

Relationship between a natural monumental stand in Turkey and local beliefs

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Abstract: Northbound roads from Ankara, the capital of Turkey, pass through immensely wide plains containing almost no trees. There is a small hill above Tuney village located at the right side of the road 80 km north of Ankara, and it is conspicuous by a small forest. How did this forest survive until today? This is a curious question for everybody interested in nature. This study aims to review and analyze two different structures of the area: the local peasants who created a myth for the small forest in question, and the forest itself. Informal interview method was employed to understand the peasants' perception of the forest and to get to know them. Inclination of the field ranges between 12-35° four sample quadrats of 400 m², which can best represent the constitution they belong to, were taken in order to find out the stand constitutions in the research site and their various silvicultural properties. There are 10 trees having monumental features in this natural stand. The most magnificent of these trees is 15 m, its diameter is 60 cm and it is estimated to be 500 yr old. The small forest studied herein does not owe its survival to the shaman belief in question; otherwise all juniper forests would have remained intact. The small forest is conserved not because juniper is considered sacred, but the local people pay respect to the evliya's grave there. The most significant conclusion deduced from this case study is environmental protection and local beliefs have closer relationships.

Key words: Cankiri, Crimean juniper, Local beliefs, Monumental stand, Tuney

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Introduction

The forests which have an important place in renewable resources are now mapped taking their various functions into consideration and planned and operated with an understanding which foresees to maintain these principal functions of the forests in a healthy manner. The services and functions provided by the forests which serves lifeless beings as well as living things with the ecosystem it created peculiar to itself are basically classified under five main headings: 1- Protection Function (functions such as soil protection, water protection, protection from the damages of snow-avalanche, road protection, protection of natural and cultural monuments and hiding for military purposes), 2- Climatic Function, 3- Health-aesthetics function, 4- Scientific function and 5- Wood and production of secondary products function (Eraslan, 1971; Sad, 1992; Kahveci, 1992; Genc and Guner 2000). With the increasing environmental pollution, the last expectation of the people of technological age who recently began to approach natural resources, and forests in this context, protectively ever more should be production raw material of wood from the forests (Genc and Guner, 2000).

Besides mountains and crests, caves, rock cliffs, canyons, lime and lava accumulations, corals, spas, water springs, cascades and waterfalls which are formed per se under natural conditions;

individual trees or tree bunches either formed per se or planted by human beings are called "nature monuments". Nature monuments are protected by laws in Turkey as in many other countries, regardless of whether they are owned or not (Gulersoy, 1984; Gumus and Yavuz, 1994; Uzun, 1997; Genc and Guner, 2000). Trees which have much larger sizes than the decorous sizes of their species in terms of age, diameter and height, have a special place in the history, culture and folklore of the locale and is naturally old enough to provide communication between past and present and also present and future are recognized as "monumental trees" (Asan, 1991; Genc and Guner, 2000).

Monumental trees and stands which are unique natural treasures bear the evidence of history like ancient cities and it is impossible to transfer them to next generations by restoring once they are destroyed and they directly influence the psychology of both human and society with aesthetic values they present. Moreover, their richness which should be protected also because of their scientific functions. For example, it is possible to obtain sensitive information about the climatic changes (Ozkan, 1990; Genc and Guner 2000) that the monumental trees experienced throughout their life, insects, fungi and even fires which they were exposed, by examining the "increment cores" taken with "increment borer" (Genc and Guner, 2000).



Monumental trees and stands also represent the living quarters where the said species rarely exist; moreover they are genetic reserves. Furthermore, they are living witnesses of the ecological changes that occurred in their environment throughout their lives of hundreds of years. Therefore the important opportunities they provide in determining the ideal conditions of forming and planting forests increase their importance. However, it is not possible to say that the said monumental trees and stands are well known in Turkey and that even the well known ones are protected as it should have been. Because the fields where monumental trees live are either private property or they could be protected since they are not easily accessible (Asan, 1985; Genc and Guner, 2000). The limited number of registered monumental trees is a clear evidence of this situation (Ozcelik *et al.*, 1998, Genc and Guner, 2000). The painful aspect of the issue is that the number of scientists interested in this subject is also rather limited in our country because it is required to walk for kilometers to reach a monumental tree in some cases. In brief, studies on monumental trees and stands are time taking as well as expensive and exhausting (Genc and Guner, 2000).

