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THE FLORA OF THE SURROUNDING ÖMERLİ DAM (PAŞAKÖY – İSTANBUL)

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ABSTRACT: The floristic study was carried out and to contributed in the flora of the surrounding Ömerli Dam between the years of 2002 and 2003. The study area is located in İstanbul and influenced by Mediterranean climate. Flora of study area consists of 158 specific and infraspecific taxa belong to 52 families and 116 genera. The numbers of endemic species were 7 (% 4.5). The phytogeographic regions of species have been determined, Euro–Siberian Elements 39 (% 25.6), Mediterranean Elements 33 (% 20), Irano-Turanian Elements 3 (% 2) and multiregional or have not been assessed pyhtogeographically 83 (% 52.4).

KEYWORDS: Flora, A2, Ömerli Dam, İstanbul, Turkey

1. INTRODUCTION

The demands to forest which is the source of a lot of service and products and to forest products are increasing day by day due to the rapid population increase. The continuance of the benefit from forests will be possible by knowing well the relationship of all their members.

Today, forested areas can be defined as an ecosystem that expands in an area of 44 billion square kilometre by %29.53 of the earth and which trees, small trees, and bushes in a certain length, structure and frequency that can compose a specific climate have formed with moss, fern, mushrooms and micro and macro organisms which live on and under ground and the environment where they live and also a unity of life. While needle leafed trees of our country mostly consist of pine, fir, cedar, spruce and juniper and their kinds, leafed trees consist of oak, beech, hornbeam, chesnut, alder, linden tree, ash tree, maple, poplar and their taxa (Anşin, 1999).

Turkey is also rich in point of the habitat types as a natural consequence of having a vast variety of topography, climate and geomorphology which has an influence on the number of plant types and endemism ratio. In accordence with this, the total number of our phanerogamous plants is 8.745 and 2.763, one-third of this number, plant types is endemic according to the explanations of Davis (1965- 1985) and Davis and his friends (1988) (Kaya, 1988). Vural (2003) dictated that the number of plant taxa in Turkey got to 10.754 and 3.708 of these were endemic in his research, in other words, Turkey is the origin and variety centre of a lot of important cultivated plants and other plant species.

Many scientists were picked up plants in İstanbul and round it where there are search areas. Some of them are Forskal (1761), Sibthorb (1786, 1794), M. Webb and Parolin (1819), Castage (1820-1830), M. Grisebach (1839), chemist Hoe (1846) and Prof. Clementi (1850). J. Nemetz (1894-1897) and J. Bornmüller (1899) are the other researchers who have picked up plants in İstanbul. G.V. Aznavour's (1897-1913) has a priority among all the researchers, he made important contributions in completing the flora of İstanbul. He named newly 22 types, 3 sub- types, 35 varieties, 8 sub-varieties and 12 forms in totally almost a 1000 different plants in his 12 studies which he made public. Moreover, he was interested in the Anatolian flora when he had time (Baytop, 2004). J. Mattfeld (1929), K. Krause (1926, 1931), W. Kotte (1931-1933), E. K. Balls with Dr. B. V. Courley (1935) and Bertram V. D. Post (1939) also picked up samples of plants in İstanbul and its around.

Irmak (1940), Saatçioğlu (1940), Acatay (1943), Kayacık (1955-1957), Bozkurt (1960), Yaltırık (1966), Baytop (1955, 1958, 1960-1961, 1971, 1968-1973, 1985), Demiriz (1963), Dönmez (1968), Kantarcı (1972-1974) and Irmak et all. (1980) are other researchers who interested in this area (Gönensin, 2001).

All of these studies determine the floristic content of this region. The obtained data is important for us to be found the destruction that will occur in floristic structure owing to various reasons. The flora studies will transfer us information about many subjects by giving us the chance to compare the floral changes that happened from past to present and from present to future.

The city of İstanbul and its enviroment is a region which becomes often the current issue for its enviromental problems. Several enviromental problems naturally affect the flora. Negative factors such as unplanned housing, industrial areas and mines in Ömerli Lake where we study and round it causes the contamination of basin water and pollution of vegetation. In other words, the natural balance of Ömerli Lake and its surrounding is getting worse day by day. So our aim is to contribute to the flora of Ömerli Lake which is an important basin. The findings of the study will lead the other studies which are going to be conducted in the future.

The Geological Structure of the Study Area

Arcosic sandstones which belong to the formation of Kurtköy that spreads in a vast zone in the study area are the oldest unit of Paleosoic hoard of İstanbul. There are formed of quartzites in a small area on the arcosic rocks in the north-east of the area. There are old Pliyosen or Pleyistosen cover sediments in this part.

Arcosic rocks and quartzites, hard, rigid, solid basic rocks are called cover rocks in sediments which consist of clay, sand and gravel regarding of geology of engineering and geotechinque features (Albayrak, 1999).

Climatic Conditions in the Study Area

Area studied is geographically situated in the Marmara Region. The topographic, orographic and geomorphologic structures have an influence on the climatic conditions of the region. The datas of the two closest meteorology stations were used in order to learn about the climate in the study area. This stations which are in the north and in the south of the area studied are Şile and Göztepe. The observation on not only rain but also temperature is made in both of the stations. The observation years of rain and temperature in the stations can be seen at Table 1.

When we inspect the tables of the climate, we find out that while the coldest month in Göztepe is February and the minimum avarege temperature (m) is 2.6 °C, it is January in Şile and the minimum avarege temperature is 2.5 °C minimum avarege temperatures are shown in Table 2. According to this, there is no freezing month in both stations.

