

## A SYNTAXONOMICAL ANALYSIS OF THE ASH FOREST IN THE VICINITIES OF ADAPAZARI

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### SUMMARY

This study was carried out on the vegetation of ash forest in the north-west of the Black Sea. The vegetation which is under the effective control of a transitional type of Mediterranean and Oseanic climate was analyzed according to the Braun-Blanquet approach. The association described here was included in the order *Populetalia* regarding its ecologic and floristic peculiarities

### INTRODUCTION

This study was carried out to research the vegetation of Süleymaniye ash forest located in the area where the streams of Mudurnu and Dinsiz joins to Sakarya river, in the north east of Adapazarı province.

Although Adapazarı Süleymaniye ash forest was researched at the previous works from the forestry point of view, it has not been investigated in respect of ecology and phytosociology so far. In this study, Süleymaniye ash forest was analyzed from the point of syntaxonomical view and the sociological units which belongs to the community were determined. During the study, much more attention has been paid to the description of the plant community and its relationship to various environmental factors.

### MATERIAL and METHODS

During the years 1981-1982 extensive phytosociological investigations were carried out in order to determine the sociological units in the area and at the same time the plant specimens were collected and the quadrats belonging to plant community were done.

A great deal of the plant specimens were identified by the authors in the herbarium of the biology department of the Science Faculty of Ankara and some were sent to the other herbaria.

The classic Braun-Blanquet approach was used in order to analyse the community. The size of the quadrats were estimated by means of "minimal area".

The climatological data of the study area were obtained from the meteorological bulletins of State Meteorological Service of Turkey.

### BRIEF DESCRIPTION OF THE STUDY AREA (Map: 1)

The study area is situated in the region where the streams of Mudurnu and Dinsiz joins to Sakarya river, in the north-east of Adapazari province. Some rivulets indicating a rather high ground-water level in forest run through the woodland often filled with water during the winter.

The soil on which the vegetation grows is generally representative of alluvial characteristics and they are formed from alluvial deposits which has been brought by the streams of Mudurnu and Dinsiz.

