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Assessing Potential Areas of Ecotourism through a Case Study in Ilgaz Mountain National Park

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Abstract

The changing demands of tourism provide greater benefits to tourists and generate competitive advantages that develop diversity in tourism. Elements of ecotourism fit within this context, and such tourism includes, but is not limited to, activities such as visiting natural and cultural resources without destroying nature, which are carried out with an aim toward sustainability. Ilgaz Mountain has a wealth of natural, cultural, historical, and recreational features, and its location near the Black Sea gives the area significant tourism potential. In order to evaluate the impact, potential, and possibilities of ecotourism in this protected area, we used geographic information systems (GIS) to determine the nature of protection required based on implementation availability. In this study, we used ecology-based identification of the natural and cultural values to characterize the features. The study consists of four parts: (1) the concept of ecotourism, (2) discussion of sustainable growth of tourism, (3) sustainability of ecotourism using GIS and how this is related to sustainable ecotourism in protected areas, such as in Turkey, (4) results and evaluation. By assessing these results, we aim to determine potential areas for ecotourism in terms of sustainable development, and we expect the results to provide useful ideas for further research.

Keywords: Ecotourism potentials, Impacts, Possibilities, Protected area, Sustainability, SWOT

1. Introduction

Ecotourism is an abbreviation of ecological tourism, which refers to understanding and protecting the freedom of tourism in nature. According to the International Nature Conservation Union (IUCN), the definition of ecotourism includes having fun while supporting the

protection of the natural and cultural resources. This involves maintaining a low visitor impact and providing the local community with socioeconomic benefits. Furthermore, ecotourism refers to traveling in environmental-responsible ways to limit the impact to the areas visited. According to the International Ecotourism Society, which protects the environment and oversees the welfare of the local people in the tourist area, travel is defined as a sensitive activity in natural areas. It is recognized that ecotourism involves the preservation of both natural and cultural values, and keeping that responsibility in mind, the areas should remain open to tourism. The concept of ecotourism bears a strong connection to both natural and social responsibility. Ecotourism, which links tourism activities with the natural environment, refers to a tourist activity based on the incentive to act with responsibility, considering the potentially negative effects of tourism on the environment. Additionally, ecotourism involves ensuring the sustainability of the earth's natural resource areas while supporting the economic development of local communities, an approach aiming toward preserving their social and cultural integrity [1–5].

Ecotourism contributes to the conservation of biological diversity and protecting local people's welfare, and such tourism helps raise awareness of local people's needs, ensuring the movement responsible for tourism, providing services to small-scale enterprises by groups of tourists, and consuming a low level of nonrecyclable resources. Tourism management business provides opportunities to local residents in favor of development. Actions that directly affect ecotourism activities include the area's natural resources, increased capacity of ecotourism areas, and ensuring social and environmental development in order to contribute to the livelihood of the local people [5–9].

Rapid economic and political changes and technological developments in today's world are parallel to the increasing size of the tourism industry. This makes tourism an increasingly important component of a nation's economy. Tourism spending in all sectors serves toward stimulating the economy. New concepts such as sustainable tourism are developed because of both, the tourist profile in a nation as well as the natural changes that occur in consumption patterns, which in this case involve protecting the natural and cultural features and maintaining a balance while engaging in tourism [1, 9–11].

The concept of ecotourism and the importance of sustainability within tourism have become popular and are being implemented frequently. As an alternative to mass tourism, ecotourism was developed in the 1990s. This form of tourism contains elements of rural and cultural tourism and is referred to as the most appropriate type of tourism that can be developed in sensitive natural and cultural areas. Developing environmental tourism and ecotourism in today's world, where massive destruction of nature is common, is significant to the society and seen as an important tool in achieving sustainable development and avoiding uncontrolled movement of tourists. Ecotourism and sustainable tourism are used interchangeably, although the difference between them is noteworthy, as sustainable tourism is a subtype of ecotourism. Ecotourism protects the environment and oversees the welfare of local people during tourist trips to sensitive natural and cultural areas. It exists through sustainable tourism policies. In today's world, ecology and economy are treated in combination; both the economic and ecological efficiency of activities that are undertaken are tied to one another [1, 11–13].

In particular, central governments need to accurately guide the land use and infrastructure decisions within local tourism regions. Constraints in infrastructure bring along the danger of destroying the natural environment. When taking decisions, the most important task to consider related to tourism other than generating more revenue is understanding the necessity of preserving the natural, cultural, and historical values of the sites in question.

2. Sustainable growth and tourism

The sustaining capabilities of a particular ecosystem involve how continuous and uninterrupted that system is without distortion and without excessive usage of the main resources. For a sustainable structure, resources should be continuously evaluated, and the foremost factor for such evaluation should be conservation and protection. Today, sustainable development is necessary, so that the natural and cultural resources remain available to both the current and future generations [1, 13–15].

The sustainability of tourism requires a knowledge on the regional and national values, with a focus on preservation as a means to ensure the continuity of development and attractiveness for each generation. In order to achieve sustainable tourism, the natural and cultural values of the site should be protected during interactions between humans and the environment. As a result, the value of the site will be transferred to future generations. Successfully accomplishing this transfer requires changes to the current consumer understanding of tourism to meet the ecotourism criteria. For sustainable tourism, ecotourism and responsible tourism are the primary concepts. Sustainable tourism refers to the relationship between the environment and the tourist. Protecting the assets in the environment requires the tourism industry to be constructed around sustainability with a long-term strategy in place. Otherwise, the benefit of the tourist site to future generations, and even to the present generation, will be lost. Identifying, implementing, and evaluating sustainable tourism are difficult processes. The tourism industry has, in recent times, made a strong effort to create green identities. Our densely populated world, natural and cultural richness, as well as the sharing and transfer of living in a particular fair profit is seen as an important area for ecotourism [15–18].

In sustainable tourism, tourist events are intertwined with the activities of the local people, and the local tourist facilities as well as the natural and cultural values all show the mutual relationship of an infrastructure based on sustainability. These interactions are important in terms of sustainability. Basically, an active management approach is needed to maintain this kind of interaction, planning, organization, coordination, direction, and control. The sustainable development of tourism products, which would not be possible without the local tourist destination, should contribute to local needs; the local human social environment should improve the self-esteem of the people, help extrude them from poor living conditions, and expand their freedom. National economic growth that results from ecotourism should also accelerate regional and local economic development. In this context, attractions and local amenities, and the basic infrastructure should be developed based on long-term local and leisure activities. These activities, which are the underlying components of any tourist product,

and the use of the natural environment for tourism, should ensure damage prevention and poverty reduction at the forefront of their management and marketing approach [18–20].

3. Ecotourism sustainability

Natural habitats are naturally occurring places of value that should remain unchanged due to people's activities. These include mountains, plains, valleys, forests, lakes, rivers, seas, and natural monuments, and the geological conditions of each habitat vary with climate and landscape. These habitats are covered with natural assets. The number and diversity of such natural assets within a country are the major factors contributing toward attracting tourists to that country. Therefore, the natural environment and assets, a continuous flow of travelers to these destinations, and raw materials are indispensable factors for the tourism industry. However, without assessment, these natural assets provide no economic benefit. In order to learn about the natural environment and the local people's lives, tours are carried out in these natural areas, either for individual tourists or for small groups [1, 9, 13, 14, 20].

The principle of sustaining the natural environment, however, refers to protecting the natural environment from degradation during these tours. This kind of tour involves implementation of certain plans and programs within the framework of the chosen route, following predetermined rules, and involving trained experts serving as guides [21, 22].

