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A Phytosociological Investigation on Forest and Dry Stream Vegetation of Karacadağ (Şanlıurfa/Diyarbakır)

***Ömer Faruk KAYA[1], Osman KETENOĞLU[2], M. Ümit BİNGÖL[2]**
[1]Harran University, Science & Art Faculty, Department of Biology, Şanlıurfa, Turkey
[2]Ankara University, Science Faculty, Department of Biology, Ankara, Turkey
*Corresponding author: phytosociologist@gmail.com

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Abstract
This research was carried out on the forest and dry stream vegetation of Karacadağ, in Southeastern Anatolia. The vegetation was analyzed according to Braun-Blanquet (1965) approach. Three new plant associations, *Nepeto trachionatae-Quercetum brantii*, *Teucrio multicauli-Crataegetum aroniae* and *Acantho dioscoridi-Viticetum agni-casti*, were described in the study area.
Key words: Karacadağ, Forest, Dry stream, Vegetation, Phytosociology

Karacadağ (Şanlıurfa/Diyarbakır)'ın Orman ve Kuru Dere Vejetasyonu Üzerine Fitososyolojik Bir Araştırma

Özet
Bu araştırma, Güneydoğu Anadolu'daki Karacadağ'ın orman ve kuru dere vejetasyonu üzerine yapıldı. Vejetasyon, Braun-Blanquet (1965) yöntemine göre incelendi. Çalışma alanında üç yeni bitki birliği, *Nepeto trachionatae-Quercetum brantii*, *Teucrio multicauli-Crataegetum aroniae* and *Acantho dioscoridi-Viticetum agni-casti*, tanımlandı.
Anahtar Kelimeler: Karacadağ, Orman, Kuru dere, Vejetasyon, Fitososyoloji

Introduction

The first knowledge about the phyotosociological studies about Turkey was given by Handel-Mazzetti (1909), Krause (1915; 1940), Schwarz (1935; 1938), Czeczott (1938), Louis (1939), Maleev (1940), Walter (1956a; 1956b), Regel (1959); starting from the 1960s, Quézel (1973) and Quézel et al.; have published important studies (1973; 1978; 1980; 1992). The first Turkish botanist who was curious about phytosociology was Birand (1947; 1954; 1960; 1970). By the help of these studies, maquis and phrygana formations are investigated and classified from the phytosociological point of view, apart from the East and Southeast Anatolian steppe and oak forests of Turkey, other forests, central Anatolia, Aegean and Mediterranean steppe formation, Aegean, Mediterranean and the Black Sea sandy coasts.

Southeastern Anatolia Region, which is usually a broad plateau in its entirety located between the external edge of the arc of Southeast Taurus Mountains and Turkish-Syrian border, attracts attention with the simplicity and plainness of its geographical patterns. This plateau consists of medium-height domed mountains and hills, which shows a gradual decline from north to south and finally meets the plains of Mesopotamia. Diyarbakır basin, located in the eastern half of the region, is surrounded by Taurus Mountains in the north and north-east, Mardin-Midyat threshold in the south, and Karacadağ volcanic mass in the west (Sözer, 1984) (Figure 1).

Southeastern Anatolia, bordered by Taurus Mountains in the north and Syria-Iraq dry climate zone in the south, includes broad steppe areas. Forests found at the edge of such steppes which have been exposed to destruction throughout ages consist of coppice oak communities, which are mostly used for meeting local fuel needs.

Southeastern Anatolia is the most forest-poor region of Turkey. In the lowlands and plateau planes in the south part of the region, forest communities can be encountered. This is reported to have caused by steppe conditions rather than human destruction. Forests can be found in the mountains in or

around these steps. Forests in these mountains used to cover a huge area in the past. The extensions of these forests form the deciduous forests of Eastern Anatolia starting from the southeast Taurus. Lack of uninterrupted forests in these areas is due to human pressure and irregular, haphazard grazing rather than growing conditions. Grazing pressure during summer months and fresh shoot and leaf exploitation in August, combined with fuel wood needs during winter months have caused the consumption of forests in several areas (Boydak, 1994).

There are four Irano-Turanian sectors in Turkey: the cold steppe sector of eastern Anatolian highlands, the central Anatolian temperate sector, the central and southern sectors of eastern Anatolia and the warmer Mesopotamian sector of southeastern Turkey (district of Mardin-Urfa) (Zohary, 1973). Karacadağ exists in Mesopotamian sector. Karacadağ, with a height of 1000-1981 m is split by small tributaries most of which dry during summer. The west part of Karacadağ is barely high until Euphrates river basin and similar to Şanlurfa terrain, which means that this area covered by Eocene and Miocene limestones looks like a desert with its unique morphological character (M.T.A., 1962)

Karacadağ is not too high; nor does it look like a massive mountain. Broad lava plateau which consists of Karacadağ shows little slope; it is almost flat. However this slope increases slightly at the skirts of Karacadağ. Diyarbakır part of the mountain, which is covered with a thin soil layer, is suitable for plant production. Other parts are covered with large and small volcanic rocks. Karacadağ mass is fragmented by valleys which extend radially from the centre to the periphery. Two fault lines attract attention on the plateau: one of them extends from east to west on Karacadağ, and the other extends more or less parallel to the first one in the south (Sür, 1972).

Material and Methods

Flora of Turkey (Davis, 1965-1985; Davis et al., 1988; Güner et al., 2000) has been used in identifying taxa as a basic resource and Malyer (1983), Kaynak and Ketenoğlu (1986), Kaynak (1989), Ertekin (2002) and Dönmez (2004) studies have been used in some indecisive situations.

The size of the relevés was estimated by means of minimal area and was determined as 400 m^2 for forest vegetation and 25 m^2 for dry stream vegetation. Phytosociological evaluation of floristic tables in terms of phytosociology was made by using Braun-Blanquet (1965) approach. Phytosociological nomenclatural code (Weber et al., 2000) was used in denomination of the new associations. Sørensen (1948) is used to compare defined syntaxa with the similar associations identified in different regions in terms of floristic compositions of them.

