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The phytogeography and ecotourism potential of the eastern province of lower part of the "Köprü river" basin

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Abstract

Köprü River Basin is located in the western Taurus mountains in south-western Turkey. The area is in the Mediterranean phytogeographical region. The climate in the area is typically Mediterranean: mild and rainy in winter, hot and dry in summer. Xerophytic plants can easily grow in this climate. *Pinus brutia* forests are common in the study area. Maquis and garique elements with sclerophyll character also occur in the region. The study aims to determine the distribution of the vegetation in the eastern province of lower part of the "Köprü River" Basin. The factors which affect the distribution of vegetation are climate, landforms and soils. In order to determine the plant growth and climate relationship, the climatic data were analyzed. As well as the geological and geomorphological conditions, the soils were investigated and the effects of these factors on vegetation cover were analyzed. The region also has various attributes for the development of ecotourism, including canyons, forests and historical places. The region has a great potential for many different social, cultural, and scientific activities related to ecotourism. These are highland tourism, rafting, botanic tourism, trekking, and climbing. In order to make ecotourism available for local people to benefit, ecotourism should be developed and introduced to the world. Moreover, plans for the sustainability of the resources should be made. The study highlights the ecotourism potential of the area which is of social, economic, and ecological importance for the region.

Key words

Köprü river basin, Phytogeography, Mediterranean region, Ecotourism

Introduction

In the Mediterranean region, geographic and ecological features have led to the formation of interactive ecosystems within short distances of each other. Topographic and climatic heterogeneity have caused the emergence of vegetation belts and led to a potential for ecotourism.

The vegetation belts in the Mediterranean region of Turkey can be classified according to the plant growth conditions as: between 0-500 m temperate Mediterranean vegetation belt, 500-1000 m typical Mediterranean belt, 1000-1500 upper Mediterranean vegetation belt, 1500-2000 m Mediterranean mountain vegetation belt, and from 2000 m upwards as high mountain vegetation belt (Akman, 1995; Atalay and Efe, 2010; Efe, 2010). The Mediterranean mountain vegetation is labelled from the coastal belt on as Oro-Mediterranean and Mediterranean vegetation and the lands behind the coastal belt as Eu-Mediterranean vegetation belt (Zohary, 1973; Walter 1962). Most parts of Turkey are located within the Mediterranean region and the southern and northern lower belts are in the eastern province (Regel, 1963). The Mediterranean plant formation is divided into three groups. The maquis belt, which occurs along the coastal belt, the forest formations of the Taurus mountains, and mountain pastures (Inandik, 1969).

Turkey has three phytogeographical regions namely; Euro-Siberian, Mediterranean, and Irano-Turanian. The Euro-Siberian phytogeographical region is located on the coast of the Black Sea in northern Anatolia. Mediterranean includes the coastal part of Mediterranean and Aegean seas. Irano-Turanian covers some parts of Central Anatolia and Eastern Turkey.

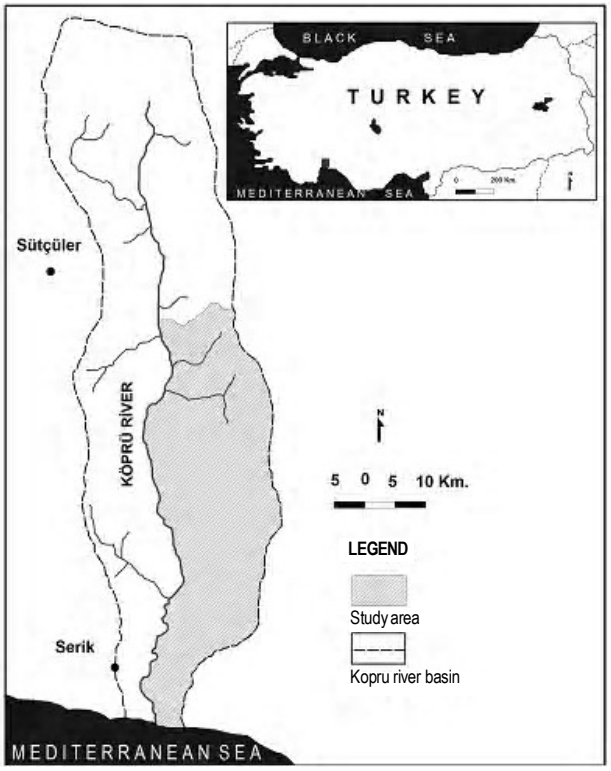

Fig. 1: Location map of the study area

Turkey is considered - from the vegetation perspective to be in the Eastern Mediterranean (Davis, 1965-1985). The tourism potential of the area is based on the physio-geography and anthropogeography of the study area. The landforms, climate, streams, wildlife, landscapes, and vegetation cover are among the most noteworthy attractions in the area (Sahin and Yilmaz, 2009). How to integrate the concept of ecotourism into local people's understanding, including the idea of directing the money made from tourism into the conservation of an area, is also vital. It is also necessary to consider how to direct government activities and initiatives so that the institutional support provided is not top-down but rather focused on local people and other stakeholders (Hiwasaki, 2003). The goal of future research should be exploring incentives and impacts for both tourists and locals throughout all stages of tourism. This more holistic perspective will be important as we explore the ways in which ecotourism and other alternative forms of tourism can generate social, economic and environmental benefits for local communities while also creating truly transformative experiences for tourists (Stronza, 2001). It is an important factor for economy development in the communities in the region (Stankova *et. al*., 2008). Even well-planned ecotourism projects, however, raise concerns about the economic, social, educational and ecological consequences of such ventures (Zanotti and Chernela, 2008). TIES 1990's definition of ecotourism is; "responsible travel to natural areas that conserves the environment and improves the well-being of local people" (TIES, 2010).