Ecotourism also requires that the overall tourism policies, regulations, and plans are available. However, in order to avoid repeating the mistakes of mass tourism, a number of goals must be established. These goals include the protection of the natural and cultural heritage of the site and improvement of local people's living standards. Furthermore, when promoting ecotourism, the natural, cultural, and recognized local characteristics should be promoted, protected, and adopted to help guarantee sustainability in the long term. The methods and techniques of disseminating tourism information should generate greater credibility and carry the certification of quality systems in order to generate greater competitive significance. Additionally, the involvement of society, politicians, as well as institutions and organizations in ecotourism will all be very beneficial in terms of ensuring sustainability in tourism. A prerequisite to ecotourism development is that the natural areas should be protected and that the tourism should contribute to the sustainable development of the society. The specific policies and strategies surrounding ecotourism should be developed at the national and regional level, and an absolute determination of specific policies and strategies should be discussed within the applicable local area [22–24].

To be considered an ecotourism activity, an event must involve the development of environmental ethics, protection of leisure areas, and use of balance regarding which area is open to tourism, taking into account the maximum capacity of an area, in order to prevent erosion or damage by consumers. The main goals of ecotourism are to provide tourists with a look into the culture and natural resources, and as ecotourism is about people participating in nature and cultural environment, such tourists would not want to be responsible for damaging or destruction of the site. Displaying the natural environment in an ecological and culturally sustainable way and educating the tourists at the same time are the cornerstones of ecotourism

that provide economic benefits at the local level. National parks and protected areas are the main sources of ecotourism. Ecotourism can have important consequences on rural development through the effective management and understanding of sustainable tourism promotion. Various policies must be created that result in sustainable tourism, the specifics of which will depend on the nature of tourist accommodations. These policies might involve the meals at ecotourism facilities, transportation that generates the least amount of pollution, especially noise and air pollution, in the environment. Building materials, furniture, and decoration should be in accordance with local regulations and should utilize such types of energy that create less pollution. Ecotourism should promote creation of sustainable job opportunities for the local population, which should include a large part of the indigenous people's income, and the purpose of protecting the environment should be explained to the tourists. To participate in all ecotourism potential stages of the local community, ecotourism activities should provide planning, monitoring, management, and supervision in making the ecotourism potential areas. These areas to be managed in accordance with ecotourism principles are also valid for sustainable ecotourism in the country [1, 13, 20–24].

4. Using GIS to find ecotourism sites

GISs allow for more ecology-based identification of flora and fauna in order to determine the nature of protection required based on application availability. In this study, GISs were used to characterize the habitats and create spatial data that form the basis of planning and managing the use and protection of land. Nature conservation and landscape ecology are carried out via practical applications in different areas, which require interdisciplinary study. Using GIS provides support for these applications and helps researchers solve their problems and achieve their goals [9, 13, 14, 19, 24–26].

Using GIS spatial location to generate a geographic and ecological inventory is finding increasing use in planning and management studies. GIS spatial data can be used to detect the potential areas and work on digital media. It also allows the research data to be saved, reorganized, modeled, and analyzed, and the data can be presented alphanumerically or graphically. In conjunction with this data, GIS users can employ geometric and nongeometric data to help them determine the spatial relationship of complex and logical content. This feature is important for the transformation of an objective and measurable level of complex structures and spatial relationships in phenomenal form located in ecological studies [9, 13, 14, 19, 24–28].

5. Ecology-based detection, analysis, evaluation, and planning as a tool for GIS

The implementation of GIS in the field of nature conservation and rural landscape offers technical and scientific support to researchers. GIS applications are found in areas involved in the following kinds of work:

1. Processing and interpretation of digital images
2. Identification of species, habitats, and biodiversity
3. Detection, analysis, and evaluation of landscape structures (biotope, land use, ecological areas, etc.)
4. Protecting and monitoring of detected valuable ecological areas
5. Creation of maps of these studies

Because of advances in hardware and software, GIS applications offer convenient, high-resolution digital image interpretation methods. The application allows for remote sensing and GIS data production, evaluation of a combination of data, as well as querying and presenting data, all of which are mutually complementary. At present, an integrated remote sensing and GIS analysis of the landscape allow for holistic planning and management, which is considered as the most important feature of the GIS tool. The tool increases the availability of data obtained remotely with GIS. Subsequently, the data is obtained by remote sensing, and the current environmental and ecological conditions of identified areas are recorded in the GIS database. This feature can also be used to update the database through monitoring [9, 13, 14, 19, 28–33].

Type of habitat and climate are used to map habitats, soil, geology, topography, and so on. Inferences are made based on the statistical relationships between biogeographic features. Spatial inference based on the potential distribution area of a species or the statistical relationships are mapped as habitat suitability. Mapping the biogeographic features with GIS, which also involves the production of new map types (topographic humidity index, sun radiation indices, land position index, land surface temperature, etc.), is also an important part of this work. Besides this feature, the remote sensing data provides researchers with various vegetation indices, including a leaf area index and normalized vegetation index. As a result of this data, the accuracy of this thesis was increased. The types of species–area relationships at work are necessary for making statistical analysis and evaluation. Analysis of the types and principle components of multivariate analysis is the primary statistical analysis used in mapping habitats, linear regression, geographically weighted regression, canonical associated correlation, generalized collective models, generalized linear models, etc. [33–37].

Based on the conservation of biodiversity and supply of spatial data management, GIS provides data management and analysis. Biological diversity of land use and land cover change in conjunction with the high areas of remote sensing data that are provided systematically. By better understanding the dynamics of these changes in GIS, conservation and management based on effective monitoring can be accomplished. In particular, biodiversity can be identified and conserved using remote sensing data through environmental and ecological features. These features are based on the diversity of information supported by improved research techniques and GIS [19, 38–40].

The use of space and hot spots for a variety of species are mapped on the basis of common analysis. Yet, species and other methods can be used to determine the abundance of key species, indicator species, functional taxonomic groups, and so on. The model used for this

study was mapped using similar habitat requirements of common species, and many possibilities were considered in certain habitat types.

6. Determination of landscape structure, analysis, evaluation, and use of GIS as a tool in planning

GIS is used to characterize the landscape on the basis of landscape ecology and has widely been used for typing rural landscape habitats, biotopes, ecosystems, land use, ecological regions, and so on. Structural formation detection, analysis, evaluation, planning, and monitoring at locations have given GIS an increasing importance for the past several years. This use of GIS is important especially for research in which an explanation of spatial relationships is needed in the form of thematic maps. The spatial relationships of the past have been used to develop scenarios and models for the future, and these relationships and models of current or future public squares have proven the GIS system's ability to interpret future changes [19, 41–45].

Since the late 1980s, structural diversity has been determined using GIS, and since the early 1990s, spatial and temporal landscapes have been used in GIS analysis. During this period, the landscape metrics for detecting and analyzing landscape structures were formed. These metrics were developed through naturally occurring and anthropogenic changes in the landscape structure, habitat quality, biodiversity, and ecosystem assessment, which expressed the effect of the nutrient loop. Subsequently, GIS-based and integrated forms of software have been developed [19, 40–46].