Crimean juniper is especially common in Anatolia (less so in its central part) and on the Crimea, with annual precipitation between 500-1000 mm. Its altitudinal range is from c. 100 m (*e.g.* Crimea) to 2300 m in the Caucasus and Turkey. It forms the tree-limit in several mountain ranges (Farjon, 1992).

The species which is most widely dispersed in Turkey after *J. oxycedrus* is seen in northern, western, middle and southern Anatolia and especially on arid and stony sides of Taurus and Antitaurus mountains one by one or in groups. They obtrude into steppe. Although they are resistant to hot and wet places they do not exist or rarely found in "Lemur" vegetation of the Mediterranean region. The species which is highly resistant to cold and arid climates is a tree of continental climate (Ansin and Ozkan 1997; Yaltirik, 1993).

Vegetation gets poorer in general terms from northern to southern Cankiri which situates on the passing band from Black Sea climate to Middle Anatolia climate. Although it is known that almost the entire city was covered with forests before 2-3 century, a large proportion of these forests disappeared or became infertile due to inconvenient climate conditions, forest fires, irregular cutting and grazing (Walter, 1962).

Northbound roads from Ankara, the capital of Turkey, pass through immensely wide plains containing almost no trees. Various reference books note that this plateau, located in central Turkey, had been full of forests in the past. Covering a surface area larger than Switzerland, mankind deprived this region of its forests. The constant pressure of mankind destroyed the local forests, and the soil layer enabling them to grow vanished at sloped areas due to erosion. There is a small hill above a small village located at the right side of the road 80 km north of Ankara and it is conspicuous by a small forest. How did said forest survive to this day? This is a curious question for everybody interested in nature.

This study aims to review and analyze two different structures of the area: the local peasants who created a myth for the small forest in question, and the forest itself. Informal interview method was employed to understand the peasants' perception of the forest and to get to know them. A meeting was held with the prominent people and elders of the village at its guest room to interview them for the purpose of finding out the reasons of their certain beliefs about the forest.

Materials and Methods

The research area is included in the fields of the Central Forestry Management which is connected to Cankiri Forestry Directorate of Ankara Region Forestry Directorate. A total field of the Central Forestry Management is 252528 ha, 17387 ha of which are forests. Forests of the Forestry Management situated between 40° 49' 38"-40° 14' 34"N latitudes and 33° 18' 30"-34° 09' 53"E longitudes (Anonymous, 1996).

This case study focuses on village of Tuney which is rumored to have been established 500-600 years ago. Ancient inhabitants of the area lived in the present city of Cankiri, lived off husbandry, and used Tuney as a highland to bring their livestock for grazing in summer. There are 200 houses in the village, but 60 of them are vacant. The village people are mostly elders and children because of the fact that youngsters and adults had moved to Ankara for employment or education. The village people live off small-scale husbandry and irrigation type of agriculture. They are able to make a living off said agricultural activities, thanks to their small population.

Study area (Fig. 1) is in the A4 square in the grid system of Davis and phytogeographically in the Irano-Turanian floristic region (Davis, 1965-1985). Natural Crimean juniper stand which situates in Tuney village in Cankiri lies on 62 ha between 40°48'38"-40°49'34"N latitudes and 33°17'30"-33°18'53"E longitudes. The stand situates at north and northwest exposures, at 810-960 m elevation and the inclination of the field ranges between 12-35°.