Results and Discussion

Three main ejection periods are found in this brad volcanic area created by basalt lavas which are spread over some 7200 km^2 the volcanism which spreads over a very large area ejected basaltic lava in the first period; lavas which are 5-10 m thick in the old valley reach 100 m when exit centers are approached, and 250 m in the east of Siverek district centre where they are the thickest. In the second period, main mass of Karacadağ was formed and basaltic lava flows occurred on the plateau basalts of the first period. Third period basaltic lavas cover a smaller area; they are in the form of diffused and unrelated lava flows (Şaroğlu and Emre, 1987).

In Karacadağ, major soils fields are composed of basaltic soils, brown forest soils, colluvial soils and bare rock which is unused field (Anonymous, 1994; 1995). The soils were analyzed according to Tüzüner (1990). Soil types in the study area have clayish-loamy textured. It is seen that soil parameters are in optimal ratios for the plant growth. There is no relation between the associations and soil texture types in the study area. The chemical properties of the soil in the study area are shown in Table 1.

Table 1. Analysis of the soils taken from the study area (CL:clay-loamy)

Associations	Saturation (%)	Salt (%)	pH	$CaCO_3$ (%)	P_2O_5 (kg/da)	K_2O (kg/da)	Organic matter (%)	Texture
Nepeto trachionatae-Quercetum brantii	65	0.063	6.5	1.1	38.8	77.9	4.8	CL
Teucrio multicauli-Crataegetum aroniae	48	0.065	7.2	1.1	16.6	64.8	1.9	CL
Acantho dioscoridi-Viticetum agni-casti	67	0.052	6.6	1.2	24.1	106.5	2.0	CL

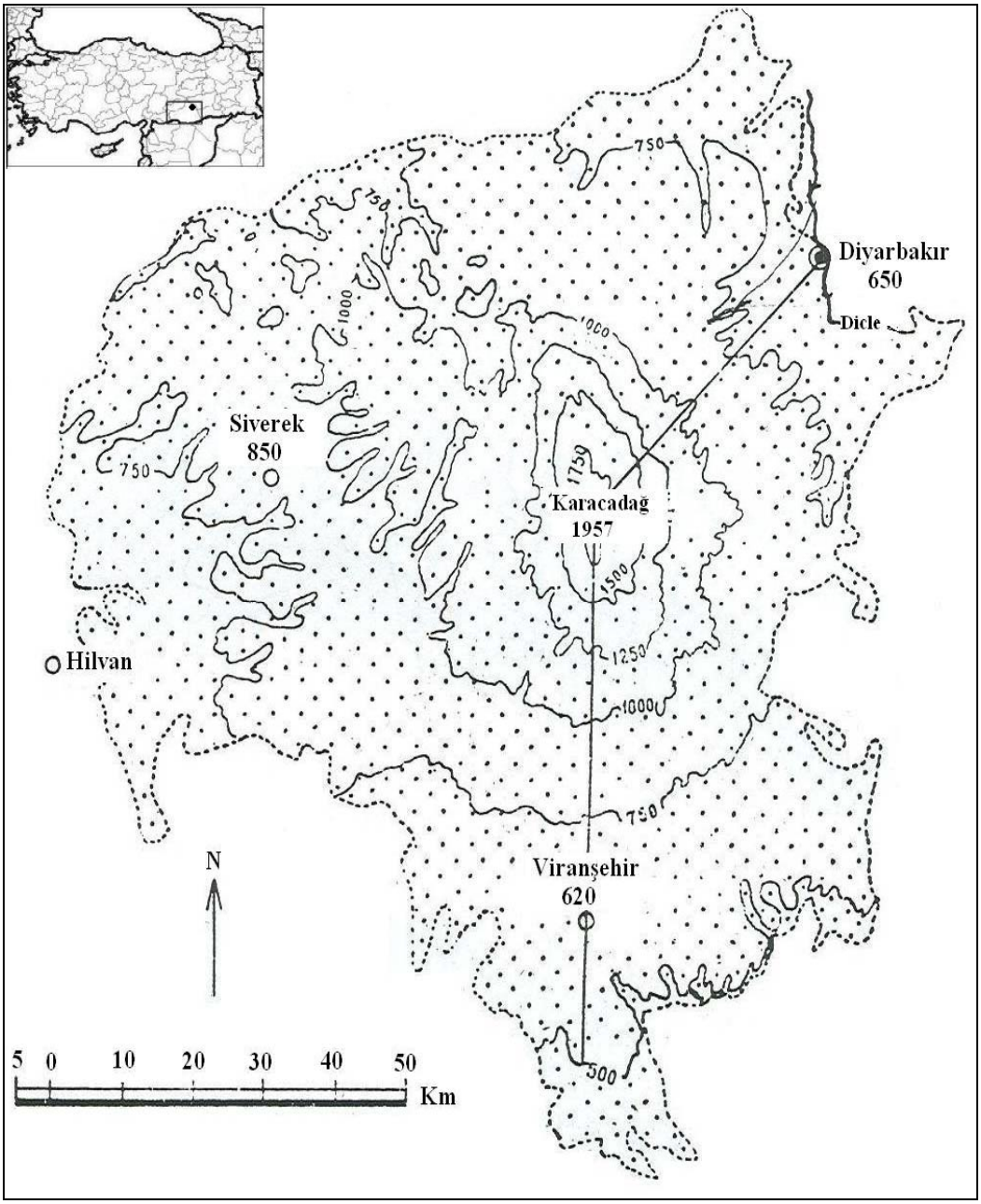

Figure 1. Study area (Ketin, 1982)

Calculations have been made with interpolation for Besrek hill, Bedro plateau, Leblebitaş village where associations were determined for the purpose of displaying the

effect of elevation difference on climatic values and therefore vegetation in the study area. When ombrothermic diagrams of these interpoled points are examined, it was seen that there was less rainfall due to elevation differences and, with the contribution of summer drought, it was even less in the stations at lower levels. Arid period in all of the three stations lasts generally from June to the middle of September (Figure 2).