7. Ecology-based inventory, conservation, and GIS applications in planning and management studies

In this study, based on the data type of the raster digital elevation map of the forest, the stand type map was overlaid with the forest. Height of each step size distribution space was also given. In another study, which identified bird species, diversity mapping was carried out in the national park. This study carried out biotope mapping, which was then combined with the previous bird observation results. Bird species identified in the previous studies from observation points, and the habitat characteristics derived from these points, were then illustrated in a biotope map that was overlaid to form a model of the diversity of bird species that have been mapped in the national park. The vegetation types in the habitats of these bird species at each observation point were brought together into an altitude-dependent properties list in MS-Excel. Furthermore, biotope types were generated of the bird species distribution, depending on the altitude. The digital elevation model and biotope type were then superimposed. Here, the distribution before the height of the biotope types, which depended on the number of bird species and the potential spread of bird species, was entered using GIS. Thus, the minimum and maximum flora and fauna can be found in the study area with a biotope type. The number

of bird species has been mapped out for all types of biotopes. The number of equally spaced areas between bird species was listed as the values very high, high, medium, low, and very low. This new map was created using the sequence values [19, 46–48].

Biotope type map planning of the required fields, including conservation and management of protected areas in particular, is of great importance as a fundamental base of potential areas. GIS mapping of biotopes and quantitative studies for the nonprinted combination of geometric and nongeometric data, or of vector–raster data sets, make it possible to evaluate potential areas separately. Satellite images of the classification of the pixels in size printed digitized with the resulting raster data map geographical data in the resulting raster or vector data set of GIS in land use are to be stored in the database of characteristics, such as vegetation and habitat features, querying and then stratification is to ensure the acquisition of new areas. The data is recorded in the database of the new field space with reference numbers of the biotope type characteristics, which is of great importance in demonstrating the line or point of the ecotourism potential areas. In particular, the resolution of the remotely sensed images, based on the height scale in the hierarchical environment, which is used to classify half of the biotope types has been derived with fully automated analysis used for switching or coding systems. The new layers with the identification of the different semantic layers of various hierarchical scales are used to name the biotope type [9, 13, 14, 19, 44–48].

8. Determining the type of mapping and function of the landscape

In this section, the contents of the project were determined by mapping the landscape types, and the functions that were carried out will also be described. Database creation and management were performed using GIS in this project, which involved spatial analysis and mapping features such as the determination of the characteristics that make up the landscape, analysis, and assessment. The mapping of landscape types was used in the analysis of landscape functions and areas of conflict. The characteristics that make up the landscape were classified separately, and the database was created for them in the GIS environment. Each type of property was mapped to form the landscape. Classified thematic maps from satellite images supported by terrestrial reception and other digital maps (terrain model, vegetation, and land use maps) were the main types of GIS data that were used to map the landscape. Determining the potential ecotourism areas in the database in the GIS environment by developing geological and geomorphological techniques, water areas, topographic terrain, vegetation, and landscape characterization, and typing methods based on the land use were provided. Land use data obtained through the evaluation of data sets provided the areas of social and cultural importance, vegetation types, maps of hydrological and geological characteristics (water areas, wet and dry areas, and lithological formations), and topographic features (slope, aspect, and elevation). Maps that obtain a homogeneous type were used [9, 13, 14, 19, 30–32].

First vector and then polygon-based maps (geology, stand types, age, site map, etc.) were used. Land use was derived from the classification of satellite images, and based on the type of vegetation raster data sets and height, slope data was overlaid in the GIS. Techniques that were

used include registration in tessellation, selecting, dissolving, the clip, intersecting, and multiple Boolean queries such as overlay. The basis for registration was the presence of characteristics in a landscape that will characterize the type, and the areas were used in dominant Umeda typing. The determination of each landscape type regarding its ecological functions was evaluated by the social-cultural and economic functions and subfunctions of the title at the top of the areas. Landscaping was determined by criteria and indicator functions that belong to them. Some criteria were prioritized by interest groups. Each function can be used to convey the criteria. Evaluations were conducted using ordinal values ranging from 3 to 5, where 1 is high, 2 is moderate, and 3 is low, or 1 is high, 2 is high, 3 is average, 4 is low, and 5 is little or none. Each function was mapped by the value used to represent it. The results obtained for all functions intersect in a 50 × 50 cell in a raster-based and mainly of potential areas. In accordance with the assessment of landscape types based on the functions between the priorities of the interest groups, a map was created for the conservation and use of landscape types in the field [14, 30–32].

GIS-based inventories of ecology now have high-capacity utilization in planning and management studies. In this study, ecological GIS-based inventory levels mentioned in the literature regarding the planning and management practices in place are thought to be explained by some of their practices. Here, the above-mentioned techniques and application methods were combined with GIS to make a good combination for determining potential areas. The most important component of these studies is the use of GIS, through which field and types produce measurable data and can be visualized as concrete levels of the complex relationship of potential areas in the future. The continuation of the new assessment for the planning and management practices for conservation and land use were seen in the making of potential areas. A database can be created for that particular query that generates a new map by overlaying the different maps. Additionally, statistical analysis is necessary to increase the accuracy of the study [6, 9, 13, 14, 19, 30–32, 44–49].

In this study, a majority of the examples discussed are from our country, but they have a common application. Their use as a fundamental base of practical planning and management efforts can be applied in many countries, especially European countries, although presently, this is only at the academic level. In our country, achieving digital or printed data is different due to the different characteristics of the natural resources and land use here. As a result, GIS-based assessment is one of the most important constraints for this kind of research. In addition to an ecology-based inventory in our country, a better level of GIS application use in planning and management will require standardization. This will also require correction of some basic data and geographic coordinates. Disseminating these corrections will be crucial.

9. Materials and methods

Occupying 1088.61 hectares in the Ilgaz Mountain National Park Western Black Sea Region, Kastamonu and Cankiri are located within the boundaries of the province as shown in **Figure 1**. Hosted naturally, these regions hold an important position in the regional and

national scale of cultural and recreational resource values. Ilgaz Mountain National Park, comprising 750.86 hectares of Kastamonu and 337.75 hectares of Cankiri, is located in the province. The national park has a forest cover dominated by coniferous trees. Scots pine and fir are the common tree species. Thrush may also occur in public areas. In the field, wild animals such as wolves, foxes, deer, roe deer, lynx, and wild boar are known to be found [50–52].

