is 779450 km$^2$, Asian part (Anatolia) of Turkey accounts for 97% of the country's area. It is also known as Asia Minor, Asiatic Turkey or the Anatolian Plateau [3, 4]. Despite increasing environmental problems, Turkey still retains most of its natural structure. There are many plant species, which survive through special artificial means in other countries, are found living in their wild and native forms in Anatolia [5]. The topography of Turkey exhibits significant variety where ecological factors change frequently over short distance. Asian section is a large, roughly rectangular peninsula situated like a bridge between Europe and Asia. The term Anatolia is most frequently used in specific reference to the large, semiarid central plateau, which is rimmed by hills and mountains that in many places limit access to the fertile, densely settled coastal regions. Major part of the Asian section consists of a high plateau with mountain ranges along the north and south coasts. The plateau extends from west to Aegean coast, with many river valleys [6]. The European section of Turkey is a relatively flat fertile hilly land. Entire land exhibits extraordinary ecosystem and habitat diversity which results in a considerable species diversity [7]. Three phytogeographical regions, EuroSiberian, Mediterranean and Irano-Turanian overlap in Turkey. Euro-Siberian Region stretches along most of North Anatolia and European section, climatically this region is the rainiest one, in the eastern part of the region, annual precipitation exceeds 2.000 mm where tea plant is grown there and most of the region is covered with forests. Mediterranean Region covers all areas bordering Mediterranean and south western part of European Turkey, evergreen shrubs, red pine and maquis vegetation dominate in this area. Irano-Turanian Region is the largest of all, in a broad sense it extends from central Anatolia towards Central Asia, climate is continental and generally step vegetation dominates in the region and this region holds the highest number of endemic plant species.

Van is situated in the IranoTuranian phytogeographical region, this area is stated in the B9 square according to the grid system adopted in the Flora of Turkey [8]. Van is an interesting province with its nature and history, which is dominated by the steppe vegetation located in the Eastern Anatolian Region near the Van Lake. It has a continental climate with an average temperature of 8.2 ºC, annual precipitation of 471 mm and altitude is 1671 m [9]. Çanakkale is a beautiful province with a magnificent view of the Bosphorus, with its maquis and forest vegetation history and nature, located on the coast of the Marmara Region of Turkey. Davis [8] included Çanakkale in grid-square A1 and B1. Çanakkale has a Mediterranean climate with an average temperature of 14.8 ºC, the highest average temperature being 30.8 ºC and the lowest 3.1 ºC, annual precipitation of 615 mm and altitude is 3 m

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[9], the precipitation regime is typical mediterranean type with rainy winters, the soils are generally alluvial regasol, brown forest, non-calcareous brown type, vertisol, flysch, sandstone and limestone rocks [10]. The total coastal length of the Çanakkale is 671 km. and territory of Çanakkale province is usually seen as rugged. The highest mountain is Mount Kaz at 1767 meters. 55% of the province's surface area is forested. The remaining area is covered with meadow, pasture and arable land. The herbaceous community of the Mediterranean climate consists of macchies, *Laurus nobilis*, *Arbutus* sp., *Vaccinium myrtillus*, bushes and etc. The majority plant taxa are *Pinus brutia*, *Pinus nigra*, *Abies* sp., *Quercus* sp., and *Fagus* sp. etc.

Çanakkale and Van have different climate and vegetation characteristics. With this study, some plants of Van and Çanakkale provinces have been compared to contribute to the related studies.

## 2. Material and Methods

Our observations and researches carried out on the plants of Çanakkale and Van provinces [11-14]. The plant samples were identified by using 'Flora of Turkey' [8]. Plant samples were collected, pressed according to herbarium technics and deposited in the VANF Herbarium. This study was presented as an oral presentation in XIV. National Biology Congress [15]. The photos of some plant taxa can be seen in Figure 1. Çanakkale and Van cities in the Turkey map can be seen in Figure 2.