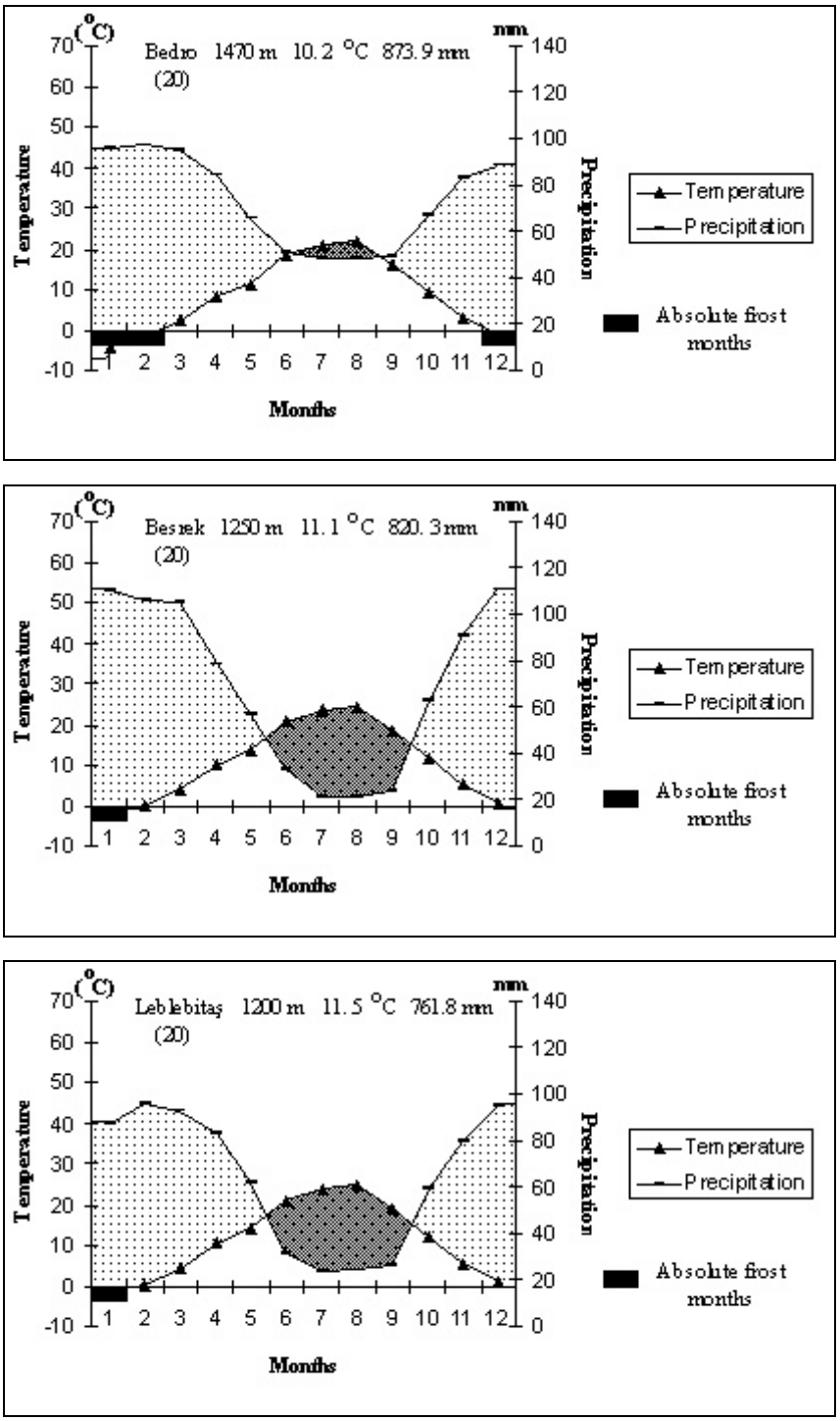

Figure 2. Ombrothermic diagrams

In this study, two vegetation types; forest and dry stream were identified in the area which is a dormant volcano. The associations and the upper units they belong to are as in below (Figure 3):

Forest vegetation

Class: *Quercetea pubescentis* (Oberd. 1948) Doing Kraft 1955

Order: *Querco-Cedretalia libani* Barbero, Loisel & Quézel 1974

Association: *Nepeto trachionatae-Quercetum brantii* ass. nov.

Association: *Teucrio multicauli-Crataegetum aroniae* ass.nov.

Dry stream vegetation

Association: *Acantho dioscoridi-Viticetum agni-casti* ass.nov.

Forest vegetation

***Nepeto trachionatae-Quercetum brantii* ass. nov. (Table 2)**

Holotype: relevé 70, Besrek Hill,

Lat: 37^0 $43^{'}$ $412^{"}$ N, Lon: 039^0 $38^{'}$ $063^{"}$ E, 1240 m., cover 60%, 400 m^2

The association was come across in all of Bersek hill which is northwest of the site and the altitude was 1100-1260 m and also in east hills of Bedro plateau (1435-1475 m) in east of the study area and in west parts of Leblebitaş village (1185-1200 m). The association of which exposition trend change distributes in east, north and west.

The association spreads on volcanic bedrock. The reaction of its soil is slightly acidic (pH 6.5). It has a soil structure with high organic matter (4.8%) and medium salty (0.063). The saturation is 65%. Texture class of the soil is clay-loamy and its structure is low-lime.

The physiognomy is dominated by *Quercus brantii* Lindl. Other characteristic species of association are *Hypericum capitatum* Choisy var. *luteum* Robson, *Nepata trachonitica* Post, *Lathyrus trachycarpus* (Boiss.) Boiss., *Onosma procerum* Boiss.