According to the geographic map by M.T.A. Institute to a scale of 1/500 000; the research site is covered by Olygosenmiosen years old gypsum areas which were formed in the III. Era (Blumenthal, 1948).

Juniperus excelsa Bieb. together with *Paliurus spina-christi* Miller., *Artemisia santonicum* L., *Astragalus angustifolius* Lam., *Agropyron repens* (L.) P.Beauv., *Bromus erectus* Hudson., *Bromus tomentellus* Boiss., *Euphorbia macrolada* Boiss., *Festuca heterophylla* Lam., *Hordeum bulbosum* L., *Onosma tauricum* Palas ex Willd. and *Potentilla recta* L. are the principle woody and herbal taxa that complete the floristic structure in the site.

According to the data which includes 1980-2005, given by Cankiri Meteorology Station (Anonymous 2005; Rubner 1949) located at 751 m elevation, annual average temperature is 11.1°C, relative humidity is 67%, precipitation is 417.7 mm. Precipitation activity rate of Cankiri was calculated $Ra = 417.7 / 11.1 = 37.63$. This value, according to Erinc, showed that the climate type of Cankiri

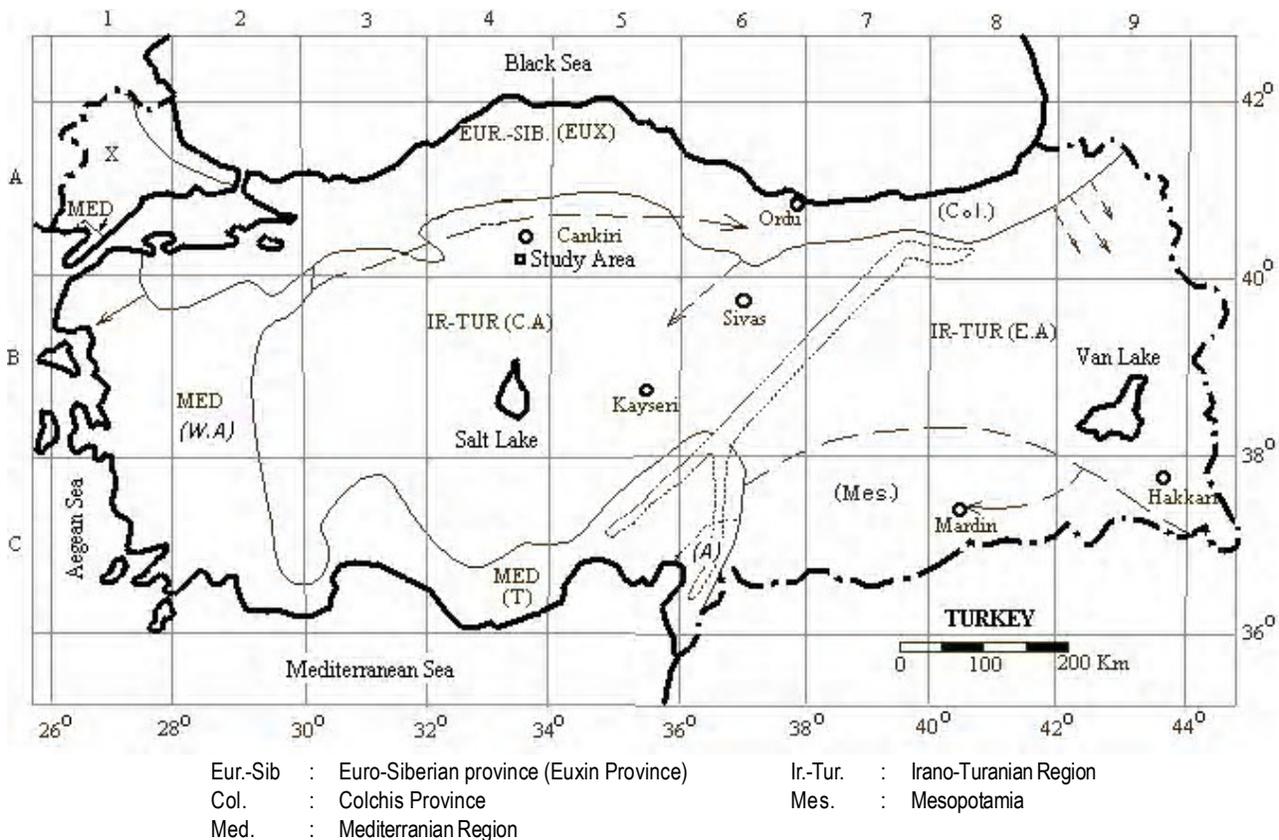


Fig. 1: Study area in floristic regions in Turkey

was semi humid and its vegetation was Park lookalike arid forest (arid district forests) (Cepel, 1966,1995; Ozyuvaci, 1998). According to the Thornthwaite method, Cankiri has an "Arid-Semi arid, Mesoderm, No or little water surplus, Close to ocean climate effect" climate which is shown as $D B_1 d b'_3$ (Cepel, 1966,1995; Ozyuvaci, 1998).

A total of 4 sample quadrats of 400 m² (Scamoni, 1963; Ellenberg, 1956,1967; Cepel, 1966; Aksoy, 1978; Ozalp, 1993), which can best represent the constitution they belong to, were taken in order to find out the stand constitutions at the research site and their various silvicultural properties. The exposure, inclination (°), altitude (m), topography, coverage of trees, shrubs and herbs (%), estimation of percentage cover (Braun-Blanquet, 1951; Scamoni, 1963), height (m), diameter ($d_{1.30}$, cm), crown diameter (m), estimated age and bark thickness (cm) of the representatives of the predominant tree species were found out.