Materials and Methods

Study Area: The area of the study includes the lower part of the Kopru River Basin in the western Taurus mountains. The area is within the Mediterranean phytogeographic region and it is located in C3 square (Fig. 1, Davis, 1965-1988). There are several ecotourism activities in the study area such as rafting, trekking and climbing.

The study aims to determine the vegetation cover and its distribution areas, to investigate the plant growth conditions, and to highlight the ecotourism potential of the area in the eastern part of the Lower Kopru River Basin.

Climate is one of the most important factors in plant growth, and data on the area's climate was provided by meteorology stations in the area. The following aids were used to investigate the topography of the area: the topography maps drawn by Mapping General Command on a 1/100 000 scale, the geological features of the area, the geology maps prepared by the General Directorate of Mineral Research and Exploration on 1/100 000 scale, and development maps to bring out the vegetation of the area prepared by the General Directorate of Forestry on a 1/25000 scale. Field studies were made in autumn 2009 and spring 2010. In order to investigate the features of the vegetation in Kopru River Basin, field studies were made and plant samples collected, and analyzed. The mountainous parts of the area in particular were researched in various directions and profiles formed.

Observations made in the area revealed the ecotourism potential of the region. Lots of interviews were held with local people and tourism entrepreneurs about the type of ecotourism potential in the area. After the determination of dominant tree type borders, the plant species were plotted on a map, and thus creating a map of the plant distribution.

Results and Discussion

Vegetation-Climate relation: There is a relation between each plant and the climate conditions. Temperature and precipitation are the fundamentals of this relation. The growth period is the time in which the plants forming the natural vegetation continue their regular development uninterrupted for a single year. In order to determine the vegetation period of the study area, the days in which the average temperature was above 8 °C and continued uninterrupted are accepted as the vegetation period (Atalay, 1994). Hence, the vegetation period in Serik, constituting the coastal belt and the low mountainous areas, is 365 days and in Sütçüler, constituting the northern parts, is 244 days. The vegetation period in the study area starts on 1st January and continues throughout the year in Serik; whereas it starts on 20th March and ends on 20th November in Sütcüler. The areas on the seaside and lower hills where the vegetation period continues throughout the year are dominated by *Pinus brutia* forest. In the inland areas where the vegetation period is interrupted, the vegetation consists mainly of *Juniperus excelsa*,

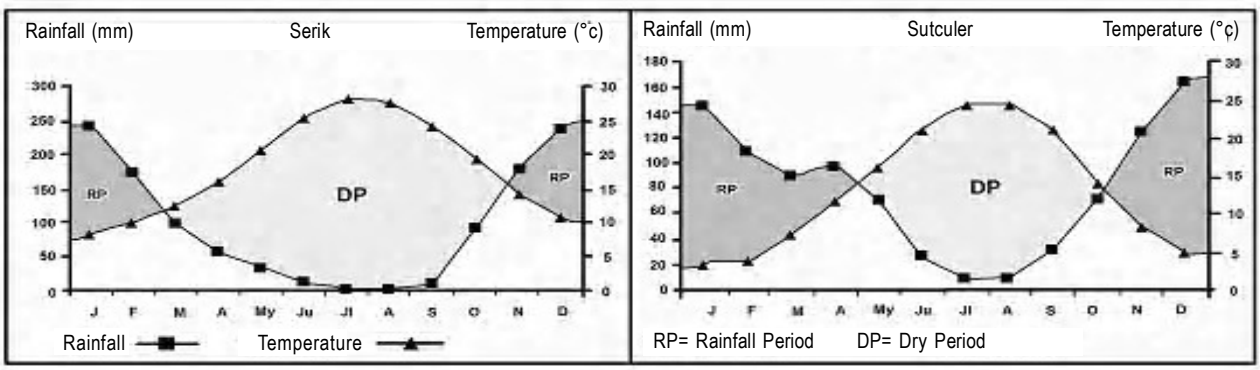

Fig. 2: Precipitation and temperature of the study area

Juniperus foetidissima, *Abies cilicica, Cedrus libani*, and partially consists of *Quercus cerris*, *Quercus infectoria* and *Pinus nigra* forests.

The annual average temperature is 18.1 °C in Serik and 13.5 °C in Sütçüler. The lowest average monthly temperature in Serik is 5 °C in January and in Sütçüler 0.0 °C in January and February. The maximum temperature, sometimes above 40 °C, starts in June and continues until November in Serik; whereas in Sütçüler it is around 37.2° C in July. If we analyze the precipitation figure of Serik, which represents seaside parts of the area, it can be seen that there is an increase in the amount of rainfall during winter and a significant decrease in summer (Fig. 2).