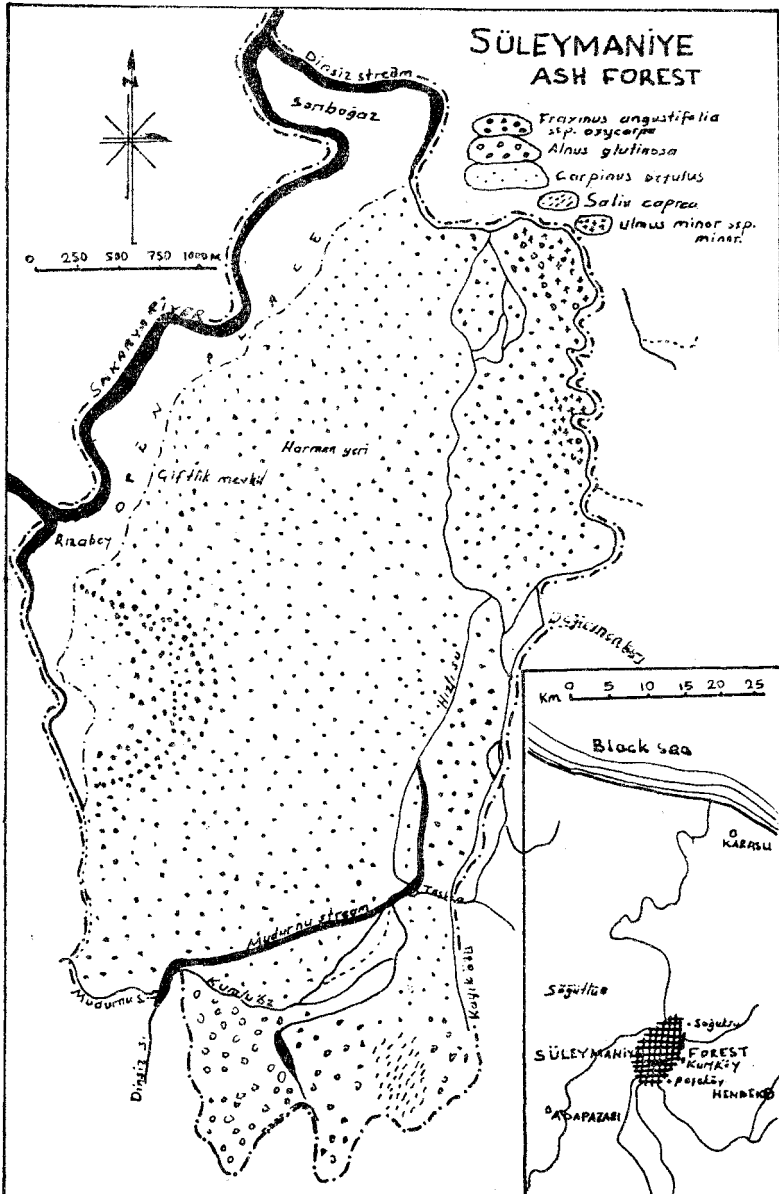
### CLIMATE

The climatic data of Adapazari station were used in order to explain the climate of the area. In this station, the annual precipitation is 797.8 mm according to the seasons, the precipitation decreases from winter to summer indicating a regime of Centre Mediterranean (W, A, Sp, Sm).

The mean annual temperature of the study area is 14.2°C, while the mean minimum temperature of the coldest month (m) 2.1 °C and the mean maximum temperature of the hottest month (M) 29.4 °C.

The bioclimatological values obtained by the present data are as follows:

Altitude	m	P (mm)	M (°C)	m (°C)	Q2	S:PF/ME	Type bioclimate
Adapazari	30	797.8	29.4	2.1	100.1	4.7	Transitional type of Mediterranean and Oseanic



According to the pluviothermic quotient of Emberger ( $Q_2$ ), the area is under the influences of a Transitional climate between Mediterranean and Oseanic bioclimate.

## VEGETATION

The study area is situated within the boundary of the Euxine province of Euro-Siberian region from the phytogeographical point of view.

*Fraxinus angustifolia* subsp. *oxycarpa* forest covers approximately 1650 hectares of the land. Today this area is surrounded by the fields and cultivated lands. In that way it is more or less isolated from other areas with a natural or seminatural vegetation cover. This forest was destroyed in the past because of its timber value. Especially, it was exposed to the intensive cuttings in the tree layer and grazing. But at the end of the recent years heavy cuttings have been ceased, because the area was administratively controlled by the State Forest Commission. Since then, the area has been left to itself, except for some small cuttings.

The tree layer of the forest are formed by *Fraxinus angustifolia* subsp. *oxycarpa* (80 %), *Ulmus minor* subsp. *minor* (5 %), *Quercus pedunculiflora* (5 %), *Alnus glutinosa* (5 %) and *Carpinus betulus*, *Acer campestre*, *Salix caprea* (5 %)

Some of the species, such as *Ulmus minor* subsp. *minor*, *Acer campestre* and *Quercus pedunculiflora* especially occur within the eastern sites of the forest. Although *Alnus glutinosa* is generally widespread all over the forest, it particularly appears in the southern sites. On the other hand, *Salix caprae* was also observed in south-east and *Carpinus betulus* was observed in western part of the forest as patches.

*Fraxinus angustifolia* subsp. *oxycarpa*-*Euphorbia altissima* association (Table no 1)

*Characteristics and differential species :*

The association has been characterized by *Fraxinus angustifolia* subsp. *oxycarpa*, *Euphorbia altissima*, *Oenanthe aquatica*, *Oenanthe fistulosa*, *Myosotis laxa* subsp. *caespitosa* and *Leucosium aestivum*.

*Habitat and Structural characteristics :*

This associations of which tree layer is composed of *Fraxinus angustifolia* subsp. *oxycarpa*, *Ulmus minor* subsp. *minor* *Quercus pedunculiflora* and *Carpinus betulus* has been localized on the alluvial

Table 1: *Fraxinus angustifolia* subsp. *oxycarpa*-*Euphorbia altissima* association