The maximum average temperature of the hottest month is 28.5 °C in Göztepe, and it is 25.6 °C in Şile; the hottest month in both stations is August. As it can be seen in Table 3, Göztepe is hotter than Şile. This is partly due to the terrestrial climate and that Göztepe is closer to the south.

The total amount of yearly rain is 686.6 mms in Göztepe and 802.6 mms in Şile. Although there isn't a distinct difference of altitude between the stations, this difference in rain is caused by the fact that Şile is on the Black Sea coast.

The seasonal rain amount and the rain regime of the stations in the study area are given in Table 4. According to this, the stations of Göztepe and Şile are KSIY and they form the rain regime of Central Mediterranean. The common point of the two stations is that the least rainy season is Spring and Autumn.

The plant cover and the vegetation structure of the study area shows that Mediterranean climate (Akman & Daget, 1971) is under the impression of the sub-

types of the little- rainy to the rainy. The most distinct feature of Mediterranean climate is that rains are cold and comparatively focuses on cold seasons. Photoperiodism is both daily and yearly. Dry season is summer and that this summer drought harmonizes with a maximum temperature.

As can be seen at the rain- temperature diagrams which belong to the stations in the study area (Figure 1-2), a certain drought is seen in August in both stations. The dry term was finding by the Gaussen Method (Erinç, 1969) and the amount of the rain was twice as big as the temperature or below it ($P < 2t$).

2. MATERIALS and METHODS

The Ömerli Dam is situated in the A2 square according to the Grid system of Davis (1965). The altitude of the study area is about 130 meters. The material of plant which forms the subject of the study was collected as a consequence of the estate studies during the term of the developing of vegetation in the years of 2002 and 2003. The estate studies were conducted in various developing periods such as the aspect of Spring, Summer and Autumn of the vegetation. At least two pairs of sample were taken and these samples were put in the Herbarium of Çankırı Forest Faculty, Ankara University after being defined.

The determination of the plants used to Flora of Turkey Davis (1965-1988) and checked from ANK.

3. FINDINGS

52 family and 116 genera which belong to 158 taxa were established in the study area. The seperation of the collect plants according to their classes and sub- classes are:

Class – Sub-classes	Genera	Species
Pteridophyta	2	2
Spermatophyta	114	156
Gymnospermae	2	3
Angiospermae	112	153
Dicotyledonae	94	128
Monocotyledonae	18	25

The numbers of endemic species are 7 of 158 (% 4.5). The three of them are belong to Mediterranean, three of the Euro- Siberian and one of them is regional.

The floristicts regional distributions are: Euro- Siberian element %25.6, Mediterranean element %20, Irano Turanian element %2 and the others %52.4.

The riches genera are; *Quercus* 6, *Hypericum* 4, *Trifolium* 4.

Floristic catalogue
These species are listed according to the order present in the Flora of Turkey.

Divisio: PTERIDOPHYTA

FILICALES
Osmundaceae
Osmunda regalis L. - Paşaköy–Ömerli, 200 m, 04.06.2003, BAYSAL, 169.
Hypolepidaceae
Pteridium aquilinum (L.) Kuhn. - Paşaköy–Ömerli, on the road sides, clearings of the forest, 152 m, 16.05.2003 BAYSAL, 114.

Divisio: SPERMATOPHYTA
Subdivisio: GYMNOSPERMAE

CONIFERALES
Pinaceae
Pinus nigra Arnold. subsp. nigra var. caramanica (Loudon) Rehder - Paşaköy–Ömerli, 200 m, 01.07.2002 BAYSAL, 23.
Pinus pinaster Aiton - (Culture) Paşaköy–Ömerli, 200 m, 01.07.2002 , BAYSAL, 36.
Cupressaceae
Juniperus oxycedrus L. - Ayazma Hill, 240 m, 13.12.2002, BAYSAL, 83, Medit. Ele.

Subdivisio: ANGIOSPERMAE
Ranunculaceae
Delphinium peregnium L. - Paşaköy–Ömerli, 158 m. 06.06.2003, BAYSAL, 184, E. Medit. Ele.
Anemone coronaria L. var. coccinea Burn. - Paşaköy–Ömerli, 152 m, on the road sides 21.03.2003, BAYSAL, 93, Medit. Ele.
Clematis viticella L. - Paşaköy–Ömerli, wet places, 68 m, 02.06.2003, BAYSAL, 138
Ranunculus repens L. - Paşaköy–Ömerli, under the oak woodlands, 130 m, 06.06.2003, BAYSAL, 175, E. Medit. Ele.
Ranunculus thracicus Azn. - A2 (A), İstanbul, Alemdağ, Azn.
Cruciferae
Sinapis alba L. - Paşaköy–Ömerli, clearings 16.05.2003, BAYSAL, 112

Thlaspi perfoliatum L. - Paşaköy–Ömerli, under the oak woodlands, 136 m 05.05.2003, BAYSAL, 97

Cistaceae

Cistus creticus L. - Paşaköy–Ömerli, clearings in the woodlands, 152 m, 06.06.2003, BAYSAL, 177, Medit. Ele.

Cistus salviifolius L. - Paşaköy–Ömerli, clearings in the woodlands, 152 m, 01.07.2002, BAYSAL, 57, Medit. Ele.