The association is connected to *Querco-Cedretalia libani* Barbero, Loisel & Quézel 1974, order which belongs to *Quercetea pubescentis* (Oberd. 1948) Doing Kraft 1955 class. This association was identified by Zohary (1973) with the name *Quercetum brantii* in Malatya and Diyarbakır. Zohary (1973) connected this association to *Quercetea brantii* class. However, comparison with the association identified in the site could not be made because Zohary did not present the findings which belong to the association as table. Zohary (1973) defined *Quercetum brantii* as the characteristic association of hills located between Diyarbakır and Mardin.

When this association is compared with *Astragalo lamarckii-Quercetum brantii* by Tel (2001) in Nemrut Mountain in terms of Sørensen (1948) similarity index, it has a low similarity ratio such as 8%.

***Teucrio multicauli-Crataegetum aroniae* ass. nov. (Table 3)**

Holotype: relevé 77, West of Leblebitaş village, Lat: 37^0 $38^{'}$ $368^{"}$ N, Lon: 039^0 $58^{'}$ $211^{"}$ E, 1185 m., cover 50%, 400 m^2

The association distributes in west-east exposition and it sometimes shares same area with *Nepeto trachionatae-Quercetum brantii* association as poor communities in the west parts of Leblebitaş village (1185-1205 m). *Crataegus azarolus* L. var. *aronia* L. determines physiognomy of the association. Other characteristic species of association is *Teucrium multicaule* Montbret & Aucher ex Benth. The association is connected to *Querco-Cedretalia libani* Barbero, Loisel & Quézel 1974, order which belongs to *Quercetea pubescentis* (Oberd, 1948) Doing Kraft 1955 class.

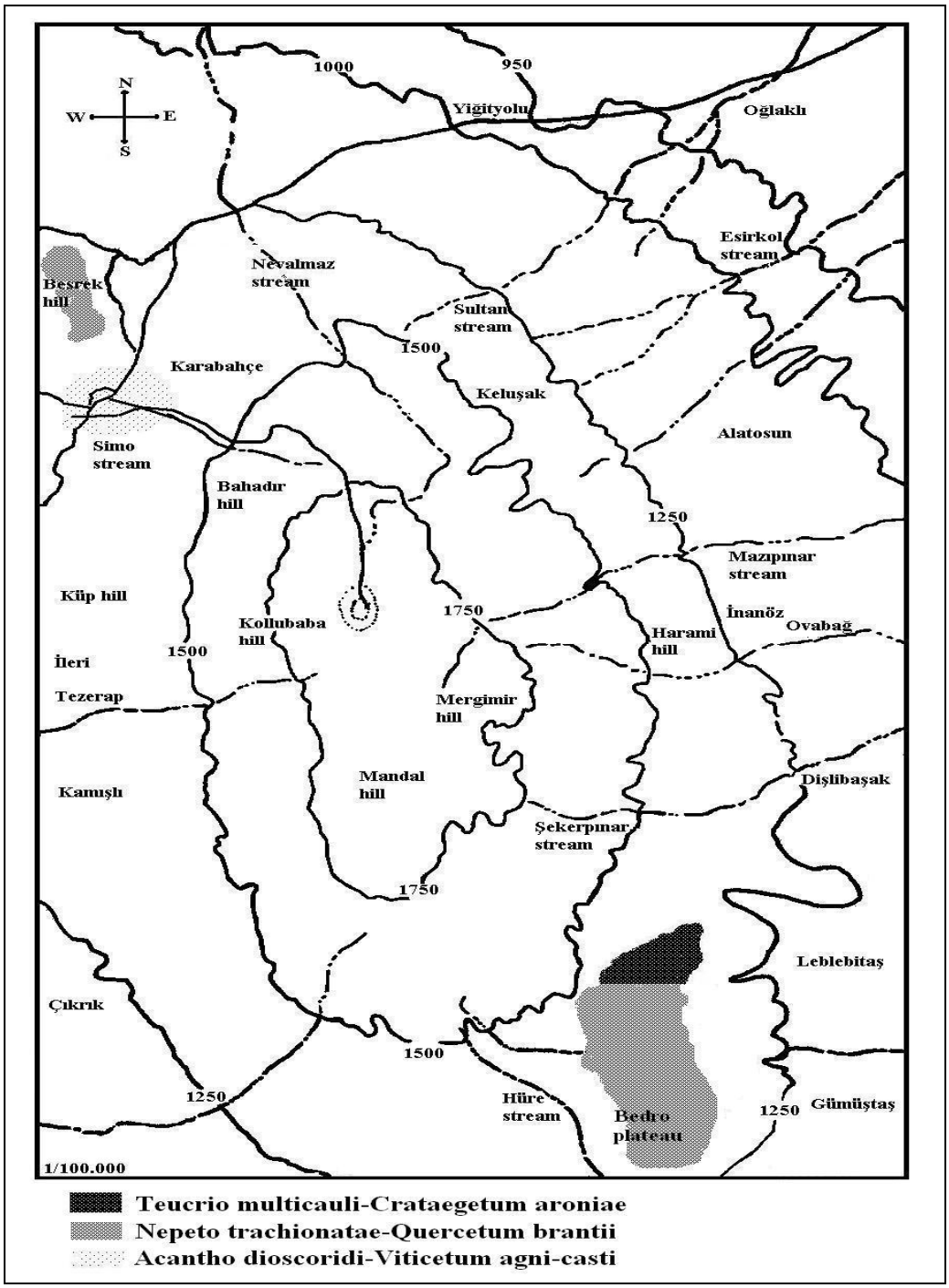

Figure 3. Distribution of associations on Karacadağ

According to Zohary (1973) the distribution of this association is bounded by east and south of the maquis areas of Southeastern Anatolia Region. Zohary (1973) connected the association he defined as *Crataegus aronia-Rhamnus palaestinus* association to *Quercetea calliprini* class, *Quercetelia calliprini* order and to *Crataegion aroniae* alliance. Due to the fact that he did not offer the findings of syntaxonomic units as table and he defined many plant groups with a few sample areas, there was not any opportunity to compare his findings with the association determined in the study area. At aftermath of the studies that will be done in future, the phytosociological situation of this association will be clarified.