## 3. Results

In Van and Çanakkale cosmopolitan plant species are generally grown. Çanakkale has Mediterranean climate type and include mostly maquis and garish varieties. In Van, mediterranean species are rarely seen because of terrestrial climate type. For example *Pinus brutia, Pinus maritima, Pinus pinea, Spartium junceum, Quercus coccifera, Coridathymus capitatus, Cistus creticus, Sarcopoterium spinosum, Calycotome villosa* species widely seen in Çanakkale provinces, but these species not widely seen in Van provinces. Ayazma, located in the Bayramiç province of Çanakkale, include naturally a *Pinus nigra* forest of among the *Pinus brutia* forest. *Pinus nigra* not widely seen naturally in Van province, but it is widespreaded naturally in Çanakkale. As a matter of fact, *Pinus nigra* is also grown in some cities of Southeastern Anatolian region, this species rarely seen naturally in the eastern part of Turkey. For example, a natural *Pinus nigra* community has been observed in the province of Tillo (Aydınlar) in Siirt province [16].

Common plant taxa from Çanakkale: *Laurus nobilis, Pistacia terebinthus* subsp. *terebinthus, Pistacia leutiscus, Veronica chamaedrys, Veronica samuelssonii, Veronica panormitana, Veronica sublobata, Veronica jaquinii, Scolymus hispanicus, Alkanna oreodoxa, Acer monspessulanum, Centaurea athoa, Daucus guttatus, Ecballium elaterium, Rubus canessens, Centaurea cuneifolia, Styrax officinalis, Pinus pinea, Pinus brutia, Pinus maritima, Abies equitrojana, Albizia jülibrissin, Ficus carica, Yucca aloifolia, Yucca gloriosa, Agave americana, Magnolia grandiflora, Cercis siliquastrum, Nerium oleander, Campsis radicans, Lagerstroemia indica, Eriobotria japonica, Gazania 'Sunschine Hybrids', Abies nordmanniana* subsp. *bornnmuelleriana, Lavandula angustifolia, Phoenix theophrasti, Washingtonia filifera, Portulaca microphylla, Artemisia cinerea, Mirabilis jalapa, Mesembryanthemum nodiflorum, Alkanna tinctora* subsp. *tinctoria, Anemone coronaria, Cupressus sempervirens, Rosmarinus officinalis, Carlina corymbosa, Centaurea odyssei, Carduus nutans* subsp. *trojanus, Crocus gargaricus* subsp. *gargaricus, Crocus pulchellus.* Common plant taxa from Van: *Veronica vanensis, Veronica fridericae, Veronica microcarpa, Veronica orientalis* subsp. *orientalis, Veronica orientalis* subsp. *carduchorum, Scrophularia carduchorum, Centaurea depressa, Centaurea argentea, Centaurea balsamita, Centaurea aggregata, Centaurea urvillei* subsp. *urvillei, Centaurea virgata, Chardinia orientalis, Tripleurospermum disciforme, Tripleurospermum transcaucasicum, Tripleurospermum sevanense, Onopordum boissieri, Carduus nutans, Alkanna orientalis, Gladiolus atroviolaceus, Onobrychis viciifolia, Coronilla varia* subsp. *varia, Phragmites australis, Fritillaria imperialis, Tulipa sintenisii, Gundelia tournefortii, Glycirrihyza glabra var. glandulifera, Callipetis cucullaria, Agrimonia eupatoria, Limonium vanensis, Centaurea vanensis, Antemis wiedemanniana, Xiolirion tataricum, Picea orientalis.* Common plant taxa from Çanakkale and Van: *Veronica triloba, Veronica cymbalaria, Veronica polita, Veronica persica, Veronica arvensis, Veronica verna, Veronica anagalloides, Veronica anagallis-aquatica, Adonis annua, Adonis flammea, Artemisia absinthium, Platanus orientalis, Chenopodium album, Tremastelma palaestinum, Ballota nigra, Alkanna azurea, Centaurea diffusa, Centaurea iberica, Centaurea solstitialis* subsp. *solstitialis, Cichorium inthybus, Carlina lanata, Erodium sicutarium, Tussilago farfara, Fragaria vesca, Rubus sanctus, Peganum harmala, Hyocyamus niger, Ajuga chamaeptys, Reseda lutea, Viburnum opulus, Amaryllis belladonna, Lamium purpureum, Papaver rhoeas, Anagallis arvensis, Populus tremula, Trifolium pratense, Trifolium dubium, Glaucium corniculatum, Tussilago farfara, Elaeagnus angustifolia, Viola tricolor, Roemeria hybrida* subsp. *hybrida, Carthamus dentatus, Eryngium campestre, Eryngium maritimum Anchusa azurea* var. *azurea, Aegilops triuncialis, Bromus tectorum, Poa bulbosa, Echinocloa crus-galli, Paliurus spina- christii, Echinops microcephalus, Echinops ritro, Geranium dissectum, Lotus corniculatus* var. *corniculatus, Vaccaria pyramidata, Lamium purpureum, Althaea rosea, Picea pungens, Morus alba, Morus nigra, Cedrus libani, Juglans regia, Tagates patula, Chenopodium botrys, Punica granatum, Robinia pseusdoacacia, Juniperus sabina, Cydonia oblonga, Pyrus malus, Malus domestica, , Rosa* spp., *Acer negundo, Lonicera etrusca, Pinus nigra, Erodium sicutarium, Catalpa bignonioides, Cydonia vulgaris, Malus domestica, Malus communis, Aesculus hippocastanum, Iris germanica, Crataegus orientalis* var. *orientalis.*