Helianthemum nummularium (L.) Miller. - Paşaköy–Ömerli, clearings in the woodlands, 130 m, 01.07.2002, BAYSAL, 17

Polygalaceae

Polygala supina Schreb. - Çam Hill, 160 m, 16.05.2003, BAYSAL, 119

Caryophylaceae

Minuartia micrantha Schischk. - Elmalı Hill, 136 m, 01.07.2002, BAYSAL, 52

Stellaria holostea L. - Elmalı Hill, 136 m, 05.05.2003, BAYSAL, 104, Euro- Sib. Ele.

Silene dichotoma Ehrh. subsp. euxina (Rupr.) Coode & Cullen - Paşaköy – Ömerli, on the road sides, 115 m, 16.05.2003, BAYSAL, 124, Euxine

Silene dichotoma Ehrh. subsp. dichotoma - Paşaköy–Ömerli, clearings in the woodlands, 115 m, 03.06.2003, BAYSAL, 145

Dianthus armeria L. subsp. armeria - Paşaköy–Ömerli, on the road sides and rocky places 120 m, 01.07.2002 BAYSAL, 12, Euro-Sib. Ele.

Dianthus corymbosus Sibht. & Sm. - Paşaköy–Ömerli, on the road sides and rocky places, 120 m, 23.06.2003, BAYSAL, 188

Polygonaceae

Rumex acetosella L. - Elmalı Hill, on the road sides, 136 m, 05.06.2003, BAYSAL, 171

Tamaricaceae

Tamarix parviflora DC. - Paşaköy–Ömerli, on the road sides, 120 m, 01.07.2002

Guttiferae

Hypericum avicullariifolium Jaub. subsp. byzantinum (Azn.) Robson - Paşaköy–Ömerli, clearings of the forest, 130 m, 16.05.2003, BAYSAL, 126, Endemic. E. Medit.

Hypericum calycinum L. - Paşaköy–Ömerli, on the road sides and under the oak woodlands, 120 m, 01.07.2002, BAYSAL, 79, Euxine.

Hypericum montbretii Spach - Paşaköy–Ömerli, clearings of the forest, 120 m, 01.07.2002, BAYSAL, 41

Hypericum perforatum L. - Paşaköy–Ömerli, on the road sides, 01.07.2002, BAYSAL, 42

Linaceae

Linum aroanium Boiss. & Orph. - Paşaköy–Ömerli, 03.06.2003, BAYSAL, 153, Medit. Ele.

Geraniaceae

Geranium columbinum L. - Ayazma Hill, 240 m, 03.06.2003, BAYSAL, 146

Rhamnaceae

Paliurus spina-christii Miller. - Çam Hill, clearings of the forest and on the road sides, 160 m, 01.07.2002, BAYSAL, 38

Frangula alnus Miller subsp. alnus - Çam Hill, forest, 160 m, 03.06.2003, BAYSAL, 158 , Euro- Sib.

Leguminosae

Chamaecytisus hirsutus (L.) Link - Elmalı Hill, 136 m, 02.06.2003, BAYSAL, 132, Medit. Ele.

Chamaecytisus pygmaeus (Willd.) Rothm. - Elmalı Hill, 136 m, 16.05.2003, BAYSAL, 131, Euro- Sib. Ele.

Genista carinalis Gris. - Paşaköy–Ömerli, clearings of the forest, 142 m, 16.05.2003, BAYSAL, 118

Genista lydia Boiss. var. lydia - Paşaköy–Ömerli, clearings of the forest, 142 m, 05.05.2003 , BAYSAL, 99

Spartium junceum L. - Paşaköy–Ömerli, 06.06.2003, BAYSAL, 176, Medit. Ele.

Calicotome villosa (Poiret) Link. - Elmalı Hill, 136 m, 01.07.2002, BAYSAL, 148

Vicia cracca L. subsp. stenophylla Vel. - Çam Hill, clearings in the woodlands, 160 m, 16.05.2003, BAYSAL, 123

Lathyrus undulatus Boiss - Çam Hill, clearings of the woodlands, 160 m, 16.05.2003, BAYSAL, 133, Endemic Eux. Ele

Lathyrus digitatus (Bieb.) Fiori - Çam Hill, clearings of the woodlands, 160 m, 05.05.2003, BAYSAL, 100 , E. Medit. Ele.

Trifolium campestre Schreb. - Çam Hill, clearings of the woodlands, 160 m, 16.05.2003, BAYSAL, 113

Trifolium arvense L. var. arvense - Çam Hill, clearings of the woodlands, 160 m, 02.06.2003, BAYSAL, 139

Trifolium purpureum Lois. var. purpureum - Çam Hill, clearings of the woodlands, 160 m, 01.07.2002, BAYSAL, 75

Trifolium constantinopolitanum Ser. - Çam Hill, clearings of the woodlands, 160 m, 03.06.2003, BAYSAL,147

Dorycnium graecum (L.) Ser. - Paşaköy–Ömerli, on the road sides, 01.07.2002, BAYSAL, 60, Euxine

Dorycnium pentaphyllum Scop. subsp. herbaceum (Vill.) Rouy - Paşaköy–Ömerli, on the road sides, 04.06.2003, BAYSAL, 167

Lotus angustissimus L. - Çam Hill, clearings of the woodlands, 160 m, 16.05.2003, BAYSAL, 105

Rosaceae

Rubus canescens DC. var. canescens - Paşaköy–Ömerli, on the road sides, 130 m, 06.06.2003, BAYSAL, 173

Rubus discolor Weihe & Nees - Paşaköy–Ömerli, on the road sides, 130 m, 01.07.2002, BAYSAL, 14