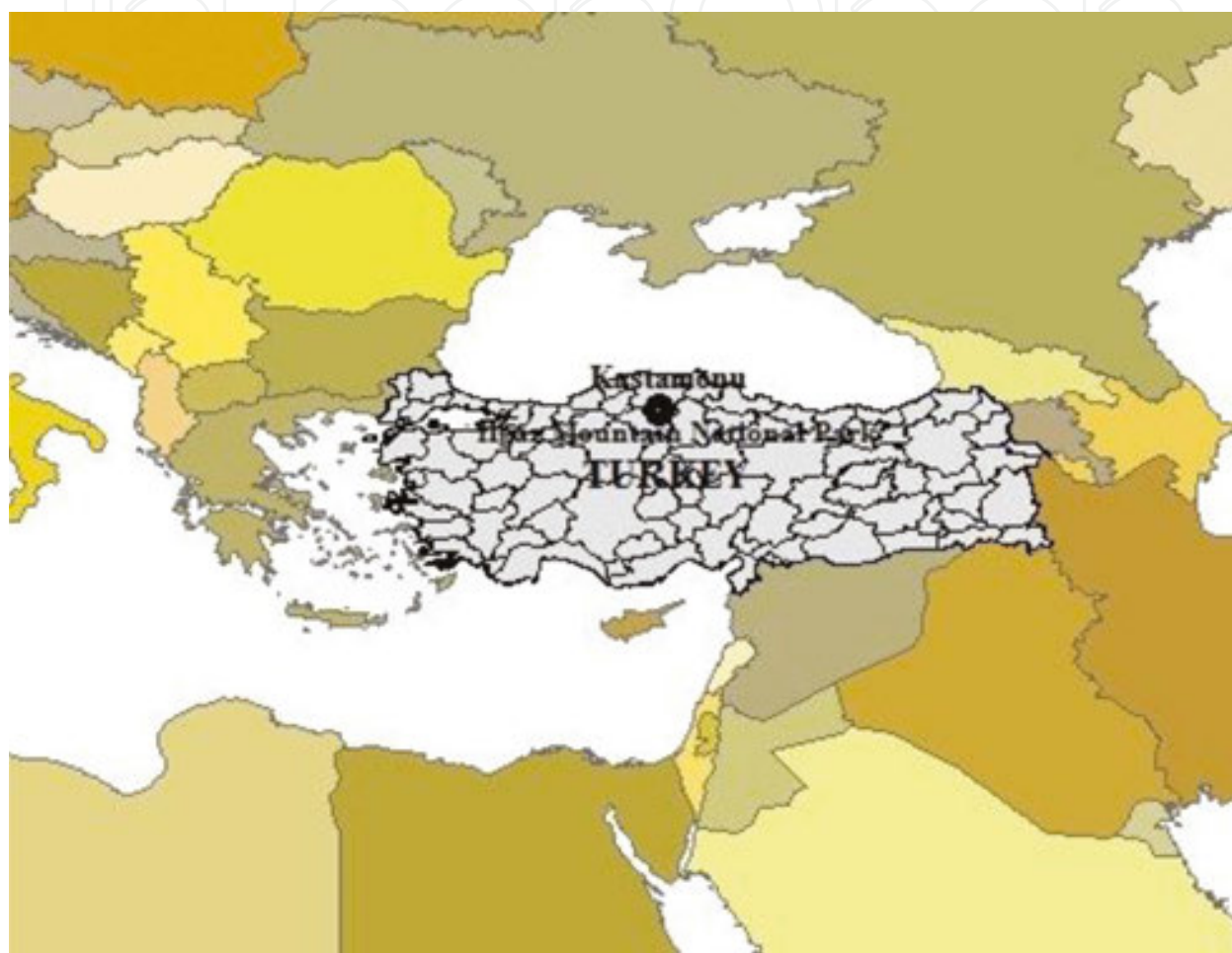


Figure 1. Location of the study area.

The Ilgaz Mountain region is the work area and constitutes the material of study. Areas with natural and cultural elements carry attractive features and provide the potential for tourism and recreational activities. The study was used to create a map using the Arc GIS software. A topographic map of the area of assessment as indicated on the map in **Figure 2** was obtained in the present study of Ilgaz Mountain, and can be developed for tourism and recreational activities. To reveal areas of natural and cultural structure, the observations were made from the photographs taken of the place. Evaluations for research included ecotourism and recreational areas under development, and recommendations were made in light of sustainability.

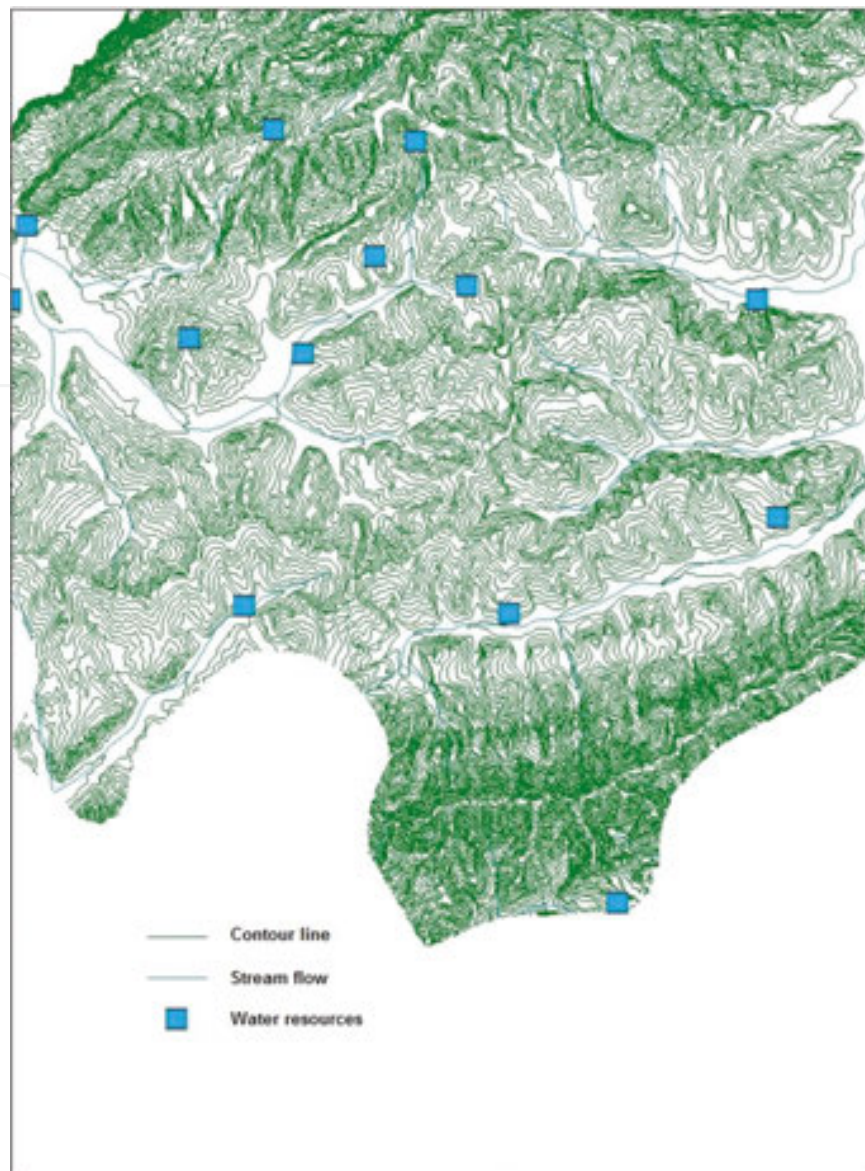


Figure 2. Ilgaz Mountain National Park's topographic map.

Ilgaz Mountain's natural and cultural heritage has been reviewed, and ecotourism has been carried out for inventory study. There are two basic methods of the study that provide additional content. One of them is applying the methodology of the GIS application to be performed in a computerized environment, and the other involves the land where they work. Land studies and the GIS graph database created in 1/25000 scale topographic maps were used. Then, the collected data and ecotourism models for Ilgaz Mountain along with the analysis were proposed.

First, this study examined the awareness levels of tourists on the conservation status in Ilgaz Mountain sporting opportunities. The information about the source values and general status of Ilgaz Mountain was given by performance data. Second, opportunities, threats, strengths, and weaknesses were identified by performing a SWOT analysis [53].

Data collection, analysis of natural and cultural values, and surveys to determine awareness were carried out together by SWOT analysis [54]. Results and suggestions of Ilgaz Mountain ecotourism were reached out by planning and management of it after evaluation of the survey, SWOT, and GIS maps.

The region has been pushed forward by the expression of research and ecotourism potential of the immediate environment and the protection of ecotourism resources in the framework of sustainable tourism approach of the population, and identified ideas for planning and development proposals were presented.