Dry stream vegetation

***Acantho dioscoridi-Viticetum agni-casti* ass. nov. (Table 4)**

Holotype: relevé 34, Simo stream,

Lat: 37^0 $46^{'}$ $757^{"}$ N, Lon: 039^0 $46^{'}$ $997^{"}$E, 1390 m, cover 45%, 100 m^2

This association was found in the donga of Simo Brook located in westbound between Karabahçe village in northwest of the area and Kollubaba hill road at 1375-1390 m altitudes. The association disperses in east-west expositions.

Texture class of the soil is clay-loamy and the association spreads on rather low-lime soil. The saturation ratio is 67% and the reaction of the soil is slightly asidic (pH 6.6). It has a soil structure with medium organic matter (2.0%) and medium salty (0.052).

Also, *Vitex agnus-castus* L. association was met with in the dried brook at 1200 m altitude in south parts of Leblebitaş village, but it was not noteworthy.

This association was named as *Viticetum agni-casti* by connecting to *Populetea* class from İzmir by Zohary (1973). Because of the findings about the association were not given through table, any comparison could not be made. When the association is compared with *Euphorbio-Vitetum agni-casti* association identified by Özen and Kılınç (1995) in Gökırmak in terms of Sørensen (1948) similarity index, it has a low similarity ratio of 4.1%.

Conclusion

While Karacadağ was covered by the forest area 40-50 years before (Zohary, 1973), today, these forest areas are replaced by the trees in small groups because of excessive destruction. The trees are found in these small groups are those; *Quercus brantii, Q. infectoria* subsp. *boissieri, Celtis glabrata, Crataegus azarolus* var. *aronia, C. monogyna* subsp. *monogyna, C. orientalis* var. *orientalis, Pyrus syriaca* var. *syriaca, Pistacia khinjuk*, *P. terebinthus* subsp. *palaestina, Cerasus microcarpa* subsp. *tortusa.*

In the study area, forest vegetation have been destroyed because the trees (especially oaks) have been cut for making them fuel and therefore forests have replaced by steppe vegetation in which *Astragalus* L. has a dominant position. Human activities increasing day by day (land clearing or extending agricultural areas, excessive and ill grazing in the natural areas like forage and steppe, for different aims especially for fuel, uprooting of gum tragacanth plants) is the most important factor that threatens the plant diversity in the region.

Unfortunately for today, it can be said that only a small area around the broadcast transmitter and military radar at Kolluaba hill are under protection. As there are no protection efforts in other areas, the destruction on the vegetation continues intensively. Especially Besrek hill, Leblebitaş village, Bedro plateau and upper parts of Gümüştaş village are seen as the areas which should be taken under protection. Because, Karacadağ is one of the important plant and nature areas on which wild plants which are relatives of many Poaceae and Fabaceae plants grow (Özhatay et al., 2003; Anonymous, 2004; Biricik et al., 2006).

Table 2. *Nepeto trachionatae-Quercetum brantii*

	Relevé No	16	22	23	66	67	68	69	**70**	71	72	
	Species number	40	46	49	56	58	57	65	**52**	60	49	
	Size of plot (m²)	400	400	400	400	400	400	400	**400**	400	400	
	Parent rock	Bslt	Bslt	Bslt	Bslt	Bslt	Bslt	Bslt	**Bslt**	Bslt	Bslt	
	Inclination (°)	40	30	20	30	30	35	30	**35**	35	35	
	Altitude (m)	1475	1100	1200	1150	1150	1200	1250	**1240**	1260	1250	
	Exposition	E	N	E	N	NW	N	E	**E**	N	N	**Presence**
	Total cover (%)	85	80	85	85	85	80	90	**90**	90	80	
LF												
	Characteristic species of the association											
P	*Quercus brantii*	44	44	34	44	44	44	34	**44**	44	44	V
H	*Nepata trachonitica*		+1		+1				**11**	+1	+1	III
H	*Hypericum capitatum* var. *luteum*	+1	+1			11			**+1**		11	III
H	*Onosma procerum*				11		11			12		III
Th	*Lathyrus trachycarpus*	+1			11	+1			**12**	11		II
	Quercetea pubescentis* and Querco-Cedretalia libani											
H	*Lecokia cretica*	33		12		12			**12**			II
P	*Quercus infectoria* subsp. *boissieri*						12		**12**	12		II
H	*Vicia cracca* subsp. *stenophylla*					+1	+1		**+1**			II
H	**Trifolium physodes* var. *psilocalyx*			+1					**+1**			I
P	*Cotoneaster nummularia*								**12**			I
	Companions											
Th	*Asperula orientalis*	+1	+1			+1		+1	**+1**		+1	III
Th	*Trifolium nigrescens* subsp. *petrisavii* var. *petrisavii*		+1	+1	+1		+1			+1	+1	III
G	*Allium cardiostemon*		+1				+1		**+1**	+1	+1	III
Th	*Lens orientalis*		+1		+1				**+1**	+1	+1	III
H	*Malabaila secacul*		+1		+1				**+1**	+1	+1	III
Th	*Galium tricornutum*			+1		+1	+1	+1		+1		III
Th	*Turgenia latifolia*				+1			+1	**+1**		+1	III
Th	*Zoegea leptaurea*			+1		+1	+1		**+1**	+1		III
H	*Astragalus mesites*		+1				+1		**+1**	+1	+1	III
Th	*Crepis foetida* subsp. *rhoeadifolia*	+1	+1						**+1**	+1	+1	III
H	*Ferula orientalis*		+1				+1		**+1**	+1	+1	III
Th	*Lathyrus inconspicuus* var. *inconspicuus*	+1	+1		+1			+1			+1	III
Th	*Scandix pecten-veneris*		+1			+1	+1		**+1**		+1	III
P	*Crataegus monogyna* var. *monogyna*			12			22		**12**	12		II
H	*Eryngium campestre* var. *virens*		11	11		11	11					II
H	*Aristolochia bottae*			+1	+1			+1	**+1**			II
Th	*Alopecurus myosuroides* var. *myosuroides*				+1	+1		+1	**+1**			II
H	*Echinops orientalis*		+1					+1		+1	+1	II
Th	*Medicago rigidula* var. *submitis*		+1					+1		+1	+1	II
Th	*Bupleurum kurdicum*	+1		+1				+1	**+1**			II
H	*Nepeta italica*			11				+1	**11**			II
H	*Verbascum lasianthum*					+1		+1		+1		II
H	*Salvia bracteata*				+1				**+1**		+1	II
P	*Cerasus microcarpa* subsp. *tortuosa*			+1		+1	11					II
Th	*Trifolium retusum*				+1	+1			**+1**			II
Th	*Habrosia spinuliflora*				+1			+1	**11**			II
Th	*Vicia lathyroides*			+1	+1				**+1**			II
Th	*Trigonella aurantiaca*			+1			+1	+1				II
Th	*Briza humilis*				+1				**+1**			I
Ch	*Rosa canina*				+1					+1		I
H	*Dianthus strictus* var. *gracilior*					+1			**12**			I
Th	*Legousia speculum-veneris*					+1		+1				I
H	*Achillea teretifolia*	+1		+1								I
Th	*Euphorbia phymatosperma* subsp. *phymatosperma*								**+1**	+1		I
H	*Centaurea urvillei* subsp. *urvillei*	+1										I
Th	*Linaria simplex*								**+1**			I