Rubus idaeus L. - Paşaköy– Ömerli, on the road sides, 130 m, 01.07.2002, BAYSAL, 15

Rosa canina L. - Elmalı Hill, clearing of the forest and on the road sides, 136 m, 01.07.2002 , BAYSAL, 39
Pyracantha coccinea Roemer - Paşaköy–Ömerli, clearings of the forest, 130 m, 23.06.2003, BAYSAL, 191
Crataegus monogyna Jacq. subsp. monogyna - Elmalı Hill, in the forest, 136 m, 01.07.2002, BAYSAL, 40
Sorbus torminalis (L.) Crantz var. torminalis - Paşaköy–Ömerli, on the road sides, 01.07.2002, BAYSAL, 10, Euro- Sib. Ele.
Pyrus amygdaliformis Vill. var. amygdaliformis - Elmalı Hill, in the forest, 136 m, 01.07.2002, BAYSAL, 109
Pyrus communis L. subsp. communis - Elmalı Hill, in the forest, 136 m, 01.07.2002, BAYSAL, 56

Myrataceae

Myrtus communis L. subsp. communis - Paşaköy–Ömerli, 130 m, 03.06.2003, BAYSAL, 150

Lythraceae

Lythrum salicaria L. - Paşaköy–Ömerli, on the road sides and wet places, 68 m, 06.06.2003, BAYSAL, 182

Crassulaceae

Sedum pallidum Bieb. var. pallidum - Paşaköy–Ömerli, on the road sides and rocky places, 130 m, 05.06.2003, BAYSAL, 172

Umbelliferae

Eryngium campestre L. var. virens Link - Paşaköy–Ömerli, clearings of the forest, 130 m, 01.07.2002, BAYSAL, 13
Oenanthe pimpinelloides L. - Paşaköy–Ömerli, wetland places, 68 m, 23.06.2003, BAYSAL, 187
Ferulago sylvatica (Besser) Reichb. - Elmalı Hill, 136 m, 06.06.2003, BAYSAL, 74, Euro-Sib. Ele.
Daucus carota L. - Çam Hill, on the road sides, 160 m, 05.05.2003, BAYSAL, 94

Araliaceae

Hedera helix L. - Elmalı Hill, in the forest, 136 m, 06.06.2003, BAYSAL, 185

Cornaceae

Cornus sanguinea L. subsp. sanguinea - Ayazma Hill, 240 m, 03.06.2003, BAYSAL, 165

Dipsacaceae

Knautia byzantina Fritsch - Ayazma Hill, 240 m, 02.06.2003, BAYSAL, 140, Endemic

Compositae

Inula ensifolia L. - Paşaköy – Ömerli, clearings of the forest, 130 m, 23.06.2003, BAYSAL, 190, Euro- Sib.
Inula oculus-christi L. - Paşaköy–Ömerli, on the road sides, 130 m, 02.06.2003, BAYSAL, 143, Euro- Sib. Ele.
Bellis perennis L. - Elmalı Hill, clearings of the forest, 136 m, 06.06.2003, BAYSAL, 183, Euro-Sib. Ele.

Senecio castagneanus DC. - Ayazma Hill, on the road sides, 240 m, 05.05.2003, BAYSAL, 101, Endemic E. Medit. Ele.
Anthemis altissima L. - Çam Hill, on the road sides and clearings of the forest, 160 m, 01.07.2002, BAYSAL, 30
Anthemis tinctoria L. var. pallida DC. - Çam Hill, on the road sides and clearings of the forest, 160 m, 01.07.2003, BAYSAL, 67
Chrysanthemum segetum L. - Çam Hill, on the road sides and clearings of the forest, 160 m, 16.05.2003, BAYSAL,130 Medit. Ele
Cirsium vulgare (Savi) Ten. - Elmalı Hill, wetland places and on the road sides, 136 m, 06.06.2003, BAYSAL, 174
Cirsium hypoleucum DC. - Elmalı Hill, wetland places and on the road sides, 136 m, 16.05.2003, BAYSAL, 107 Euxine
Centaurea inermis Velen. - Çam Hill, on the road sides, 160 m, 23.06.2003, BAYSAL, 192
Centaurea kilaea Boiss. - Çam Hill, on the road sides, 160 m, 01.07.2002, BAYSAL, 46, Endemic
Cichorium inthybus L. - Paşaköy–Ömerli, clearings of the forest, 130 m, 01.07.2003, BAYSAL, 35
Hypochoeris radicata L. - Elmalı Hill, 136 m, 06.06.2003, BAYSAL, 186, Euro-Sib. Ele.
Pilosella auriculoides (A. F. Láng) Sell & West - Çam Hill, 160 m, 16.05.2003, BAYSAL, 127
Pilosella piloselloides (Vill.) Sojak subsp. megalomastik (NP.) Sell & West - Çam Hill, 160 m, 02.06.2003, BAYSAL, 141
Crepis micracantha Czer. - Ayazma Hill 240 m, 23.06.2003, BAYSAL, 193
Crepis pulchra L. subsp. pulchra - Ayazma Hill, under the shrub and on the road sides, 06.05.2003, BAYSAL, 111

Ericaceae

Erica arborea L. - Elmalı Hill, under the oaks, 136 m, 01.07.2002, BAYSAL, 18 , Medit. Ele.
Erica manipuliflora Salisb. - Elmalı Hill, under the oaks, 136 m, 01.07.2002, BAYSAL, 21, E. Medit. Ele.
Arbutus unedo L. - Çam Hill, 160 m, 13.12.2002, BAYSAL, 87, Medit. Ele.