10. Results and discussion

A national park's history, archeological structure, topography, flora and fauna, vegetation, and recreations are quite favorable in terms of natural beauty. Ilgaz Mountain National Park is home to many extreme sports like mountaineering, canyon rafting, camping, hiking (hiking), caving, and rock climbing. Ilgaz Mountain National Park, Central Anatolia, North Anatolian transition zone forming the North West Anatolia, the largest mountain range is located on the Ilgaz Mountains. The national park area from the highway is 200 km away from Ankara, 75 km from Cankiri, and 25 km away from Kastamonu. The area is at an altitude of 800 m between 1600–2000 meters and 1500 m. The park involves two ski slopes in lengths. Ilgaz National Park's area is ideal to respond to recreational needs such as excursionist botanical trips, nature walks, bicycle tours, mountain climbing, running, shooting, skiing, and so on [13].

When looking at the major national parks in terms of recreational use, Kastamonu Mountains National Park of biological diversity and geological structure increase the diversity of recreational activities. The national park's recreation options such as wildlife viewing, hiking, canyoning, rafting, caving, landscape watching, photo safaris, climbing, and so on offer a very suitable environment for camping activities.

In national parks, forest areas, forest openings, accommodation and recreational facilities, a river forms a border with the ski slopes. Because of its rare landscape value, rich vegetation and wildlife, Ilgaz Mountain was declared as a national park on June 2, 1976. The total area is 1088.61 hectares. The location of Ilgaz Mountain on a map of Turkey is shown in **Figure 1**, and the topographic maps are shown in **Figure 3**. The Ilgaz Mountain terrain consists mostly of serpentines, schists, and volcanic rocks. Soil groups in the area are shown in **Figure 4**. The geological structure of the area has interesting properties for up mountain formations. Different geomorphological character movements in the valley are characterized by ridges and peaks. Slope conditions in Ilgaz Mountain National Park are shown in **Figure 5**. This geomorphological structure creates an extraordinary natural landscape combined with lush forests [50].



Figure 3. Ilgaz Mountain National Park between Kastamonu and Cankiri.

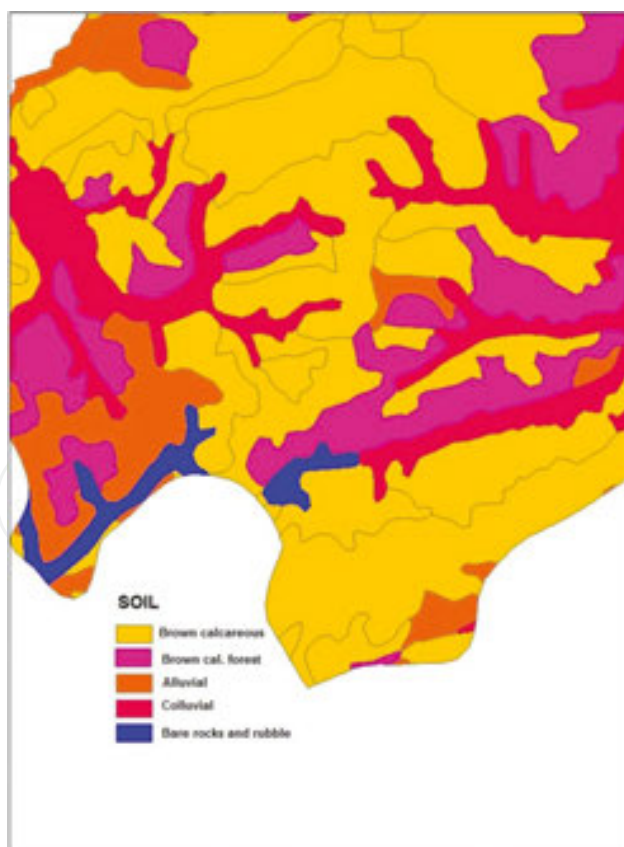


Figure 4. Ilgaz Mountain National Park soil groups.

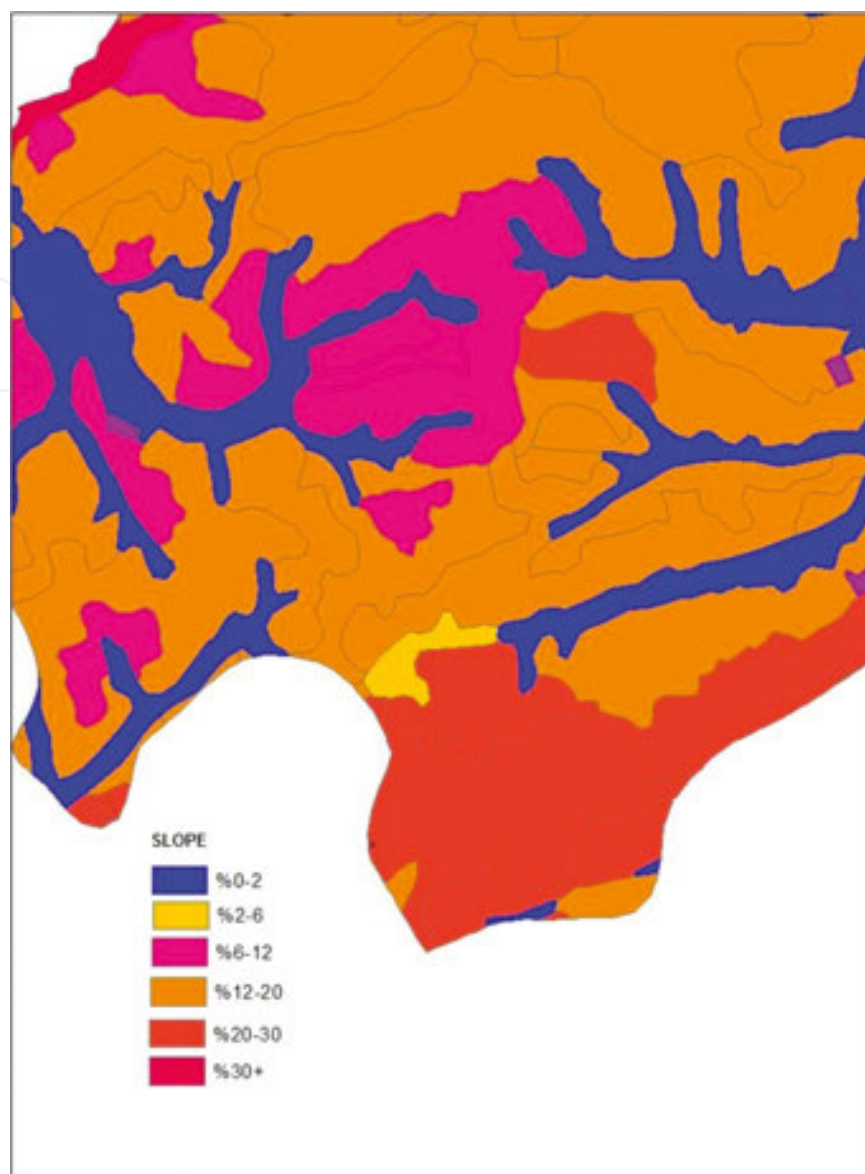


Figure 5. Ilgaz Mountain National Park slope conditions.