In order to find the crown diameter, radius of the quarter that is within the crown projection of the tree was measured through east, west, north and south and they were summed. Crown diameters were found by dividing this value by two. Diameter was found by dividing the diameter at 1.30 m height from the ground by π (3,14). Heights of trees were measured by hypsometer which has 50 cm sensitivity. Ages were estimated using the number of annual rings ascertained at the increment core which was at least 15 cm high and was taken at 1.30 m height with increment borer. For this purpose,

the number of rings which was ascertained in accordance with the length of the increment core was interpolated by the diameter of the tree without bark. The time (years) in which the tree reached 1.30 m height was not taken into consideration (Genc and Guner, 2000).

Results and Discussion

Data related to the samples taken from the research site are given in Tables 1-2. The stands located between 810-960 m, on north and north west exposures and between 12-35° inclinations. The coverage of tree layer ranges between 50-70%, the coverage of shrub layer ranges between 10-40% and the coverage of herbs ranges between 20-30% in the locale. *Juniperus excelsa* Bieb forms the tree layer of the stand with 26-75% coverage degree. This species is accompanied by *Paliurus spina-christi* Miller at the shrub layer with 6-25% coverage ratio. The species in the herb layer are; *Artemisia santonicum* L., *Astragalus angustifolius* Lam., *Agropyron repens* (L.) P.Beauv., *Bromus erectus* Hudson., *Bromus tomentellus* Boiss., *Euphorbia macrolada* Boiss., *Festuca heterophylla* Lam., *Hordeum bulbosum* L., *Onosma tauricum* Palas ex Willd. and *Potentilla recta* L. Heights of the junipers in the stand range between 5-15 m; dbh between 23-60 cm; crown diameters between 3.7-8.9 m; bark thicknesses between 0.3-0.6 cm and estimated ages between 170-500 yr.