Primulaceae

Primula vulgaris Hudson subsp. sibthorpii (Hoffmanns) W.W.Sm. & Forrest - Ayazma Hill, 240 m, Marc 2003, BAYSAL, 92, Euxine
Lysimachia punctata L. - Paşaköy–Ömerli, Lake edge, 01.07.2002, BAYSAL, 1, Euro- Sib. Ele.
Anagallis arvensis L. var. arvensis - Elmalı Hill, on the road sides and clearings of the forest, 136 m, 01.07.2002, BAYSAL, 65
Anagallis arvensis L. var. caerulea (L.) Gouan - Elmalı Hill, on the road sides and clearings of the forest, 136 m, 16.05.2003, BAYSAL, 115

Oleaceae

Fraxinus angustifolia Vahl. subsp. syriaca (Boiss.) Yalt. - Elmalı stream sides, 01.07.2002, BAYSAL, 45, Ir.-Tur.
Ligustrum vulgare L. - Elmalı stream sides, 04.06.2003, BAYSAL, 170, Euro-Sib. Ele.
Phillyrea latifolia L. - Elmalı Hill, 136 m, 13.12.2002, BAYSAL, 84, Medit. Ele.

Apocynaceaea

Amsonia orientalis Decne. - Çam Hill 160 m, 02.06.2003, BAYSAL, 136

Asclepiadaceae

Vincetoxicum fuscatum (Hornem) Reichb.fil subsp. fuscatum - Çam Hill, clearing of the forest 160 m, 01.07.2002, BAYSAL,34

Gentianaceae

Centaurium erythraea Rafn. subsp. turcicum (Velen.) Melderis - Elmalı stream sides, 03.06.2003, BAYSAL, 152
Centaurium maritimum (L.) Fritsch - Çam Hill, clearing of the forest and on the road sides, 160 m, 01.07.2002, BAYSAL, 77, Medit. Ele.

Convolvulaceae

Convolvulus compactus Boiss. - Çam Hill, clearing of the forest and on the road sides, 160 m, 01.07.2002, BAYSAL, 77, Medit. , Ir.-Tur.

Boraginaceae

Echium plantagineum L. - Ayazma Hill, clearings of the forest, 240 m, 05.05.2003 , BAYSAL, 102, Medit. Ele.
Onosma aucheranum DC. - Çam Hill, under the forest, 160 m, 05.05.2003, BAYSAL, 103, E.Medit. Ele.

Scrophulariaceae

Verbascum bugulifolium Lam, x xanthophoeniceum Griseb. - Elmalı Hill, under the forest, 136 m, 03.06.2003, BAYSAL, 149
Linaria genistifolia (L.) Mil. subsp. linifolia (Boiss.) Davis - Paşaköy–Ömerli, clearings of the forest, 03.06.2003, BAYSAL, 148
Kickxia commutata Fritsch subsp. commutata - Ayazma Hill, 240 m, 03.06.2003, BAYSAL, 164, E. Medit. Ele.
Gratiola officinalis L. - Çam Hill, 160 m, 03.06.2003, BAYSAL, 163, Euro-Sib. Ele.
Veronica anagalloides Guss. - Çam Hill, clearings of the forest and on the road sides, 160 m, 01.07.2002, BAYSAL, 19

Orobanchaceae

Orobanche mutelii F.Schultz - Paşaköy–Ömerli, clearings of the forest, 130 m, 03.06.2003, BAYSAL, 157

Verbenaceae

Vitex agnus-castus L. - Ayazma Hill, 240 m, 01.07.2002, BAYSAL, 47, Medit. Ele.

Labiatae

Teucrium chamaedrys L. subsp. lydium O.Schwartz - Elmalı Hill, on the road sides, 136 m, 01.07.2002, BAYSAL, 20, E.Medit

Lavandula stoechas L. subsp. stoechas - Paşaköy–Ömerli, clearings of the forest, 130 m, 01.07.2002, BAYSAL, 27, Medit.
Stachys byzantina C.Koch - Elmalı Hill, on the road sides, 136 m, 01.07.2002, BAYSAL, 44, Euro-Sib.
Prunella vulgaris L. - Elmalı Hill, on the road sides and clearings of the forest, 136 m, 03.06.2003, BAYSAL, 156, Euro-Sib
Prunella laciniata (L.) L. - Elmalı Hill, on the road sides and clearings 136 m, 02.06.2003, BAYSAL, 142, Euro-Sib. Ele.
Clinopodium vulgare L. subsp. arundanum (Boiss.) Nyman - Elmalı Hill, 136 m, 01.07.2002, BAYSAL, 53
Salvia viridis L. - Elmalı Hill, on the road sides and clearings of the forest, 136 m, 03.06.2003, BAYSAL, 155, Medit. Ele.
Salvia verbenaca L. - Elmalı Hill, on the road sides and clearings of the forest, 136 m, 05.05.2003, BAYSAL, 96

Plantaginaceae

Plantago lanceolata L. - Ayazma Hill, clearings of the forest, 240 m, 13.12.2002, BAYSAL, 85
Plantago lagopus L. - Ayazma Hill, clearings of the forest, 240 m, 16.05.2003, BAYSAL, 110 , Medit. Ele.