Ilgaz Mountain is noted for its natural, cultural, and archaeological values. These floristic regions with specific climatic advantages allow the growth of plant species with endemic features. Kastamonu is a province benefiting from land and air transport. Ilgaz is on the Ankara–Cankiri highway. Ilgaz Mountain can be reached from Kastamonu at approximately 25 km by road.

The Ilgaz Mountains' humid Black Sea is situated on the transition zone between the Black Sea climate and the terrestrial climate of Central Anatolia. The transition zone between the Black Sea and the Central Anatolia region of Ilgaz Mountain has provided a rich diversity of species and habitats.

National parks, topography, rich forests and vegetation, high wildlife potential, unique natural beauties, rich recreational resources, and winter tourism facilities provide a potential area for

a recreational atmosphere beneficial to health tourism, which focus on medical treatments and the utilization of healthcare services. Due to the transition area between the inner regions and areas, the park is rich in habitats. The national park has geomorphological and geological features, rich textures of plants and forests, interesting sights, and high recreation facilities which attract attention with clean air, winter sports, and tourism facilities [51, 52].

The average annual temperature is 9.8 °C in Ilgaz Mountain National Park. **Figure 6** shows Ilgaz Mountain National Park's annual average temperature. The highest temperature in July is 19.7°C and that in August is 20°C. January is the coldest month with -0.8°C. The average annual precipitation is 65 mm rainfall in Kastamonu, which is 110 mm lower than that in the national park, and 1200 mm at the mountain peaks. **Figure 7** shows Ilgaz Mountain National Park's average annual precipitation. With the features of continental mountain climate, the maximum precipitation is in spring and early summer is harsh. The northern slope gets more rain. The summit consists of up to about 1 m of snow for 6 months of the year and remains in place.

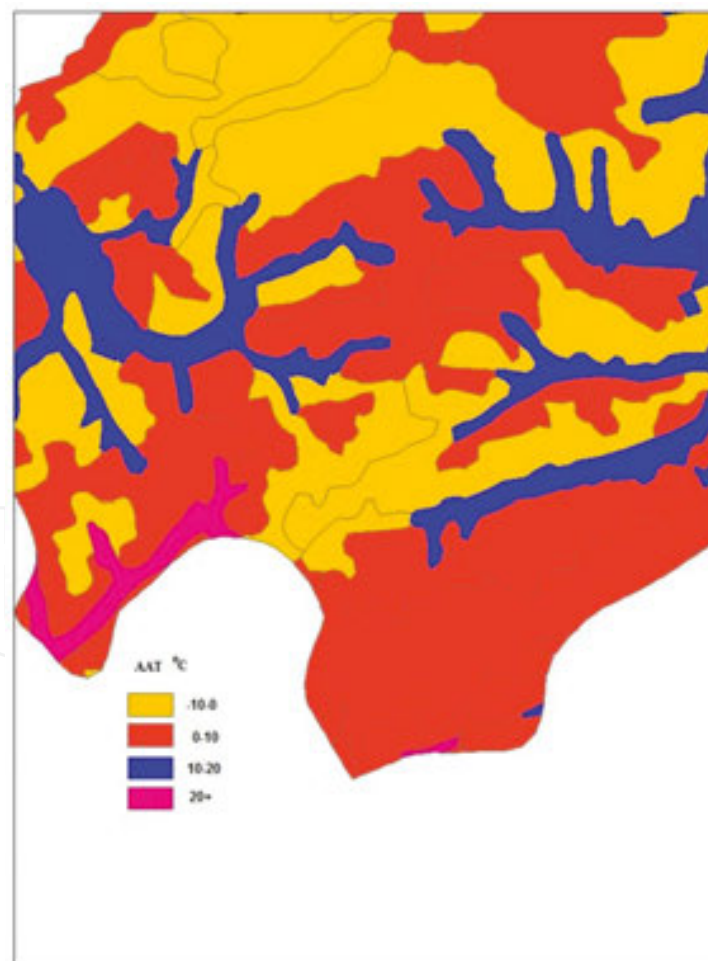


Figure 6. Ilgaz Mountain National Park annual average temperature.

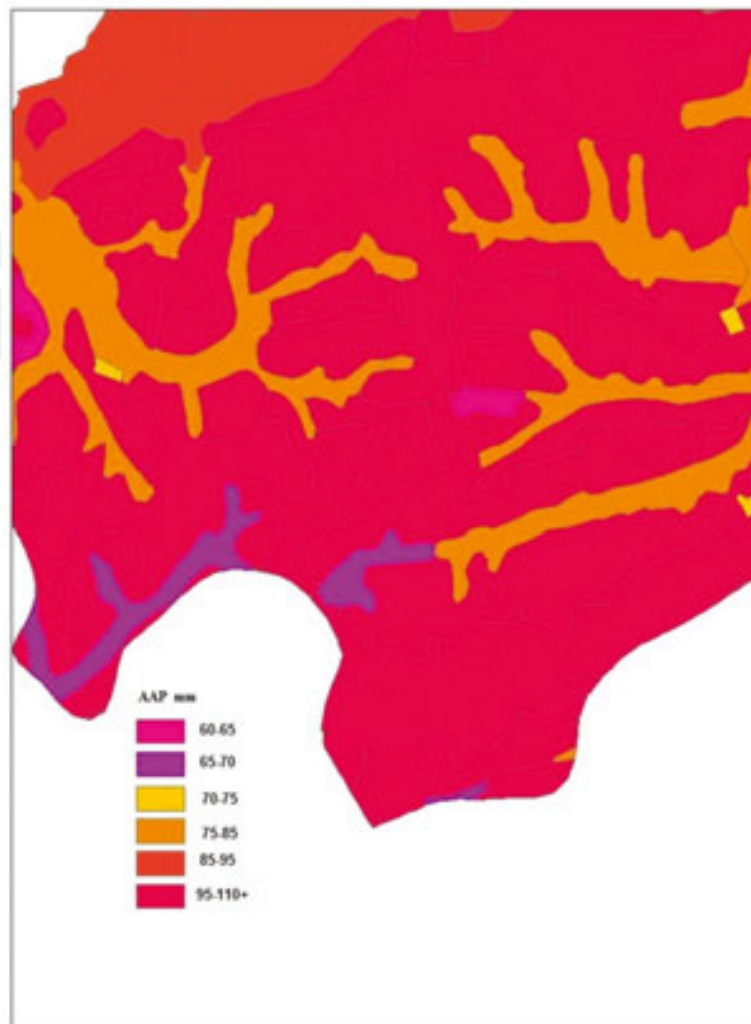


Figure 7. Ilgaz Mountain National Park annual average precipitation.

In the Ilgaz Mountains, the Euro-Siberian region of great flora is included in the lower region. Uludag fir and pine forests are the main trees in the region. Around the national park forest, shrub and grass formations of 617 taxa were identified. Floristic research conducted in national parks included groups of 51 families in which 234 species and subspecies-level taxa have been identified. Out of these 37 species in Turkey (15.8% rate of endemics), 4 are endemic to the Ilgaz mountains. Two of the endemic class are gravely endangered—*Arabis abietina* and *Barbarea trichopoda*. *Ornithogalum wiedemannii* with *Corydalis wendelboi* are the other endemic species.

Mountains overlooking the northern slopes of the Black Sea, compared to the southern side, get more rain and are damp. Larch is seen on the southern slope. In general, coniferous tree species up to a height of 2000–2200 m are common. Alpine plants can be seen at the upper limit of the forest. In the northern slope, with the broad-leaved oak trees, beech trees can also be seen. Pine and fir dominate the heights.