## 4. Discussion

In this research, some of the plants grown in Çanakkale and Van were handled and the geographical distribution was compared in terms of two provinces. We have tried to give examples of plant species that have spreaded in common in both of cities and differences from grown. Some of these plant species are endemic to cities and environment. For example *Veronica vanensis* and *Veronica fridericae* are endemic species for Van [17, 18]. *Abies equitrojana* is an endemic species for Çanakkale. *Fritillaria imperialis* is also endemic and grown from türü Van and Hakkari provinces. Naturally grown plant species in Çanakkale and Van are cosmopolitan species with wide ecological tolerance. The species that do not grow in Çanakkale while they are growing in Van are the ones that are higher in altitude and are suitable to the climate characteristics of the Iran-Turan steppe region. The plant species that do not grow in the Van region when grown in Çanakkale are generally maquis and garish species or tropical species, which are warmer climate Mediterranean climate and can be grown at lower altitudes due to genetic makeup. Because the Van region is continental climate and is not suitable for growing Mediterranean species. However, some Mediterranean plants, rarely ecologically tolerant, can grow in Van as natural or cultivated plants. In this respect, it is possible to make experiments for the cultivated plants in Van, which can adapt to the climate of the Mediterranean and also to the Van climate. For example, it has been observed that *Spartium junceum* have been grown in Van in recent times, although it is a maquis plant.

## 5. Conclusion

In conclusion, this study suggests that such field studies should be planned in future covering the other parts of the Turkey, in order to contribute to floristic studies as well as helping botanist, agronomists, farmers and related study areas.

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**Figure-1.** Some plant taxa in the research area


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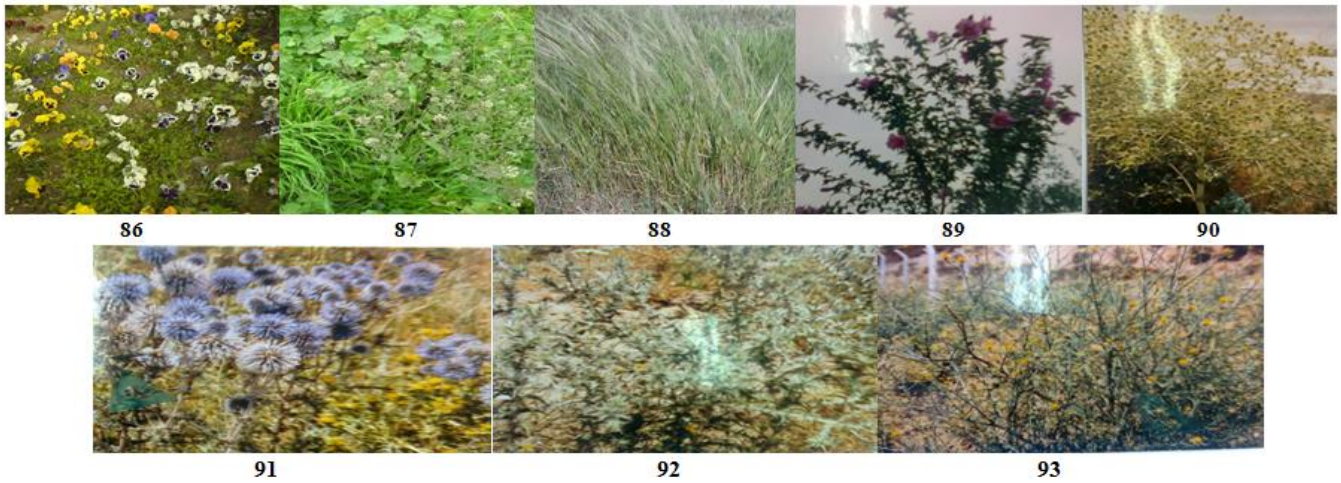