Table 3. *Teucrio multicauli-Crataegetum aroniae*

	Relevé No	17	73	74	75	76	**77**	78	79	80	81	
	Species number	17	19	19	17	17	**23**	16	15	18	14	
	Size of plot (m²)	400	400	400	400	400	**400**	400	400	400	400	
	Parent rock	Bslt	Bslt	Bslt	Bslt	Bslt	**Bslt**	Bslt	Bslt	Bslt	Bslt	
	Inclination (°)	5	5	5	5	5	**5**	5	5	5	5	
	Altitude (m)	1185	1185	1190	1190	1185	**1185**	1195	1200	1200	1205	
	Exposition	E	E	E	E	E	**E**	E	E	E	E	
	Total cover (%)	60	65	65	60	70	**65**	60	60	65	65	Presence
LF												
	Characteristic species of the association											
P	*Crataegus azarolus* var. *aronia*	33	34	33	33	34	**33**	33	33	33	34	V
H	*Teucrium multicaule*	11		12		11	**11**		+1		11	III
	Quercetea pubescentis* and Querco-Cedretalia libani											
H	*Vicia cracca* subsp. *stenophylla*		+1				**+1**			+1		II
P	*Quercus infectoria* subsp. *boissieri*			12			**12**					I
H	**Trifolium physodes* var. *psilocalyx*					+1	**+1**					I
	Companions											
Th	*Trifolium speciosum*	22	12	22		22	**12**		12	22		IV
Th	*Trifolium pauciflorum*	23	12	23		33	**23**		23	+1		IV
Th	*Aegilops columnaris*		11		12		**12**	+1	12		12	III
Th	*Avena sterilis* subsp. *sterilis*		+1		+1	11	**11**		+1	11		III
H	*Ceratocephalus falcatus*		+1		+1	+1	**+1**			+1	+1	III
Th	*Trifolium campestre*	+1		+1		+1	**+1**		+1	+1		III
Th	*Valerianella kotschyi*	11		+1			**11**	11		12	11	III
Th	*Bromus tectorum*		22	+1			**22**	12		12		III
Th	*Tripleurospermum parviflorum*		12		+1		**12**	12			12	III
H	*Eryngium campestre* var. *virens*		12		11	+1	**11**			11		III
Th	*Rhagadiolus angulosus*	+1		+1		+1	**+1**	+1				III
Th	*Senecio vernalis*	11			11		**11**	+1		11		III
Th	*Trifolium arvense* subsp. *arvense*				11		**12**	12		12	+1	III
H	*Carduus pycnocephalus* subsp. *albidus*	12			12			11	11		12	III
Th	*Clypeola jonthlaspi*	+1		+1	+1				+1		+1	III
P	*Cerasus microcarpa* subsp. *tortuosa*		+1	+1		11	**+1**					II
Ch	*Noaea mucronata* subsp. *tournefortii*		12	+1				+1		+1		II
Th	*Filago pyramidata*			11	12			11	12			II
Th	*Erysimum repandum*			+1			**+1**	+1	+1			II
H	*Verbascum lasianthum*		+1		12			11			11	II
H	*Achillea aleppica* subsp. *aleppica*		11	+1		11	**11**					II
Th	*Picnomon acarna*			11		12			12	11		II
Th	*Fumaria asepala*		+1				**+1**			+1	+1	II
Th	*Callipeltis cucullaria*	11					**11**	+1			+1	II
H	*Tragopogon longirostris* var. *longirostris*	11					**11**	+1		11		II
Th	*Scabiosa rotata*	12				11	**12**			12		II
Th	*Crupina crupinastrum*	+1	+1						+1		+1	II
H	*Eremostachys laciniata*	+1	+1		+1		**+1**					II
P	*Celtis glabrata*		+1						11		12	II
Th	*Bromus japonicus*			12			**11**		12			II
H	*Geranium tuberosum* subsp. *tuberosum*		11	12						12		II
H	*Tragopogon dubius*		11	+1		+1						II
Th	*Habrosia spinuliflora*	11			12		**11**					II
Ch	*Bongardia chrysogonum*			+1		+1						I
Th	*Ziziphora capitata*					+1				11		I
H	*Dianthus hymenolepis*				11							I
Th	*Galium tenuissimum* subsp. *tenuissimum*						**+1**					I
H	*Bryonia multiflora*				+1							I
Th	*Trifolium hausknechtii* var. *candollei*	+1										I