Elaeagnaceae

Elaeagnus angustifolia L. - Ayazma stream sides, 01.07.2002, BAYSAL, 11

Santalaceae

Osyris alba L. - Ayazma Hill, 240 m, 16.05.2003, BAYSAL, 117, Medit. Ele.

Aristolochiaceae

Aristolochia pallida Willd. - Ayazma Hill, 240 m, 05.05.2003, BAYSAL, 105

Euphorbiaceae

Euphorbia stricta L. - Çam Hill, clearings of the forest, 160 m, 01.07.2002, BAYSAL, 69, Euro-Sib. Ele.

Platanaceae

Platanus orientalis L. - Elmalı stream sides, 01.07.2002, BAYSAL, 55

Fagaceae

Quercus cerris L. var cerris - Paşaköy–Ömerli, 130 m, 01.07.2002, BAYSAL, 25
Quercus frainetto Ten. - Paşaköy–Ömerli, 130 m, 01.07.2002, BAYSAL, 5, Euro-Sib. Ele.
Quercus hartwissiana Steven. - Paşaköy–Ömerli, 130 m, 23.06.2003, BAYSAL, 189, Euxine Ele.
Quercus petraea (Mattuschka) Liebl. subsp. iberica Krassiln - Paşaköy–Ömerli, 130 m, 01.07.2002, BAYSAL, 3
Quercus pubescens Willd. - Paşaköy–Ömerli, 130 m, 01.07.2002, BAYSAL, 4
Quercus infectoria Olivier. - Paşaköy–Ömerli, 130 m, 01.07.2002, BAYSAL, 6

Betulaceae

Alnus glutinosa (L.) Gaertner subsp. glutinosa - Elmalı stream sides, 01.07.2002, BAYSAL, 54, Euro- Sib. Ele.

Salicaceae

Salix alba L. - Elmalı stream sides, 02.06.2003, BAYSAL, 144, Euro- Sib. Ele.

Populus tremula L. - Elmalı stream sides, 01.07.2002, BAYSAL, 9, Euro- Sib. Ele.

Rubiaceae

Galium palustre L. - Çam Hill, on the road sides and clearings of the forest, 06.06.2003, BAYSAL, 179, Euro-Sib. Ele.

Galium verum L. subsp. verum - Çam Hill, on the road sides and clearings of the forest, 06.06.2003, BAYSAL, 180, Euro-Sib. Ele.

Liliaceae

Ruscus aculeatus L. var. aculeatus - Elmalı stream sides, 01.07.2002, BAYSAL, 2

Asparagus acutifolius L. - Ayazma Hill, rocky places, 240m, 02.06.2003, BAYSAL, 137

Ornithogalum montanum Cry. - Çam Hill, on the road sides, 160 m, Mart 2003, BAYSAL, 122, E. Medit. Ele.

Muscari armeniacum Leichtlin ex Baker - Elmalı Hill, on the forest 136m, 06.06.2003, BAYSAL, 178

Muscari comosum (L.) Miller - Elmalı Hill, on the forest 136 m, 16.05.2003, BAYSAL, 121, Medit. Ele.

Muscari neglectum Guss. - Elmalı Hill, in the forest, 136 m, 16.05.2003, BAYSAL, 120

Iridaceae

Iris suaveolens Boiss. & Reuter - Çam Hill, clearings of the forest 160 m, 15.03.2003, BAYSAL, 91, E. Medit.

Iris sintenisii Janka. - Çam Hill, clearings of the forest, 160 m, 03.06.2003, BAYSAL, 151, Euro-Sib. Ele.

Crocus biflorus Miller subsp. pulchricolor (Herbert) Mathew - Elmalı Hill, in the forest clearings, 136 m, Mart 2003, BAYSAL, 89, Endemic Euro-Sib. Ele.

Crocus pestalozzea Boiss. - Elmalı Hill, in the forest clearings, 136 m, Mart 2003, BAYSAL, 90, Endemic E. Medit. Ele.

Gladiolus atroviolaceus Boiss. - Elmalı Hill, clearings of the forest, 136 m, 03.06.2003, BAYSAL, 161, Ir.-Tur.

Orchidaceae

Serapias vomeracea Briq. subsp. orientalis Greuter - Ayazma Hill 240 m, 03.06.2003, BAYSAL, 162, E. Medit. Ele.

Juncaceae

Juncus bufonius L. - Elmalı Hill, wetland places, 68 m, 03.06.2003, BAYSAL, 160, Cosm,

Juncus thomasii Ten. - Elmalı Hill, wetland places, 68 m, 03.06.2003, BAYSAL, 159, Medit. Ele.

Gramineae

Brachypodium sylvaticum (Hudson) P.Beauv. - Ayazma Hill, clearings of the forest, 240 m, 01.07.2002, BAYSAL, 50, Euro-Sib. Ele.

Holcus lanatus L. - Elmalı Hill, clearings of the forest, 136 m, 01.07.2002, BAYSAL, 51, Euro- Sib. Ele.

Calamagrostis epigejos (L.) Roth - Çam Hill, clearings of the forest, 160 m, 01.07.2002, BAYSAL, 7, Euro- Sib. Ele.

Calamagrostis pseudophragmites Koeler - Çam Hill, clearings of the forest, 160 m, 01.07.2002, BAYSAL, 8, Euro-Sib. Ele.

Apera spica- venti (L.) P.Beauv - Elmalı Hill, 136 m, 16.05.2003, BAYSAL, 106, Euro- Sib. Ele.