1 *Spartium junceum* and *Cupressus sempervirens* population, 2 *Spartium junceum* and *Quercus coccifera* population, 3 *Pinus pinea* and *Pinus brutia* population, 4 *Sunshine* sp., 5 *Agave americana*, 6 *Alkanna oreodoxa*, 7 *Laurus nobilis*, 8 *Anemone coronaria*, 9 *Cupressus sempervirens*, 10 *Cersis sliquastrum*, 11 *Ficus carica*, 12 *Nerium olaeander*, 13 *Eryobotria japonica*, 14-15 *Pinus brutia*, 16 *Pinus pinea*, 17 *Pistacia lentiscus*, 18 *Portulaca microphylla*, *19 Rosmarinus officinalis*, *20 Quercus coccifera*, 21 habitat of *Veronica vanensis*, 22 *Veronica vanensis*, 23 *Veronica fridericae*, 24 *Lotus corniculatus* subsp. *corniculatus*, 25 *Berberis vulgaris*, 26 *Picea orientalis*, 27 *Irıs paradoxa,* 28 *Cardaria draba* subsp. *draba*, 29 *Ixiolirion tataricum* subsp. *montanum*, 30 *Secale montanum*,31 *Melilotus officinalis*, 32 *Astrodaucus orientalis*, 33 *Scorzonera cana*, 34 *Achillea biebersteinii*, 35 *Ziziphora persica*, 36 *Astragalus chaldiranicus*, 37 *Crambe orientalis*, 38 *Senecio vernalis*, 39 *Astragalus jodoctachys*, 40 *Medicago sativa* subsp. *sativa*, 41 *Alkanna orientalis*, 42 *Gladiolus atroviolaceus*, 43 *Scrophularia carduchorum*, 44 *Anthemis wiedemanniana*, 45 *Centaurea depressa*, 46 *Pinus sylvestris*, 47 *Onobrychis viciifolia*, 48 *Styrax officinalis*, 49 *Adonis flammea*, 50 *Thuja orientalis*, 51 *Kerria japonica*, 52 *Picea pungens*, 53 *Anchusa azurea*, 54 *Malus communis*, 55 *Aegilops triuncialis*, 56 *Salix alba*, 57 *Romeria hybrida*, 58 *Tragopogon bubthalmoides*, 59 *Poa bulbosa*, 60 *Tagates patula*, 61 *Punica granatum*, 62 *Papaver rhoeas*, 63 *Pinus nigra*, 64 *Picea abies*, 65 *Morus nigra*, 66 *Althea rosea*, 67 *Lonicera etrusca*, 68 *Junglans regia*, 69 *Robinia pseudoacacia*, 70 *Trifolium repens*, 71 *Elaeagnus angustifoli*, 72 *Acer campestre*, 73 *Glaucium corniculatum* subsp. *corniculatum*, 74 *Reseda lutea var. lutea*, 75 *Platanus orientalis*, 76 *Veronica persica*, 77 *Malus domestica*, 78 *Aesculus hippocastanum*, 79 *Catalpa bignonioides*, 80 *Cedrus libani*, 81-82 *Thuja oxcidentalis*, 83 *Juniperus sabina*, 84 *Pyracantha coccinea*, 85 *Cotoneaster horizontalis*, 86 *Veronica polita*, 87 *Cupressus arizonica*, 88 *Erodium scutarium*, 89 *Salix babyllonica*, 90 *Taraxacum officinale*, 91 *Viola tricolor*, 92 *Capsella bursa-pastoris*, 93 *Taeniaterum caput-medusae*, 94 *Hibiscus syriacus*, 95 *Eryngium campeste* var. *virens*, 96 *Echinops ritro*, 97 *Carthamus lanatus*, 98 *Centaurea solstitialis* subsp. *solstitialis.*

**Figure-2.** Çanakkale and Van cities in the Turkey map