The summer drought, starting with the 2nd week of March ends in the 1st week of November. The drought increases during the vegetation period of the plants. Under these prevalent conditions, it is observed that the number of plants of sclerophyll character, maquis, garrique and other scrubs adapted to high temperatures increases in the area. Moreover, the dominant species among the typical Mediterranean forests is *Pinus brutia* due to the climate dynamics of the study area. The drought period lasts for a short time in Sütçüler. The rainy period with rainfall starts in the middle of October and continues until the beginning of May. The rainy period in Sütçüler lasts for about 5 to 6 months. The drought period, observed most intensely during June, July, August and September, lasts for about five months.

The semi-humid high mountain forest, adapted to these conditions, spreads uninterruptedly up to 1800-2000 m height. This forest belt mainly includes coniferous plants; however, because of other broad leaved plants growing in the area, some parts of the belt have mixed forests. The amount of annual precipitation in Serik is 1141 and 954 mm in Sütçüler.

All rain falls during the vegetation period in Serik. However, only 66% of the total rain falls during the vegetation period in Sütçüler. Thus, out of the total 954 mm precipitation only 629 mm falls during the vegetation period. The rainfall regime in Serik is WASS (Winter, Autumn, Spring, and Summer). In Sütçüler, however, the marker of rain regime is WSSA (Winter, Spring, Summer, and Autumn).

The coastal belt and southern parts of the mountains within the rainy Mediterranean climate zone are charaterized by thermo Mediterranean vegetation series. The internal parts and places open to the effects of the Mediterranean sea are characterized mostly by the vegetation series on the mountains.

Vegetation-Geological structure relation: The geological structure is quite important in the spread of the plants. The composition of the main rock forming the geological structure leads to the formation of different soils. The soil types combined with other environmental factors define the dispersion areas of the plants.

The rock units in the area dating back to the Cambrian Era have developed under different circumstances ranging from platform to oceanic area (Senel, 1997). Some of these units are in autochthonous, whereas some are in allochthonous position

Triassic formations occur only in limited area. Carbonate based formations date back to the Jurassic and Cretaceous period. The bedrock of these carbonate based formations consists of limestone, dolomitic limestone, neritic limestone and dolomite.

Tertiary is represented by formations dating back to the Miocene period. In the lithologic structure of Miocene, formations consist of conglomerate, limestone, claystone, siltstone and neritic limestones. As these formations are not very densely crystallized and form clayish formations, they are easily decomposed and disintegrated. In other words, they may easily become exposed to erosion.

Formations dating back to the Quaternary era are made of units dating back to the Pleistocene and Holocene periods. Most of these formations are fluvial origin. Pleistocene is characterized by conglomerate and ancient dunes. Alluviums are generally in the lowlands and widely spread on Serik plain.

Pinus brutia and maquis species are dominant on conglomerate, limestone, sandstone and siltstone. The maquis species such as