There are 10 trees having monumental features in this natural stand (Table 2, Sample Quadrante No: 4, Tree No: 1-10). The most magnificent of these trees is 15 m, its diameter is 60 cm and

Table - 1: Site and stand characteristics of sample quadrats

	Quadrat no. 1	Quadrat no. 2
Size of quadrat (m ²)	400	400
Altitude (m)	810	820
Exposure	NW	N
Inclination (°)	12	18
Coverage of trees (%)	50	60
Height of trees (m)	7	11
Coverage of shrubs (%)	40	20
Height of shrubs (m)	5	4.5
Coverage of herbs (%)	20	30
Height of herbs (cm)	40	30
Species	Estimation of percentage cover	
<i>Juniperus excelsa</i>	3	4
<i>Paliurus spina-christii</i>	2	.
<i>Artemisia santonicum</i>	1	.
<i>Astragalus angustifolius</i>	1	+
<i>Agropyron repens</i>	+	.
<i>Festuca heterophylla</i>	.	+
<i>Bromus tomentellus</i>	.	+
<i>Bromus erectus</i>	1	.
<i>Potentilla recta</i>	+	.
<i>Hordeum bulbosum</i>	.	1
<i>Euphorbia macrolada</i>	.	1
<i>Onosma tauricum</i>	.	+

Tree no.	Species	Height (m)	Estimated age (yr)	Diameter at breast height (d _{1.30}) (cm)	Crown diameter (m)	Bark thickness (cm)	Height (m)	Estimated age (yr)	Diameter at breast height (d _{1.30}) (cm)	Crown diameter (m)	Bark thickness (cm)
1-	<i>Juniperus excelsa</i>	7	192	26	4.2	0.5	11	318	43	6.7	0.6
2-	<i>Juniperus excelsa</i>	6	185	25	4.0	0.4	8	251	34	6.0	0.5
3-	<i>Juniperus excelsa</i>	7	200	27	4.1	0.4	7	237	32	5.9	0.4
4-	<i>Juniperus excelsa</i>	5	177	24	3.9	0.4	7	237	32	5.9	0.3
5-	<i>Juniperus excelsa</i>	6	185	25	4.0	0.5	8	259	35	6.1	0.4
6-	<i>Juniperus excelsa</i>	7	200	27	4.4	0.5	6	230	31	5.8	0.3
7-	<i>Juniperus excelsa</i>	6	185	25	4.0	0.4	8	259	35	5.9	0.4
8-	<i>Juniperus excelsa</i>	6	177	24	4.1	0.5	9	274	37	6.0	0.5
9-	<i>Juniperus excelsa</i>	6	192	26	4.0	0.4	9	281	38	6.1	0.3
10-	<i>Juniperus excelsa</i>	5	170	23	3.7	0.3	10	296	40	6.2	0.3

Estimation of percentage cover scales: + = Less than % 1 cover, 1 = 1-5% cover; 2 = 6-25% cover, 3 = 26-50% cover, 4 = 51-75% cover, 5 = 76-100% cover

it is estimated to be 500 yr old. (Table 2, Sample Quadrant No. 4, Tree No. 1). This is also the thickest and the oldest tree in the stand. There are 82 trees in this stand, with trees having monumental features, which can be considered as magnificent whose dbh range between 23 and 60 cm and estimated ages range between 170 and 500 yr. Heights and diameters of these trees were measured and the values are given in Table 1 and 2.

Forests have had an important effect on the distribution of mankind over the earth's surface. They have deeply affected the

spiritual and religious life of the tribes living within or nearby them. The forest left a deep impression on the souls of primitive people. The mysterious twilight of the forest, its gentle rustling, and its weird moaning in storm endowed it with supernatural attributes. The forest figures largely in the religious beliefs of primitive races all over the world (Zon, 1920).