Agrostis stolonifera L. - Çam Hill, on the road sides 160 m, 01.07.2002, BAYSAL, 16, Euro- Sib. Ele.

Festuca heterophylla Lam. - Ayazma Hill, clearings of the forest, 240 m, 16.05.2003, BAYSAL, 108, Euro-Sib.

Dactylis glomerata L. subsp. glomerata - Ayazma Hill, clearings of the forest, 240 m, 01.07.2002, BAYSAL, 63, Euro-Sib. Ele.

Briza maxima L. - Ayazma Hill, clearings of the forest, 240 m, 01.07.2002, BAYSAL, 32

Briza media L. - Ayazma Hill, clearings of the forest, 240 m, 01.07.2002, BAYSAL, 49

Chrysopogon gryllus (L.) Trin. - Ayazma Hill, clearings of the forest, 240 m, 01.07.2002, BAYSAL, 24

4. RESULTS and DISCUSSION

In the study area, samples of plants were collected as a result of the estate studies conducted in terms of vegetations developing in the years of 2002 and 2003, and 52 families, 116 genus and 158 taxa were determined after recognation of these. 3 of these belong to the sub- division of to Gymnospermae, 153 to Angiospermae. The phytogeographic regional percentage of the taxa which were determined in the study area is, Euro- Siberian element %25.5, Mediterranean element %20, Irano-Turanian element %2 and the others are % 52.4.

Our study area is represented by a close rate by Euro- Siberian (% 25.6) and Mediterranean (% 20) as can be found out from the seperation on the region of plant geography. Consequently, area studied is a passageway which has a floristic and geographic structure in accordance with its climatic features.

When we compare the flora of the Ömerli Dam with other study areas according to the phytogeographic regional elements, the results can be seen in Table 6.

The study area is phytogeographically in the Euro- Siberian region, and that Mediterranean species is on a rate that can not be neglected is the result of the climate. As a result, natural plant cover and the structure of vegetation shows that Mediterranean climate is under the influence of the sub- types of rainy and little-rainy.

The Mediterranean basin takes a lot of rain because of the drafts and the fact that it is under the influence of the low pressure in winter. But in the summer, the drafts from Atlantic Ocean to Basra Golf take a dry character while they extend from cold latitudes to warm ones. Consequently, summer months last almost without rain and dry (Erinç, 1969). The rain regime is W.A.S.S. (Winter, Autumn, Spring, Summer) with respect to the seasons, and is the type of Central Mediterranean. Whereas the study area is under the influence of Mediterranean Climate, that the comperative damp is high affects heavily the vegetation. The vegetation consists of mostly deciduous forests, because of the fact that the less rain and comperative humidity.

In the study area, Compositae family which has 17 species. Leguminosae follows it with 16 species, Gramineae with 11, Rosaceae with 9 and Labiatae with 8 species (Table 7).

The numbers of endemic species are 7 of 158 (% 4.5). The three of them are belong to Mediterranean, three of the Euro-Siberian and one of them is regional.

Small gatherings which consist of *Salix alba, Populus tremula* and *Alnus glutinosa* subsp. *glutinosa* are seen in near- lake and wet parts of the area. *Cornus sanguinea* subsp. *sanguinea, Sorbus torminalis* var. *torminalis, Pyrus amygdaliformis* var. *amygdaliformis* and *Pyrus communis* subsp. *communis* can be mentioned among the rare- inherited trees and small trees which were observed.

In the right bank of the lake where water gathers in the winter, of the area *Juncus bufonius, Juncus thomasii* were seen.

The dominant type of tree in the tree level of the plantation forests which are located in the Basin of Ömerli Dam Lake is *Pinus pinaster. Quercus frainetto, Quercus petraea* subsp. *iberica, Quercus cerris* var. *cerris, Quercus hartwissiana Quercus infectoria* and *Quercus pubescens* lead in order among the other deciduous elements which joins this pine formation.

The dominant species of small trees and bush level are consists primarily *Arbutus unedo, Erica manipuliflora, Erica arborea* and *Phillyrea latifolia. Ligustrum vulgare, Pyracantha coccinea, Rosa canina, Rubus discolor, Rubus idaeus* and *Rubus canescens* var. *canescens* follow them.

Thick gatherings of *Pteridium aquilinum, Cistus salviifolius* and *Cistus creticus* are observed near the groves.

ÖZET: Bu çalışma 2002-2003 yılları arasında Ömerli Barajı (İstanbul) çevresi Florasına katkı sağlamak üzere yapılmıştır. Çalışma alanı İstanbul'dadır ve Akdeniz iklimi etkisi altındadır. Çalışma alanındaki Flora 52 familya 116 cins ve bu cinslere ait 158 tür ve tür altı düzeyde takson içermektedir. Endemik tür sayısı 7 (%4.5)'dir. Taksonların fitocoğrafik dağılışları tespit edilmiş olup: Avrupa – Sibirya Elementi 39 (%25.6), Akdeniz Elementi 33 (%20), İran – Turan Elementi 3 (%2) ve çok bölgeli yada bölgesi tanımlanamayan 83 (%52,4) şeklindedir.