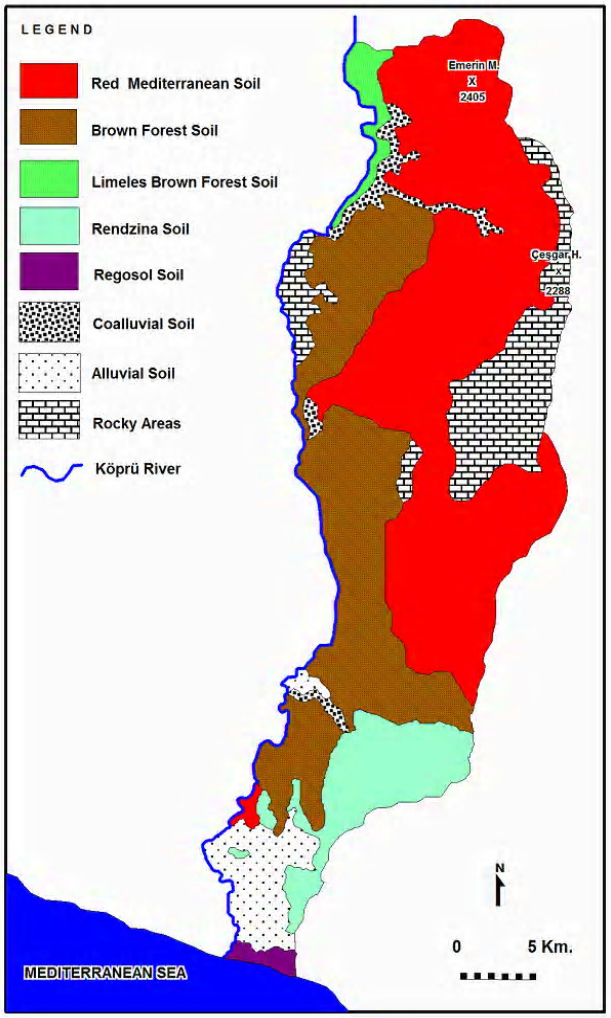

Fig. 3: Soil map of the study area

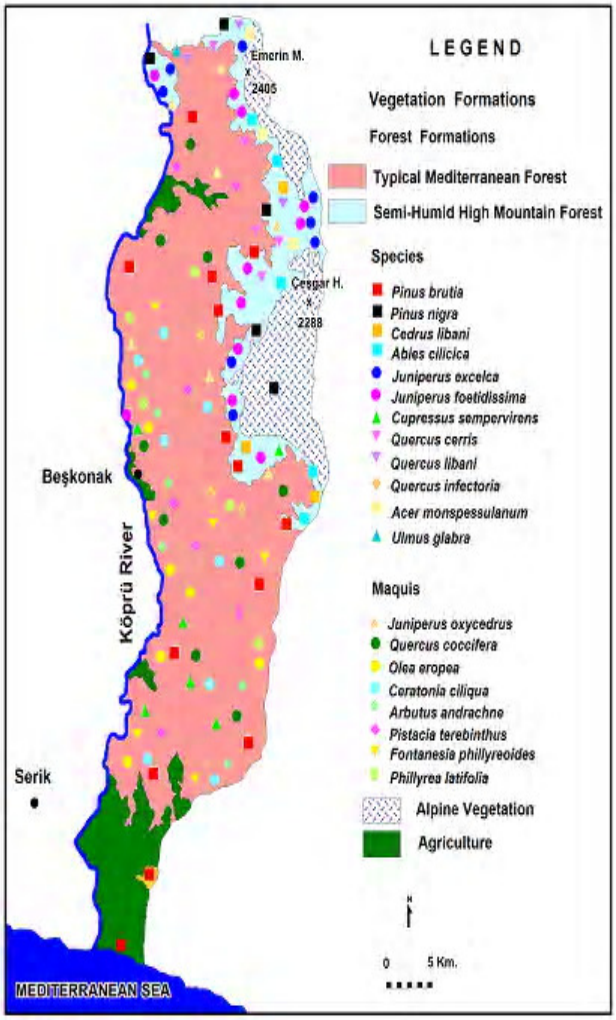

Fig. 4: Plant formations and distribution in the study area

Quercus coccifera, *Phillyrea latifolia, Juniperus oxycedrus, Styrax oficinalis, Ceratonia siliqua, Cercis siliquastrum, Pistacia lentiscus, Pistacia terebinthus and Myrutus communis* are found in the area. On limestone, however, *Quercus cerris*, *Quercus infectoria*, *Juniperus excelse*, *Juniperus drupacae*, *Juniperus oxycedrus*, *Juniperus foetidissima* species and *Abies cilicica* and *Cedrus libani* are widespread.

Vegetation-Topography relation: The mountains in this study are extensions of the Western Taurus mountains. The most important mountain structures in the area are Emerin mountain (2405 m), Çesgar hill (2288 m), Kaklik mountain (1870 m), Kovacik mountain (2268 m), Gökkusak hill (1862 m) and Melik mountain (2288 m).

Dolomitic limestone and dolomite occur on Emerin mountain. In the mountain foothills, there are in patches clastic material of the Quaternary. Among the macro karstic landforms uvala and dolins are widely spread in the area. Species of the semi-humid character cover the slopes of this mountain. The lithologic structure of these mountains is Jura-Crataceous limestone, dolomitic limestone and dolomite. In their foothills there are Triassic shale and Quaternary material in patches. Melik mountain, which spreads from north to south, is formed of Jura-Cretaceous limestone. These areas are all of high plateau and karstic plateau character. The forest formations on the high plateau areas are semi-humid high mountain forests. Broad leaved hygrophilous plants are widespread in the valleys. In the lower plateau areas, however, there are alluvial depositions. All of hills on the lower plateau are covered by *Pinus brutia*, a typical Mediterranean forest character and maquis species.

In the stream beds, there are many humid species such as *Platanus orientalis*, *Paliurus spina-christi*, *Nerium oleander*, *Vitex agnus castus*, *Smilax aspera*. The largest plain land in the study is Serik plain and mainly devoted to agriculture.

Vegetation-Soil relation: In the study area, zonal soils are dominant. Red Mediterranean soils are most common and they form in humid and hot places. This area receives 1000 mm precipitation. These soils are widespread in the areas with altitudes from 500 m up to 2200 m with undulating topography (Fig. 3). These soils are formed on limestone where the Mediterranean climate prevails. *Pinus brutia,* among the coniferous plants, is in general the dominant species on