Mankind lives within nature, even if nature's effect on Man has been gradually diminishing from the dawning of Man to the present. Man affected nature, and vice versa. In the early

Table - 2: Site and stand characteristics of sample quadrats

	Quadrat no. 3	Quadrat no. 4
Size of quadrat (m ²)	400	400
Altitude (m)	900	960
Exposure	N	NW
Inclination (°)	35	32
Coverage of trees (%)	70	60
Height of trees (m)	7	14
Coverage of shrubs (%)	10	40
Height of shrubs (m)	5	5
Coverage of herbs (%)	20	20
Height of herbs (cm)	25	35

Species	Estimation of percentage cover	
<i>Juniperus excelsa</i>	4	4
<i>Paliurus spina-christii</i>	.	2
<i>Artemisia santonicum</i>	+	.
<i>Astragalus angustifolius</i>	.	1
<i>Agropyron repens</i>	1	+
<i>Festuca heterophylla</i>	.	1
<i>Bromus erectus</i>	1	.
<i>Potentilla recta</i>	+	+
<i>Hordeum bulbosum</i>	1	1
<i>Onosma tauricum</i>	.	+

Tree no.	Species	Quadrat no. 3				Quadrat no. 4					
		Height (m)	Estimated age (yr)	Diameter at breast height (d _{1.30}) (cm)	Crown diameter (m)	Bark thickness (cm)	Height (m)	Estimated age (yr)	Diameter at breast height (d _{1.30}) (cm)	Crown diameter (m)	Bark thickness (cm)
1-	<i>Juniperus excelsa</i>	6	215	29	4.7	0.5	15	500	60	8.9	0.6
2-	<i>Juniperus excelsa</i>	7	245	33	4.8	0.5	13	483	58	8.8	0.5
3-	<i>Juniperus excelsa</i>	7	245	33	4.8	0.4	12	475	57	8.5	0.5
4-	<i>Juniperus excelsa</i>	6	229	31	4.5	0.4	11	466	56	7.9	0.5
5-	<i>Juniperus excelsa</i>	6	207	28	4.2	0.5	11	458	55	7.6	0.4
6-	<i>Juniperus excelsa</i>	6	200	27	4.1	0.3	10	441	53	7.3	0.3
7-	<i>Juniperus excelsa</i>	6	215	29	4.3	0.3	10	433	52	7.1	0.4
8-	<i>Juniperus excelsa</i>	7	222	30	4.0	0.4	10	433	52	6.9	0.5
9-	<i>Juniperus excelsa</i>	6	207	28	4.0	0.4	10	416	50	7.5	0.6
10-	<i>Juniperus excelsa</i>	5	200	27	4.1	0.3	11	450	54	6.9	0.4

ages of living inside nature, Man attributed sacredness to the natural phenomena he could not otherwise explain, and worshipped such natural events and objects as thunder, lightning, the sun and the moon. Anthropologic studies indicate that such worships were extensively performed until the emergence of monotheism (Mosko, 1987; Thayer, 1983; Rolston, 1998; Whitbeck, 1918). This gradually disappeared as monotheistic religions emerged and science advanced, but some of those beliefs still exist in communities isolated from scientific progresses. Their reflections are still observable in various communities living in Anatolia.

The most popular of these currently existing beliefs is the respect paid to and good omen expected from people

considered as sheikhs or evliya (Moslem saints). Graves of such sheikhs and evliya are considered sacred too, and are protected by the people. On the other hand, the fact that people unable to access to modern medicines turn to traditional medicines is interesting in emphasizing the relations between nature and Man.

The interviews made with the local people point out that the forest in question survived, thanks to certain beliefs. Although all of the local people are Moslem, a number of beliefs thought to be dating back to shamanism are still preserved. According to the myth, a person considered to be an evliya lies in a grave on the top of the hill in question. It is believed that said evliya has been protecting the forest, and that those who damage the forest will come to a bad end.



The elders tell stories of ill-luck suffered by such damagers in the past. Therefore, the peasants never remove anything from the forest, and prevent others from damaging it. The fact that there used to be a gendarme station nearby the village and that a few gendarmes were killed after cutting some trees in the forest supports their belief. After that incident, the peasants cut off trees from the woodland in question only for the needs of the village mosque or of the gendarme station, and cutting works were always accompanied with prayers. Today it is prohibited to cut off any trees or even branches from the woodlands except for some bushes cut by the local shepherds and burned within the woodland. The woodland is still considered sacred, and the oldest juniper tree is used as a wishing tree in that the peasants put pieces of clothes or prayer beads on it to make a wish.