Quadrat no	25	26	27	28	98	99	95	94	97	96	128	129	130	131	132	Presence
Area of the quadrat (m <sub>2</sub> )	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
Altitude (m)	20	20	20	20	25	25	25	25	25	25	20	20	20	20	20	
Direction	—	—	—	—	S	S	S	S	S	S	—	—	—	—	—	
Slope (%)	—	—	—	—	2	2	2	2	2	2	—	—	—	—	—	
<b>Characteristic and differential species:</b>																
<i>Fraxinus angustifolia</i> subsp. <i>oxycarpa</i>	45	55	55	55	45	45	44	44	44	44	45	45	45	45	45	V
<i>Euphorbia altissima</i>	33	23	23	23	33	33	33	33	33	33	23	23	23	23	23	V
<i>Oenanthe aquatica</i>	.	++	.	.	+1	+1	++	++	+1	.	.	++	+1	.	.	III
<i>Oenanthe fistulosa</i>	++	+1	+1	.	+1	.	++	.	.	.	.	.	.	.	.	II
<i>Myosotis laxa</i> subsp. <i>caespitosa</i>	.	.	.	.	+1	+1	.	+1	+1	+1	.	.	.	.	.	II
<i>Leucosium aestivum</i>	++	++	++	++	.	.	.	.	.	.	.	.	.	.	.	I
<b>The characteristic of the Querco-Fagetea and Querco-Fagea:</b>																
<i>Ulmus minor</i> subsp. <i>minor</i>	+	+	+	+	.	.	+	.	+	.	++	++	++	++	++	IV
<i>Hedera helix</i>	++	.	++	++	.	.	.	++	++	.	.	++	++	++	++	III
<i>Lapsana communis</i> subsp. <i>intermedia</i>	.	+1	.	+1	.	+1	.	.	.	+1	.	+1	.	+1	.	II
<i>Carpinus betulus</i>	.	.	.	.	+	.	+	+	+	+	.	.	.	.	.	II
<i>Rubus ideaeus</i>	11	11	11	11	.	.	++	.	.	.	.	.	.	.	.	II
<i>Ranunculus brutius</i>	+1	.	+1	+1	.	.	+1	.	.	.	.	.	.	.	.	I
<i>Tamus communis</i>	++	++	++	++	.	.	.	.	.	.	.	.	.	.	.	I
<i>Poa nemoralis</i>	+1	+1	+1	+1	.	.	.	.	.	.	.	.	.	.	.	I
<b>The characteristic and preferential species of the Populetalia:</b>																
<i>Rumex conglomeratus</i>	++	++	++	++	12	12	++	++	12	12	++	++	.	++	++	V
<i>Galium palustre</i>	.	+1	+1	+1	.	+1	+1	+1	+1	+1	+1	+1	+1	+1	+1	IV
<i>Lysimachia vulgaris</i>	12	12	+1	12	+1	+1	12	12	+1	+1	+1	+1	+1	.	.	IV
<i>Potentilla reptans</i>	++	++	++	++	++	++	++	++	++	++	.	.	.	++	++	IV
<i>Carex pendula</i>	.	++	++	++	++	++	++	++	++	++	.	++	.	++	++	IV
<i>Alnus glutinosa</i>	11	11	11	11	+	+	+	+	+	+	.	.	.	.	.	III
<i>Populus alba</i>	.	+	.	+	.	.	.	+	+	+	.	.	.	.	+	III
<i>Oenanthe silaifolia</i>	.	.	.	.	+1	+1	+1	+1	.	.	.	++	++	.	++	III
<i>Cornus sanguinea</i> subsp. <i>australis</i>	.	++	++	++	.	.	.	.	.	.	++	++	++	++	++	II
<i>Sambucus ebulus</i>	++	++	.	.	++	.	++	.	.	.	.	.	.	.	.	I
<b>Other species:</b>																
<i>Urtica dioica</i>	12	+1	11	11	+1	+1	+1	+1	+1	+1	+1	+1	.	+1	+1	V
<i>Plantago major</i>	++	.	++	.	++	++	++	++	++	++	++	++	++	++	++	IV
<i>Alisma plantago-aquatica</i>	.	+1	+1	+1	++	++	++	.	.	.	++	+1	++	++	+1	IV
<i>Prunella vulgaris</i>	+1	++	+1	+1	++	++	+1	.	.	.	.	.	++	+1	+1	III
<i>Trifolium repens</i> var. <i>repens</i>	++	+1	.	.	+1	+1	+1	+1	+1	.	.	+1	.	+1	+1	III
<i>Poa bulbosa</i>	+1	+1	+1	+1	.	.	.	.	.	.	+1	+1	+1	+1	+1	III
<i>Trifolium resupinatum</i> var. <i>resupinatum</i>	+1	.	.	.	+1	+1	+1	+1	.	.	.	.	+1	+1	+1	III
<i>Capsella bursa-pastoris</i>	++	.	+1	.	+1	.	.	+1	.	.	++	.	++	++	+1	III
<i>Poa annua</i>	.	+1	.	.	++	.	.	++	.	+1	+1	.	++	.	++	II
<i>Smilax aspera</i>	.	.	.	.	++	++	++	++	++	++	.	.	.	.	.	II
<i>Ranunculus marginatus</i> var. <i>trachycarpus</i>	.	.	.	.	+1	+1	++	+1	+1	++	.	.	.	.	.	II
<i>Galium rotundifolium</i>	+1	+1	+1	+1	.	.	12	.	12	.	.	.	.	.	.	II
<i>Rubia tinctoria</i>	+1	.	+1	+1	.	.	+1	.	.	.	++	.	+1	.	.	II
<i>Quercus pedunculiflora</i>	+	.	.	.	+	+	+	+	+	.	.	.	.	.	.	II
<i>Salix caprea</i>	.	+	+	+	+	.	+	.	.	.	.	.	.	.	.	II
<i>Platanus orientalis</i>	.	+	+	+	.	.	.	+	+	+	.	.	.	.	.	II
<i>Oenanthe pimpinelloides</i>	+1	+1	+1	.	+1	.	+1	.	.	.	.	.	.	.	.	II
<i>Acer campestre</i>	+	+	+	+	.	.	.	.	.	.	.	.	.	.	.	I
<i>Viola odorata</i>	.	++	++	++	.	++	.	.	.	.	.	.	.	.	.	I
<i>Rosa canina</i>	.	.	.	.	.	.	.	.	.	.	++	++	++	++	.	I
<i>Euphorbia stricta</i>	.	.	.	.	.	.	.	.	.	.	+1	+1	+1	+1	.	I
<i>Dactylis glomerata</i>	.	.	.	.	.	.	.	.	.	++	+1	+1	+1	+1	.	I
<i>Oxalis acetosella</i>	.	.	.	.	+1	.	+1	+1	.	.	.	.	.	.	.	I
<i>Bellis perennis</i>	.	.	.	.	.	+1	.	+1	+1	.	.	.	.	.	.	I