Table 4. *Acantho dioscoridi-Viticetum agni-casti*

	Relevé No	3	31	32	33	**34**	35	36	37	38	39	
	Species number	14	18	23	11	**22**	22	13	19	17	14	
	Size of plot (m²)	25	25	25	25	**25**	25	25	25	25	25	
	Parent rock	Bslt	Bslt	Bslt	Bslt	Bslt	Bslt	Bslt	Bslt	Bslt	Bslt	
	Inclination (°)	2	2	2	2	**2**	2	2	2	2	2	
	Altitude (m)	1390	1385	1390	1375	**1390**	1395	1390	1380	1390	1385	
	Exposition	NW	NW	NW	NW	**NW**	NW	NW	NW	NW	NW	
	Total cover (%)	55	50	50	50	**55**	50	50	50	55	50	**Presence**
LF												
	Characteristic species of the association											
Ch	*Vitex agnus-castus*	34	44	34	44	**44**	34	34	34	44	44	V
H	*Acanthus dioscoridis* var. *dioscoridis*	23	33			**23**	12	22		12		III
H	*Galium consanguineum*	+1				**+1**			+1	+1		II
	Companions											
Th	*Ziziphora capitata*			+1		**+1**	+1	+1		+1	+1	III
Th	*Aegilops columnaris*		+1	+1		**+1**		+1		+1	+1	III
Th	*Rhagadiolus angulosus*	+1	+1		+1		+1			+1	+1	III
H	*Rochelia cancellata*		+1	+1			+1		+1	+1	+1	III
H	*Torilis leptophylla*	+1		+1		**+1**		+1		+1	+1	III
H	*Bryonia multiflora*	+1		+1		**+1**			+1	+1	+1	III
G	*Ornithogalum orthophyllum*	+1		+1			+1	+1		+1	+1	III
Th	*Filago pyramidata*		+1	+1		**+1**	+1		+1			III
Th	*Hordeum bulbosum*		+1			**+1**	+1		+1		+1	III
Th	*Ranunculus arvensis*		+1	+1		**+1**		+1	+1			III
Th	*Trifolium campestre*		+1	+1				+1	+1		+1	III
Th	*Hordeum spontaneum*			+1		**+1**	+1		+1	+1		III
Th	*Roemeria hybrida* subsp. *hybrida*		+1		+1	**+1**			+1	+1		III
Th	*Trifolium retusum*		+1				+1		+1	+1	+1	III
Th	*Legousia speculum-veneris*		+1	+1			+1					III
Th	*Peltaria angustifolia*	+1			+1				+1	+1		II
H	*Silene longipetala*	+1		+1		**+1**	+1					II
Ch	*Ononis spinosa* subsp. *leiosperma*			+1		**+1**	+1			+1		II
Th	*Bromus tectorum*		+1		+1				+1		+1	II
Th	*Bromus japonicus*			+1	+1			+1	+1			II
Th	*Poa bulbosa*			+1		**+1**	+1			+1		II
Th	*Avena sterilis* subsp. *sterilis*		+1		+1		+1	+1				II
H	*Salvia bracteata*				+1		+1			+1	+1	II
Th	*Trifolium hirtum*		11	+1			12		12			II
Th	*Trifolium scabrum*	+1	+1			**+1**		11				II
Th	*Ziziphora tenuior*	+1			+1	**+1**			+1			II
Th	*Trifolium pauciflorum*			+1		**+1**	+1					II
Th	*Scandix stellata*			11		**+1**	12					II
H	*Corydalis rutifolia* subsp. *erdelii*		+1	+1				+1				II
Th	*Helianthemum ledifolium* var. *ledifolium*	+1		+1					+1			II
Th	*Lathyrus vinealis*					**+1**	+1		+1			II
H	*Nepeta nuda subsp.albiflora*	+1				**+1**	+1					II
H	*Convolvulus betonicifolius* subsp. *betonicifolius*	+1	+1			**+1**						II
H	*Torilis leptocarpa*				+1			+1				I
H	*Dianthus strictus* var. *gracilior*			+1			+1					I
Th	*Trifolium hausknechtii* var. *candollei*								+1		+1	I
H	*Pimpinella kotschyana*			+1								I
H	*Umbilicus erectus*					**11**						I

Oak forests around Karacadağ are in the form of small communities in Besrek hill, Bedro plateau and Leblebitaş village, which are destroyed in several sites. In addition, the *Crataegus* L. outside Leblebitaş village are communities which consists of a small number of members, whose lower envelope is destroyed due to gazing. Due to excessive destruction in the study area, both forest and steppe vegetations do not show homogeneous structure. All associations defined in the study area are in the form of open associations with abundant single and double frequency species which indicate the destruction caused by humans. Forest vegetation (deciduous trees) in the study area is represented by two associations.

When the chorology of the taxa detected in the reléves are examined, it was seen that the Irano-Turanian elements had a high level of diffusion in the study area. This conclusion supports the view that the study area is an extension of Irano-Turanian phytogeographic region (Figure 4).

According to Zohary (1973), the warmer Mesopotamian sector of Irano-Turanian phytogeographic region which covers the study area is characterized by chamaephytes and hemicryptophytes taxa. An examination of life forms of the taxa in plant associations agreed with this view (Figure 5).