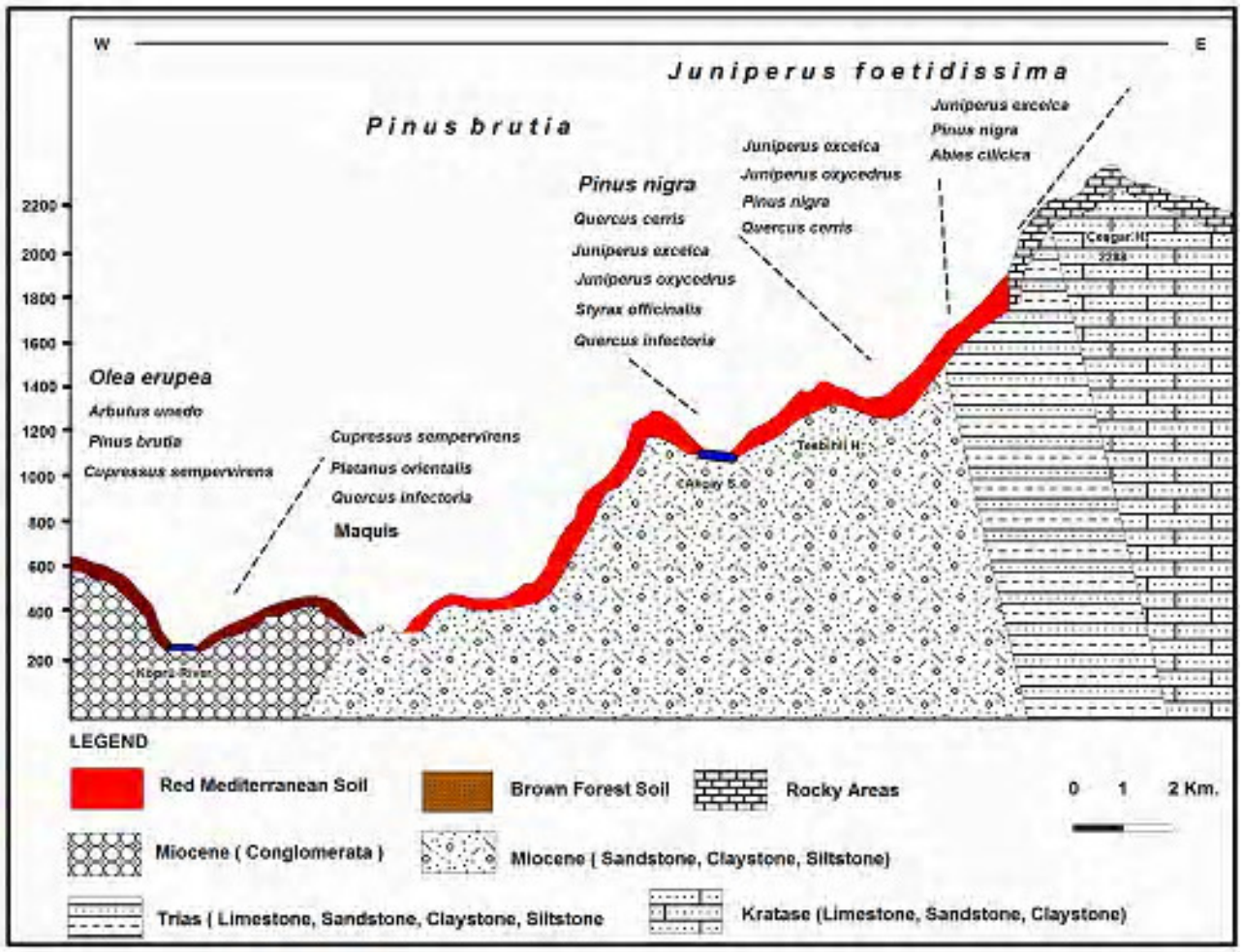

Fig. 5: Koprulu Canyon-Melik mountain plant distribution profile

these soils. There are also *Quercus coccifera*, *Cercis siliquastrum*, *Ceratonia siliqua*, *Olea europea, Daphne sericea, Myrutus communis*, *Phillyrea latifolia* in the areas up to 800 m. *Juniperus* and *Quercus* sp., *Abies cilicica* and *Cedrus libani* are widespread on higher parts. Brown forests soils are generally found in mountainous and hilly areas. They are formed on conglomerate, sandstone, claystone, siltstone and limestone. *Pinus brutia* forests and maquis species occur on brown soils. Brown forest soils are widespread on the hills behind the coastal belt on the areas between 250-500 m.

Limeless brown forest soils develop well on flysches. These soils are not common in the area. They have formed on the areas receives abundant rainfall. These soils develop on acidic rocks such as granite, shale, and andesite. An important part of the *Juniperus* forests of xerophyte character grow on limeless brown forest soils at 1000-1500 m altitudes.

Rendzina, among the interzonal soils, developed at height 50-150 m in an area close to the coastal belt, as a narrow strip under semi humid climate conditions. Rendzina soils are sandy due to the character of bedrock.

Azonal soils are represented in our area of study by alluvial, colluvial soils and regosols. Alluvial soils are most common in the study area. The altitude of azonal soils varies between 0-50 m. The natural vegetation is maquis, garique and thorny annual grassy plants on these soils. Regosols developed in the areas where *Pinus brutia* has been destroyed. These areas are suitable for the development of maquis and garique vegetation. Colluvial soils develop on sandy-stony material and not suitable for the development of plants.

Vegetation Formations and Distribution Areas

Typical Mediterranean forests: These forests spread uninterrupted from the study area into the Western Taurus mountains as far as the interior parts (Fig. 4). *Pinus brutia* is the dominant species in the forests. Typical Mediterranean forests cover valleys and the peaks of the mountains up to 1250 m. In the northern parts of the mountains, under the effect of Mediterranean climate, the altitude that *Pinus brutia* can reach is a maximum of 1000-1200 m. On the southern slopes of the mountains, it forms mixed forests together with semi-humid high mountain trees.

Further north in the internal parts, the maximum altitude for *Pinus brutia* is 1000 m. *Pinus brutia* forms, after this stage, mixed forest and can reach 1250 m. In the area, species of semi-humid high mountain forests mix into *Pinus brutia* at 1250-1500 m. Among these species are *Juniperus excelsa*, *Juniperus drupacea*, *Juniperus foetidissima*, *Juniperus oxycedrus*, *Abies cilicica*, *Cedrus libani* and *Pinus nigra*. The bush belt of *Pinus brutia* consists of maquis. Especially in destroyed *Pinus brutia* areas, the intensity of maquies is significant. Besides *Pinus brutia,* among the typical Mediterranean forests, the sparsely distributed *Cupressus sempervirens* associations do not form a forest.