soils carried by the streams of Mudurnu and Dinsiz and Sakarya river. Some species such as *Hedera helix*, *Rubus ideaus*, *Cornus sanguinea* subsp. *australis* and *Sambucus ebulus* constitutes the shrub layer. Although the study area is exposed to the several external effects, it exhibits a well homogeneous type of vegetation from the point of floristic and physiognomic view due to the phytogeographical situation of the area in which some species such as forestrial and marshy ones are together grown.

#### *Distribution :*

This association is widespread in the east of Sakarya river, in the north of Paşaköy, in the west of Kurtköy and in the south-west Soğuksu willage.

#### *Syntaxonomy :*

The association was considered within the order *Populetalia* due to its floristic and ecological characteristics.

### DISCUSSION

*Fraxinus angustifolia* subsp. *oxycarpa* extending from Portugal and Spain to Balkans, Crimea and to Turkesten (Rehber, 1962; Muray, 1968; Karpatı, 1970; Franco, 1972) has a distribution in the distinct geographical region of Turkey, particularly as patches in all Black Sea zone. But the pure stands of this species has been encountered in Longos forests of İğne ada and Süleymaniye forest cited here.

During the years 1962–1967 sylvatic investigations on the ash forests were carried out by Pamay, Acatay and Kalıpsız in Süleymaniye and Longos forests in order to research only from the forestry point of view and this species was also declared by Ekim, 1977 within the *Pinus brutia* and *Quercus cerris* associations in Eskişehir Sündiken forests. On the other hand, during the extensive ecological and phytosociological researchs carried out by Akman, Quēzel and Barbēro, 1978 in Black sea region was determined the *Alnus glutinosa*–*Fraxinus excelsior* association.

This association determined here displays a high smilarity to the Longos forests from the floristic point of view and there is also smilarity between *Alnus glutinosa*–*Fraxinus excelsior* association described by Akman, Quēzel and Barbēro, 1978 in Black sea region in respect to the their syntaxonomical and floristical characteristics.

In the study, this association has been considered in the order *Populetales* because of its characteristics and dominant species.

## ÖZET

Bu araştırma batı Karadeniz bölgesinde Adapazarı vilayetinin kuzey doğusunda Mudurnu ve Dinsiz sularının Sakarya nehrine karıştığı yerde bulunan Süleymaniye Dışbudak ormanının vejetasyonunu araştırmak amacı ile gerçekleştirilmiştir. Akdeniz-Oseyanik geçiş iklim tipinin etkisi altında bulunan araştırma alanının vejetasyonu Braun-Blanquet metoduna göre analiz edilmiş olup, tanımlanan bitki birliği *Populetales* ordosu içerisinde değerlendirilmiştir.

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