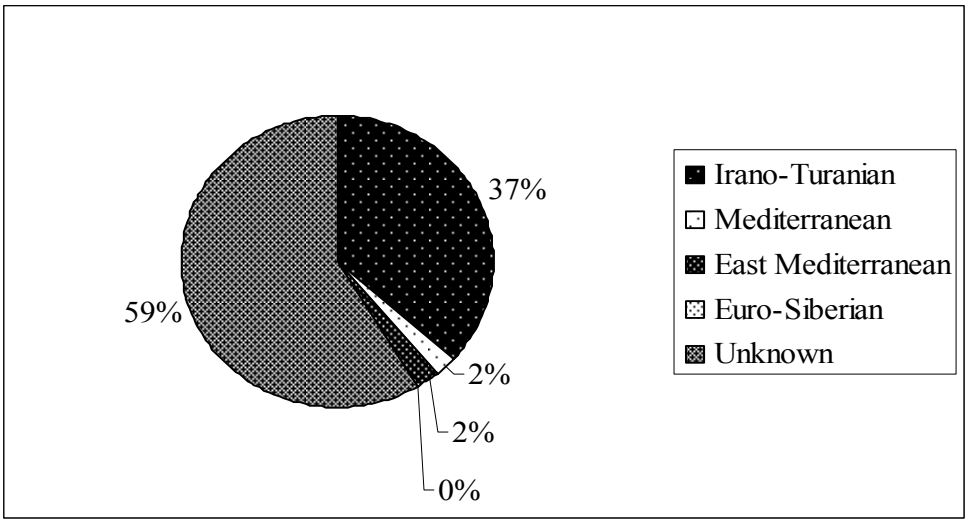

Figure 4. Chorotypes of taxa

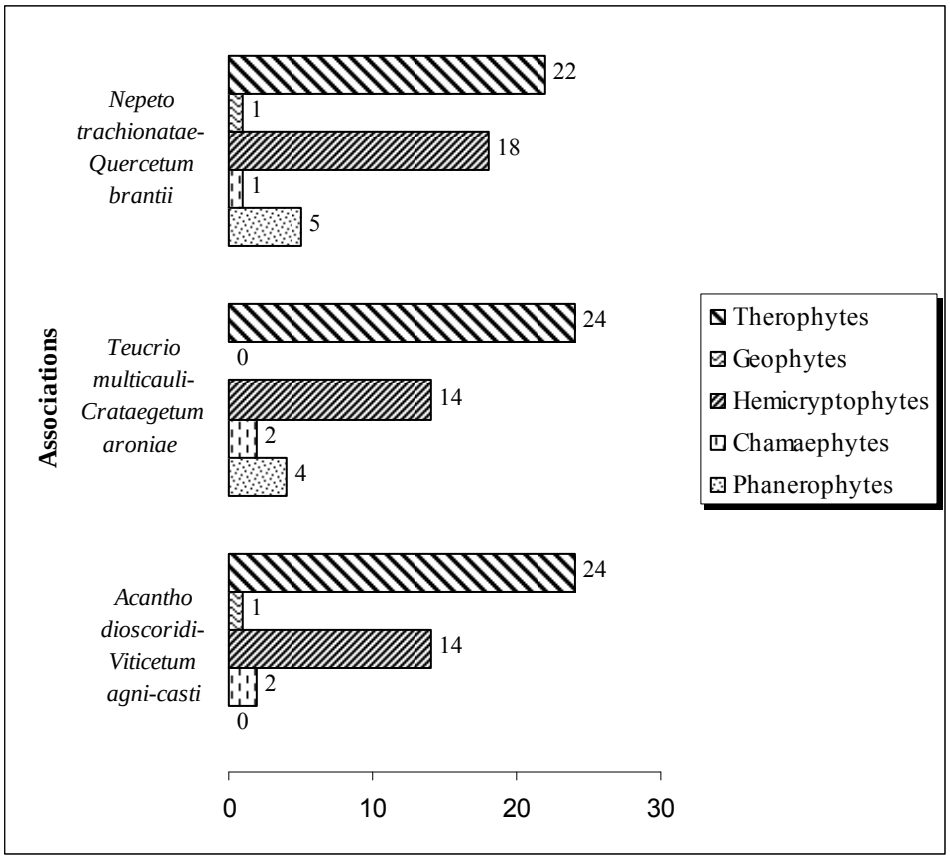

Figure 5. Life form spectrum of the associations

In conclusion, two new association belonging to the forest vegetation and one new association belonging to the dry stream vegetation were identified in the study area. *Nepeto trachionatae-Quercetum brantii* and *Teucrio multicauli-Crataegetum aroniae* were connected to *Querco-Cedretalia libani* order, included in *Quercetea pubescentis* class. Any alliance that these associations can be connected to, could not be found in this class. *Acantho dioscoridi-Viticetum agni-casti* which belongs to dry stream vegetation could not connected in any upper syntaxa.

Appendix: Localities

Relevé no	Date	Localities
3	25.v.2004	C7 Şanlıurfa: Siverek, between Karabahçe village-Kollubaba hill, 4 km, 1375–1395 m, dry stream
31, 32, 33, 34, 35, 36, 37, 38, 39	01.vi.2005	
16	10.vi.2004	C8 Diyarbakır: between Ovabağ-Viranşehir, 5 km from Belek village, Bedro plateau, 1475 m, oak
22	12.vi.2004	C7 Diyarbakır: Ergani, Besrek hill, 1100–1260, oak
23	12.vi.2004	C8 Diyarbakır: between Ovabağ-Viranşehir, 2 km from Leblebitaş village, 1200 m, oak
66, 67, 68, 69, 70, 71, 72	14.vi.2005	C7 Diyarbakır: Ergani, Besrek hill, 1100–1260, oak
17	10.vi.2004	C8 Diyarbakır: between Ovabağ-Viranşehir, 1 km from Leblebitaş village, 1185–1205 m
73, 74, 75, 76, 77, 78, 79, 80, 81	15.vi.2005	

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