Semi-humid high mountain forests: These forests starting from the upper borders of the typical Mediterranean forests at 1500 m form ecotone areas with *Pinus brutia*, and after 1500 m pure forests. In the area between 1250-1500 m the dominant species is in general Juniperus sp. Within these forests there are *Pinus nigra*, *Cedrus libani* and *Abies cilicica* in patches and these species form the passing zone for semi humid high mountain forests. Understory vegetation is formed by species like *Quercus coccifera*, *Cotoneaster nummularia*, *Creteagus monogyna* and *Daphne sericea*. After 1500 m the dominant species of semi humid high mountain forests are dominant. *Abies cilicica* and *Cedrus libani* forests form mixed forest from 1250 m on the southern slopes of the mountains. *Abies cilicica* is prevalent among the species forming semi humid high mountain forest . Besides *Abies cilicica,* the most common species forming pure forest in the semi-humid high mountain area is *Cedrus libani*. *Cedrus libani* depends on the local climate factors and can reach up to 2250 m.

The area of these forests is less than that of typical Mediterranean forests. The main species of this formation are *Juniperus excelca*, *Juniperus foetidissima*, *Juniperus oxycedrus*, *Juniperus drupacea*, *Quercus trojana*, *Quercus libani*, *Quercus cerris*, *Quercus coccifera*, *Quercus infectoria*, *Acer monspessulanum*, *Phillyrea latifolia*, *Cotoneaster nummularia*, *Creteagus monogyna*, *Abies cilicica* and *Cedrus libani*.

Maquis and Garique formation: In the area maquis plants are prevalent in the sections where *Pinus brutia* habitats have been destroyed. Furthermore, some maquis species form the understory vegetation of *Pinus brutia* within the area of typical Mediterranean forests. The most concentrated maquis population is observed in an area reaching 0-10 km from the coastal belt to the inner parts. The vertical distribution of maquis change according to the topography and climate conditions. The maquis species in the study area are represented by *Arbutus unedo*, *Arbutus andrachne*, *Ceratonia siliqua*, *Cercis siliquastrum*, *Clematis flamula*, *Colutea cilicica*, *Cotinus coggygria*, *Daphne sericea*, *Erica manipuliflora*, *Fontenesia phillyreoides*, *Jasminum fruticans*, *Juniperus oxycedrus*, *Laurus nobilis*, *Myrutus communis*, *Nerium oleander*, *Olea europea*, *Phllyrea latifolia*, *Pistacia lentiscus*, *Pistacia terebinthus*, *Punica granatum*, *Quercus coccifera*, *Rhus coriaria*, *Ruscus aculeatus*, *Smilax aspera*, *Spartium junceum*, *Rhamnus oleides*, *Styrax officinalis and Vitex agnus-castus*.

Gariques are prevalent in the areas close to the coastal belt and behind the coastal zone where the maquis formation cleared. They form short chameophyt shrubs communities. This group developing in more extreme conditions than maquis, consists of the species *Calycotome villosa, Cistus creticus, Cistus salviifolius, Genista acanthocloda* and *Sarcopoterium spinosum.*

The other bush species within the maquies area are *Berberis creteagina*, *Juniperus excelca*, *Lonicera etrusca*, *Ononis natrix*, *Paliurus spina christi*, *Pinus brutia*, *Pyrus communis*, *Rosa canina*, *Rubus canescens* and *Rubus sanctus*.

Alpine plants: Alpine plants are found in the highlands of the mountains where semi-humid high mountain forests and forests of xerophytic character are widespread. These areas, where *Juniperus excelca* and some thorny bush plants can develop, define the upper boundaries of forest vegetation. In the heights without trees, we can observe thorny perennial species mostly of chameophyte character (such as *Astragalus* sp., *Salvia* sp., *Euphorbia* sp., *Festuca* sp., *Acanthalimon* sp., *Tymus* sp., *Genista* sp.), partially together with short tall shrubs such as *Berberis crateagyna, Cotoneaster nummularia and Crateagus orientalis*.

Distribution of the plants: Some *Pinus brutia* forest remnants have survived up to today on hills between 50- 200 m on the coastal belt. At locations like Türkbelen hill, where *Pinus brutia* has not been destroyed, they form small groups at 50-100 m distances from the coastline.

At the coastal belt on the sand hills, sand vegetation and garique species developed. A slightly undulating area begins from the Serik plain and extends towards the north. Gelintasi hill (325 m), Pelitli hill (508 m), Mihrafbeleni hill (325 m) are almost covered with *Pinus brutia* and maquis and partially with garique species. However, with regard to the distribution of the plants, the existence of different belts is apparent further north.

The typical Mediterranean forest formation completely covers the following hills and continues until 1400 m; Korudagi hill (469 m), Kocabogaz hill (1359 m) Erikkanadi hill (1300 m) and Yemislidelik hill (851 m). On the slopes with susceptible conditions, species like *Quercus cerris*, *Quercus infectoria* intermingle with *Pinus brutia*. *Cupressus sempervirens* shows scarce dispersion on undulating surfaces and slopes with little inclination up to 350-400 m. Scrub groups like *Quercus coccifera* and *Phillyrea latifolia* form the bush belt. Whereas hygrophilous elements like *Platanus orientalis* and *Fraxinus ornus* are common in the valleys.