Mammals common in the forest include brown bear, red deer, roe deer, wolves, lynx, fox, wild boar, dwarf bats, hares, Caucasian squirrel, falcon, and lesser spotted eagles. Flora and fauna are shown in **Figure 8**.

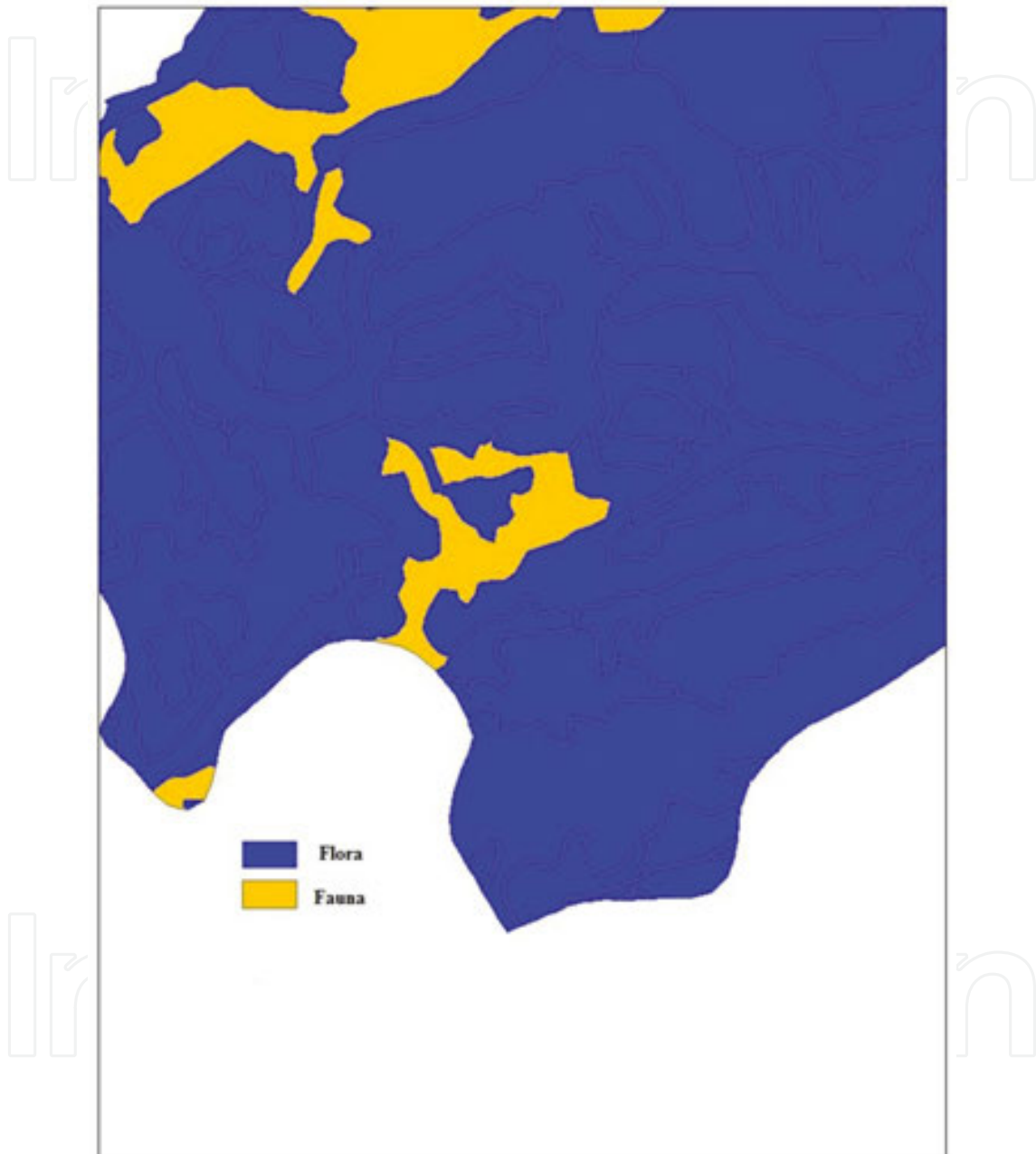


Figure 8. Ilgaz Mountain National Park flora and fauna.

A one-to-one survey was conducted randomly in Ilgaz Mountain National Park in order to determine the awareness level of the protected areas. The number of visitors coming to the park daily during the tourist season reached 100 in 2015. The national park offers many recreational activities such as skiing, hiking, camping, photo safaris, trekking, cycling trips,

amateur line fishing, botanical tourism, and air sports, along with its unique natural beauty. SWOT analysis was carried out and was used in the decision-making, planning, and management phases by predicting the opportunities and threats that can be encountered in the future along with the present strengths and weaknesses. **Table 1** provides the results of the SWOT analysis.

Strengths	Weaknesses
<ul style="list-style-type: none"> • Still retains the natural character of the forest areas • Historical, archeological, and cultural values • A variety of different ecotourism activities in all seasons • The climate and geomorphology • Ecosystem diversity and richness • Easily accessible due to its geographical location • The presence of diversified products • Having uniquely beautiful and natural landscapes • Its borders are being protected by multiple conservation statutes • Offers many activities such as cave tourism, hiking, mountain sports, photo safaris, bird and butterfly watching, nature walks, study tours, skiing, etc. 	<ul style="list-style-type: none"> • It cannot be adequately protected while people unconsciously use the natural resources • Lack of social awareness about protected areas • Lack of qualified staff • Lack of recognition of the imagined and the destination • Environmental, economic, and social consequences which can lead to different results with the apparent lack of eligibility criteria of ecotourism activities • The lack of an institutional structure for monitoring and controlling ecotourism activities consisting of uncontrolled entry • Protectionist awareness of tourism is not developed well enough • Lack of inspection • Lack of infrastructure and superstructure at the desired level could threaten ecotourism services • Lack of adequate work on the potential of the region despite rich fauna and flora • Lack of sufficiently developed local public awareness of natural protection • Lack of structure required to perform many of the top and bottom of ecotourism activities • Lack of accommodation
Opportunities	Threats
<ul style="list-style-type: none"> • Turkey's increasing demand for ecotourism 	<ul style="list-style-type: none"> • Expansion of ecotourism has adversely

Strengths	Weaknesses
<ul style="list-style-type: none"> Natural and cultural landscape values being preserved Local communities providing new job opportunities in the field of ecotourism generating revenue Unspoiled areas The formation of new investments in the ecotourism sector and subsectors Different geographical structures Local in nature conservation, national and global consciousness development opportunities Having a wide variety of different recreational and tourist activities Developing transportation facilities and development of long-distance travel opportunities accordingly Rich in flora and fauna with its natural structure Landscape beauty Nature can be considered as an alternative type of tourism besides tourism The increased interest of the individual and the community ecotourism issues worldwide and in our country Increase the quality and quantity of natural areas protected by law 	<ul style="list-style-type: none"> affected the raid and increased destruction of biological diversity Destruction of flora and fauna at protected areas Unplanned increases with endemic or economic value as a result of the growing ecotours of plant and animal species and the illegal trade for the increase in smuggling Exceeding the carrying capacity Solid waste pollution Air and water pollution The corruption of natural and cultural texture Uncontrolled and increasing notoriety and unconscious eco-tours at the end of life and property lose tourists The monotony of ecotourism activities can bring trouble everywhere along with the implementation of similar activities Threats made for promoting ecotourism which led to excessive construction in natural areas of investment

Table 1. SWOT analysis of Ilgaz Mountain

11. Conclusions

The importance of sustainable tourism activities carried out in different countries with an ecological approach for development and economic growth is huge. Sustainable ecotourism can only be achieved with the appropriate approach to the ecological features of tourism development and management plans. Tourism and recreational activities in the region need

to be organized and implemented with good planning to establish an ecotourism strategy. The study area has quite a high tourism potential in terms of tourism and recreation. Rare resource assets owned by Ilgaz Mountain allow for different tourist activities in different seasons.