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Table 1. The observation times of rain and temperature in the stations

Station	High (m)	Observation	Observation Times (Year)
Şile	39	Rain –Temperature	42
Göztepe	31	Rain –Temperature	52

Table 2. The minimum average temperature of the stations (°C)

Station	High (m)	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Göztepe	39	2.7	2.6	3.7	7.3	11.8	15.7	18.1	18.3	15.3	11.8	8.5	5.1
Şile	31	2.5	2.8	3.5	7.0	11.3	15.2	17.9	18.5	15.7	12.0	8.5	5.0

Table 3. The maximum average temperature of the stations (°C)

Station	High (m)	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Göztepe	39	8.6	8.9	11.2	16.4	21.5	25.9	28.3	28.5	24.9	20.3	15.5	11.2
Şile	31	8.5	9.1	10.3	14.4	18.8	23.2	25.3	25.6	22.9	19.0	15.2	11.2

Table 4. The average annual rainfall (mm)

Station	High (m)	O.T	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Annual
Göztepe	39	55	96.1	76.2	62.9	44.0	32.1	24.1	22.9	24.7	46.9	64.6	84.8	107.4	686.6
Şile	31	47	113.1	69.2	67.2	43.9	37.2	29.0	27.2	39.2	68.4	95.6	98.7	113.9	802.6

Table 5. The seasonal rain amount and the rain of regime

Station	Winter		Spring		Summer		Autumn		Total	Rain of regime
	mm	%	mm	%	mm	%	mm	%	mm	
Göztepe	279.7	40.73	139	20.25	71.7	10.45	196.3	28.60	686.6	W.A.S.S.
Şile	296.2	39.90	148.3	18.47	95.4	11.89	262.7	32.73	802.6	W.A.S.S.

a: Göztepe b: 39 m c: 686.6mm d: 14.0 °C e:28.5 °C f: 2.6°C

Table 6. Ömerli Dam and the other study areas compare with the phytogeographic regional elements

The study area	Irano-Turanian	Mediterranean	Euro-Siberian	Multiregional
The flora of Karadağ (Karacabey, Bursa)	% 0.9	% 19.9	% 16.3	% 62.8
The flora of Uludağ University Campus	% 1	% 22	% 10.8	% 66
The flora of the surrounding Ömerli Bam Paşaköy / İstanbul	% 2	% 20	% 25.6	% 52.4

Table 7. The comprasion in between floras closed to the study area from the aspect of families.

Families	Kocaeli –Maşukiye	Karacadağ	Uludağ Üniv.	Paşaköy- İstanbul
Compositae	23	36	52	17
Leguminosae	19	14	45	16
Gramineae	25	24	16	11
Rosaceae	12	10	13	9
Labiatae	18	13	19	8

a: Göztepe b: 39 m c: 686.6mm d: 14.0 °C e:28.5 °C f: 2.6°C

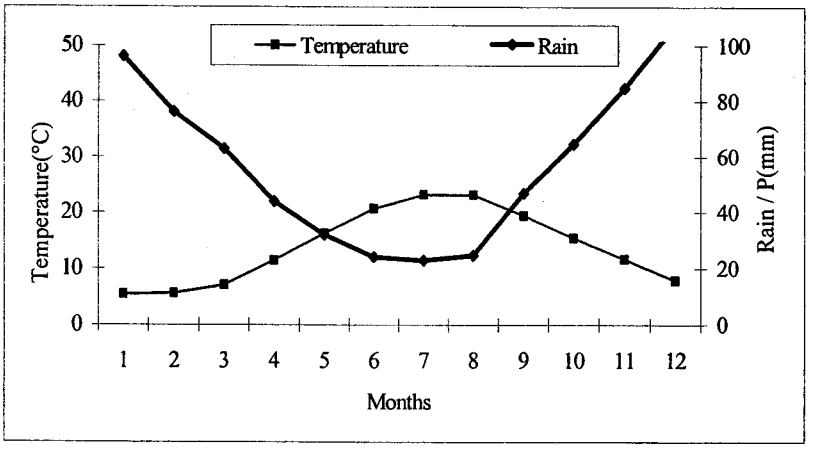

Figure 1: The Ombro-Thermic Diagram of Göztepe Station

b: Şile b: 31m c: 802.6mm d: 13.4°C e: 25.6°C f: 2.5°C

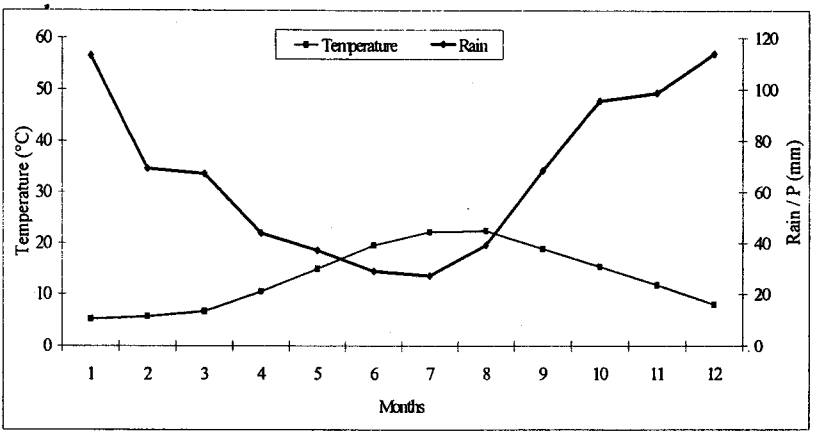

Figure 2: The Ombro-Thermic Diagram of Şile Station

a: The name of station
b: The station high from the sea (m)
c: The total amount of yearly rain (mm)
d: The total amount of yearly temperature (°C)
e: The maximum avarege temperature of the hottest mounth (°C)
f: The minimum avarege temperature of the lowest mounth (°C)
g: The drought period

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