Above the *Pinus brutia* forest at altitudes between 1250-1500 m, the distribution of coniferous and broad leaved species is apparent. The deciduous species of cool and humid places, *Fraxinus ornus*, *Lonicera etrusca*, *Acer monspessulanum*, *Quercus*

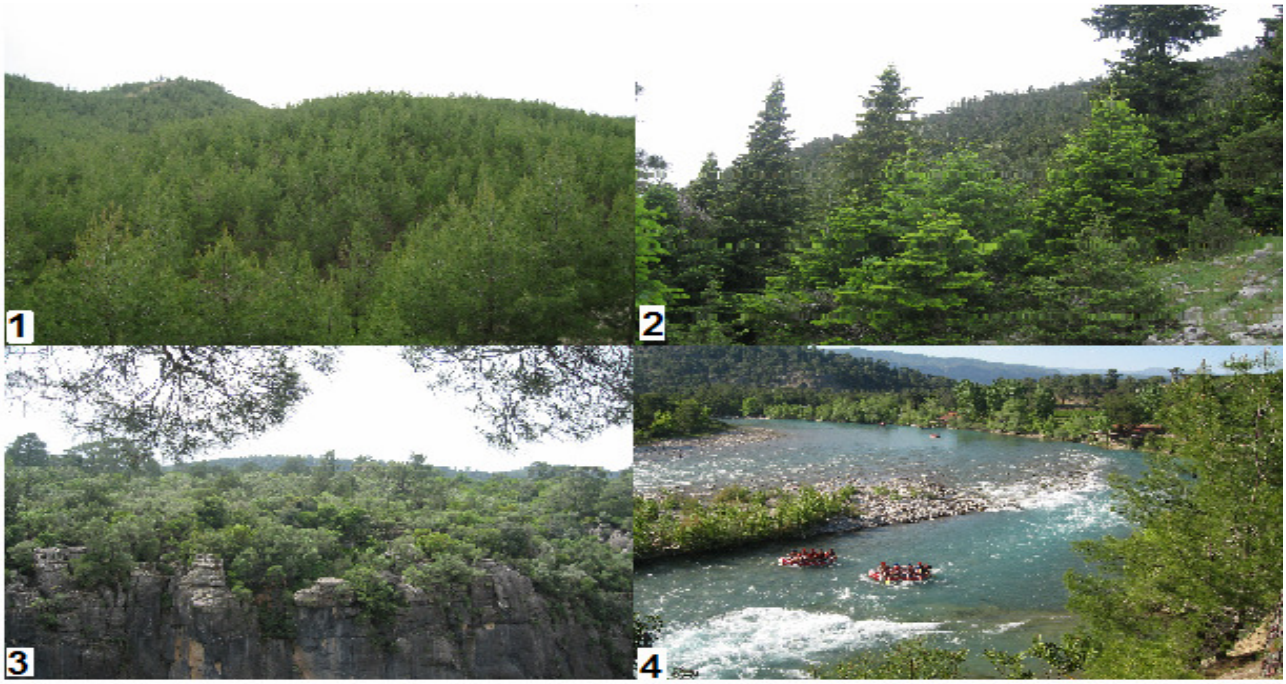

Fig. 6: (1) *Pinus brutia* forest (2) *Cedrus libani*, *Abies cilicica* and *Pinus nigra* mixed forest (3) Maquis vegetations (4) Rafting on the Kopru river

cerris and *Quercus infectoria* are widely found in the transition zone.

In the plant profile of the area between Köprülü Canyon-Çesgar hill, to the west of Oluk bridge at 600 m altitude, there is a climax of maquis formation (Fig. 5). A lot of species such as *Ceratonia siliqua*, *Cercis siliquastrum*, *Quercus coccifera*, *Phillyrea latifolia*, *Pistacia terbinthus*, *Pistacia lentiscus*, *Rhamnus oleides*, *Spartium junceum*, *Styrax officinalis*, *Vitex agnus-castus*, *Myrutus communis, Nerium oleander*, and many others mix with *Olea eurepae* associations. *Pinus brutia* is very scarce within these communities. In the canyon of Akçay stream, many maquis and other bush spceies are found within *Pinus brutia* forests. These bushes are mainly of the species *Laurus nobilis*, *Pistacia terebinthus*, *Paliurus spina christi*, *Smilax aspera*, *Calluna vulgaris* and *Nerium oleander.* In the western part of Tesbihli ridge between 1000-1250 m, species such as (mainly) *Styrax officinalis, Phillyrea latifolia*, *Quercus coccifera*, *Smilax aspera*, *Pistacia terebinthus*, *Cretaegus monogyna*, *Spartium junceum*, *Ruscus aculetus* are common. In a northeastly direction from the Tesbihli ridge slopes there are *Pinus nigra* and *Quercus cerris* communities in patches on conglomerate and flysch rocks. The understory vegetation is made up of maquis such as *Quercus coccifera*, *Styrax officinalis*, *Phillyrea latifolia*, *Fontenecia phillyreoides*, *Juniperus oxycedrus* together with bush species such as *Quercus infectoria, Paliurus spina-christi*, *Colutea cilicica*, *Berberis crateagyna*, *Crateagus monogyna* and *Rosa canina.*