Another local myth is the legend of the Blond Girl. The origin of said legend is lost in the mists of time, it involves a young girl who came to the village one day, and who was probably a leper, to beg some food and shelter. The peasants, scared that her disease might be contagious, refuse to help her and drove her from the village. The girl walked away, cursed the peasants to contract an incurable disease just like her, collapsed, began to cry and died shortly afterwards nearby the village. The legend has it that a spring flowed out from the spot where she died; it is believed to be the girl's tears. In fact, there really is a spring nearby the village and its water is salty and dense. A tombstone was erected for the memory of the girl. The peasants explain that the spring is still in the winter, but active in the summer. The peasants also remark that the water of the spring heals various renal, skin and intestinal diseases and attract visitors from the surrounding villages. Visitors drink its water and take a bath in its mud pools, but the village people never drink it on the belief that it will harm them under the Blond Girl's curse. The tombstone and spring in question are on right side by the small forest. Islam prohibits attributing sacredness to graves, so that they can only be paid respect. Apart from payment of respect, Islam strictly prohibits using such graves for vowing, sacrificing, wishing, or curing and considers them superstition. However, such beliefs persist in almost all regions of Turkey.

Forestry has been defined as "the scientific management of forests for the continuous production of goods and services", though, as with agriculture, forestry that reflects the specifics of place as well as the generalities of science necessarily involves art, Biological, physical, social, management and engineering sciences all play an important role in forestry. Over the past 20 yr, the scope of biological and environmental sciences contributing to forest management has expanded beyond ecophysiology, genetics and vegetation management to encompass soil processes, ecosystem structure and dynamics, hydrology, wildlife biology, fisheries, restoration ecology, conservation biology, and landscape ecology. The social sciences, once relegated to a backseat, are now seen as critically important. A new dialogue among science, philosophy and religion is exploring the aesthetic/spiritual dimensions of forests that have been common to humans for millennia (Perry, 1998).

County of Cankiri is located in a climatic zone unsuitable for forestation in general. The area where the case study was conducted is located within the Central Anatolia region. Ecological studies conducted on the cultural objects left by the Hittites who lived in the region and data collected from a number of Assyrian epitaphs indicate that the Central Anatolia was full of forests in the past. The anthropogenic steps, certain remnants of woods found in said region, and the presence of some very old trees are evidence showing that forests indeed existed there in ancient times (Rowton, 1967). There still are some woods in the mountainous and uninhabited areas of the region. The only reason why the small forest, studied presently, survived is the local people's beliefs.

Since the oldest trees here are 500 yr old, it is estimated that the legend is of the same age. A conclusion deductible at this point is that pine forest was systematically removed from the region in the last 500 yr. It is known that pine wood is much usable than juniper. Therefore, people found it desirable to cut off and use the pines. It would have been juniper's turn after all pines were cut off, but the evliya's grave in the small forest studied herein saved it from extinction. It is known that juniper is considered sacred by shamanists. There are many high juniper trees in Anatolia which people visit, makes sacrifices to, and tie colored yarns for wishing purposes and they are reflections of the shamanist tradition to the present. On the other hand, the small forest studied herein does not owe its survival to the shaman belief in question; otherwise all juniper forests would have remained intact. The small forest is conserved not because juniper is considered sacred, but the local people pay respect to the evliya's grave there. The most significant conclusion deduced from this case study is that environmental protection policies cannot be applied in an efficient way unless the people are persuaded that it is a must to protect the environment. In fact, another town located within this region had suffered a number of devastating floods in the 1960s, its forestation was restored, and the local people noting that forests prevent floods began to protect the forests in question. Neither the laws nor the fines and penalties are capable of protecting the environment and forests by themselves.

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