The *Pinus nigra* area is on the western slopes of Melik mountain (2288 m) between 1100-1250 m. Floristic structure starts to change at these altitudes. In the area between 1250-1500 m, there are mixed forest forms of *Pinus nigra* and *Quercus cerris.* One of the most dominant species is *Pinus nigra. Pinus brutia* also forms in small communities. Within this ecology, between 1500-1700 m *Juniperus foetidissima*, *Juniperus excelca*, *Juniperus oxycedrus* distribution begins. Above this level, up to 1900 m, a mixed group formed by *Juniperus foetidissima* with *Abies cilicica*, *Pinus nigra, Juniperus excelca* are common. In the distribution areas of *Abies cilicica* forests, bushes such as *Crateagus monogyna*, *Cotoneaster nummularia*, *Pyrus elaeagrifolia* merge and form understory vegetation. Furthermore, in these mixed forests broad leaved species like *Acer hyrcanum*, *Acer monspesulanum* are found.

The main occurrence area of the forest formation made up by *Abies cilicica* and *Cedrus libani* starts on the northeastern slopes of Melik mountain at 1500 m altitude. *Abies cilicica* decreases from 1600 m on. *Juniperus excelca* is observed even at 1800 m as the dominant species. Among the Juniperus, trees like *Acer monspessulanum* and *Acer hyrcanum* are observed with *Juniperus excelca*. The scrub species forming the understory vegetation consist of *Cotoneaster nummularia*, *Berberis crateagyna* and *Juniperus oxycedrus*.

Ecotourism potential: According to the study, the geographical features and natural potential of the area show that it has many advantages in regard to ecotourism (Fig. 6). The study area has a great potential to conduct different ecotourism activities. In the study, the ecotourism activities possible in the area have been emphasized.

The area has the necessary conditions for trekking in nature. The Oluk Bridge road is quite suitable and safe for trekking. The village roads and dirt patches in the woods, parallel to each other, within the National Park are still famous for trekking. The area is very suitable for uniting with nature, observing the constantly changing vegetation, and for camping at the roadside.

The Köprü river has an average inclination of 10% and the constant water level makes it an important river for rafting sports. The Köprü river itself and its environment are also suitable for the technical enjoyment of this sport. The waterfalls along the river, phenomenological structure, and the vegetation contribute to the beauty of the scenery. There are convenient spots for camping, pensions and places to pull your boat in for overnight at the riverbed. The medium rafting difficulty level of the river is thrilling for those who want to do this sport. The starting point for rafting at Köprü river is Oluk bridge. The rafting track is approximately 11 km long and finishes at the Concrete bridge at the south of Beskonak.

The importance of mountain tourism, due to the activities involved, becomes more meaningful. The plateaus were formerly used as grassland to breed sheep and cattle. Nowadays, they have become tourist attractions that are used for trekking, resting, for various sports activities, plateau festivals, etc. The Nebikirdi plateau, within the area of study, is very suitable for prairie tourism because of the fresh air, vegetation, natural water springs, natural beauties, the seasonal variation and transportation.

The area of the study has a great potential for the observation of flora. The topography in the field of study has a gradual increase towards the north leading to the emergence of different areas for plant growth. Therefore, different plant communities emerge in that area. On the sandy beaches, there is sand vegetation and in the areas where maquis is destroyed, there are garique plants. Again if we proceed from the coastal belt to the north, there is a gradual spread of typical Mediterranean forests and maquis according to the environmental conditions. On further heights, there are semi-humid high mountain forests and above these there is alpine and sub-alpine vegetation. It is possible to observe every structure and characteristic of Mediterranean natural vegetation in this area. On further heights there are semi-humid high mountain forests and above these there is alpine and sub-alpine vegetation. One can see every structure and characteristic of Mediterranean natural vegetation in this area. The ecosystems encompassing rich floristic composition and biodiversity are very suitable for ecotourism. The forest structure of the basin is also attractive for ecotourism. There are a hundred entrepreneurs in the study area for ecotourism like camping, log cabin hotels, restaurants etc. to attract some specific tourist groups. In the basin there are pure and mixed *Pinus brutia*, *Pinus nigra*, *Cedrus libani*, *Abies cilicica* forests. The *Cupressus sempervirens* associations within the Köprülü canyon are worth seeing. There are wild animals such as deer, wild pig, wild goat, bear, fox, wolves, and rabbits important for hunting tourism. Furthermore, trout with red pointed scales are to be found.

Emerin mountain (2405 m), Melik mountain and other high spots (2288 m, south of Köprü river) have interesting vegetation, geomorphological and geological structures. These heights, where pine forest can reach up 2000 m, have a great potential where many different mountain sports can be done.

The Mediterranean phytogeographical area has different plant habitats and micro-climates due to its climate, and for geological and geomorphological reasons. The nature in most parts of the study area is not disturbed by man; it could even be described as virgin. The area is unique if the flora, fauna, and vegetation are taken into consideration. With the addition of socio-economic and socio-cultural values, the area of study exhibits an important potential for ecotourism. There are noticeable deficiencies in the infrastructure for ecotourism. The local residents are not totally aware of the concept of ecotourism and a high level of income from this kind of tourism is not completely possible in the area for the time being. While developing ecotourism in the area, one of the most important factors to be taken into consideration is the preservation of the ecological environment.

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