Ilgaz Mountain National Park is rich with ecotourism activities, which include photography, bird watching, adventure and sports tourism, historical and cultural tourism, wildlife tours, cave exploring, camping, picnic activities, horseback riding, cycling, and fishing.

Ilgaz Mountain National Park is an important recreational area for hiking for the realization of the scope of the regulation of ecotourism; however, planning is required for these trekking activities so that they do not affect the natural habitat of the area. Trekking guide for the cultivation of the field is another issue to be resolved. This, along with the local people, is a critical guideline that needs to be considered to be selected. This will ensure raising awareness about the value of natural resources, which in turn will create jobs for the local people. An alternative course of arranging the necessary cultural and archeological sites in determining the trekking routes may be another suggestion.

Ilgaz Mountain is rich in vegetation and provides a significant contribution to the tourism potential of the mountain. Some plants can be grown in spaces such as arboretums, and dead plants can be showcased in herbarium museums, providing an important educational aspect and adding value to tourism. In addition, the area also contains interesting examples of the different geological and geomorphological structures. Nature or hiking trails that can be installed in the museum with samples of these rocks can be displayed in the field.

Ilgaz Mountain prevents excessive use of resources in the area covered by natural transhumance activities, protection from pollution and prevention of waste. Erosion work is of great importance in terms of the continuity of nature values. Unconscious agricultural and livestock activities are of great risk to the ecosystem and other areas in the highlands, and the local people should create environmental awareness to inform others about this.

Bird watching refers to observation of birds in nature and is recognized in the world of sports. Finding birds in all types of habitats is the best indicator of a healthy environment. The total number of bird species found in Turkey includes the bird species of the whole Europe. One of the most important reasons that our country is rich in bird species is the rich wetlands which are located on major bird migration routes.. Ilgaz Mountain is also located in the bird migration route. Bird watching is spreading rapidly in Turkey in recent years, especially in the Ilgaz Mountain National Park. The park is home to bird species unique to this region and that are rare. Rare birds and bird species can be spotted in the area, which attract many bird watchers. **Figure 9** shows the bird observation stations in the region. The incubation period should be traced and cooperation sought with associations for this purpose.

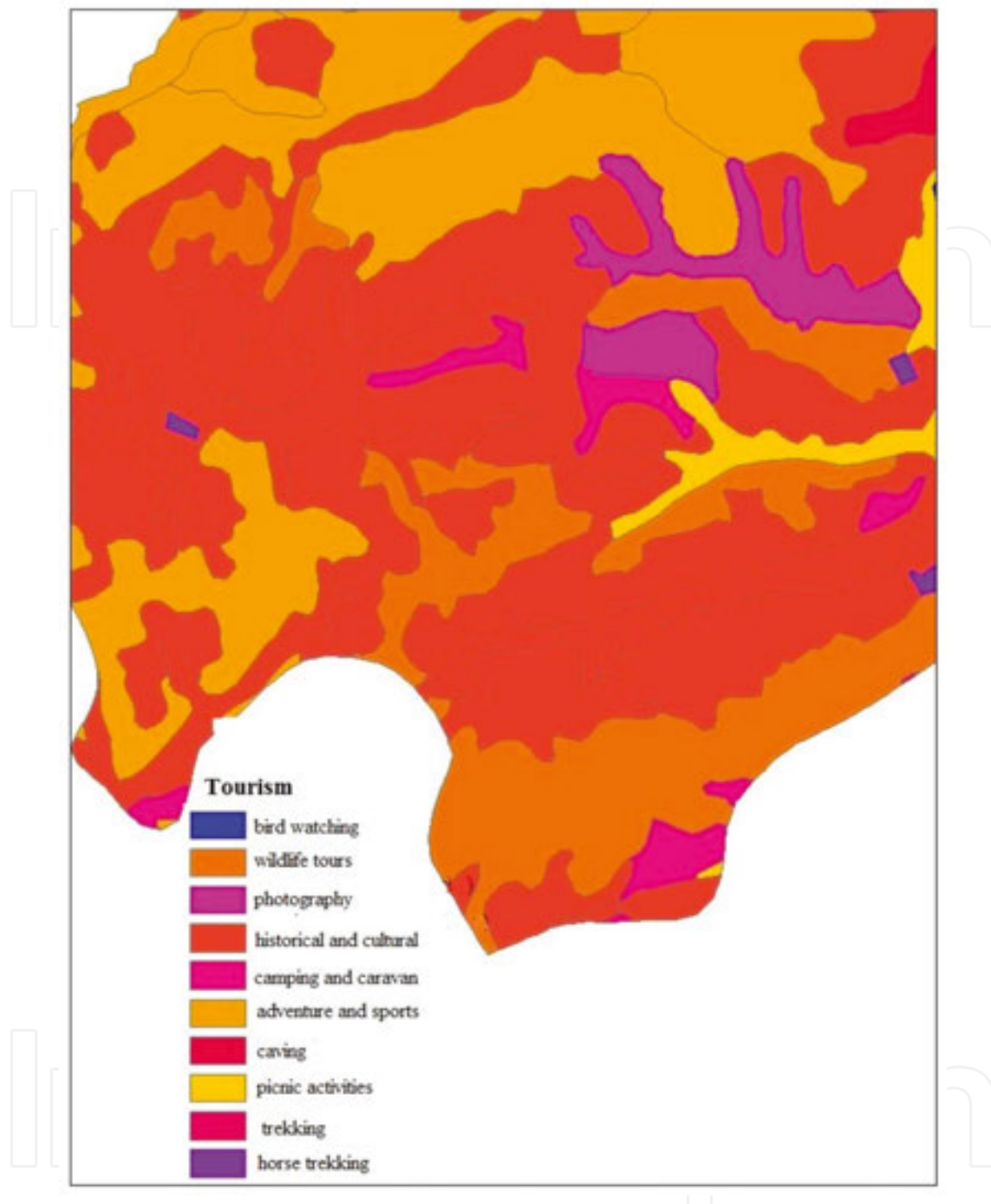


Figure 9. Existing and potential tourism and recreation activities for Ilgaz Mountain National Park.

Suitable areas for camping and recreational vehicle use in the park are shown in **Figure 9**. These areas, as well as those intended for daily use, allow visitors to stay in their tents and motorhomes. At the same time, areas for picnicking are also available, which are preferred by both tourists and local people. In such areas, ecotourism infrastructure, planning studies, site selection, planning, design, transportation, lodging, as well as sewage management should be implemented for the protection of the natural environment and wetlands.

Figure 9 shows a natural park for equestrians, with the potential for horseback riding trails. However, groomed and trained horses, their status as careers and local people trained work should be done. The resting places for visitors should be set at a good time and should not be selected if they create negative impact for the wildlife.

Mountainous areas have many features like spatial untouched areas, fresh air, rich biodiversity, and appeal to hosts for various reasons such as land forms and cultures. Therefore, this environment is a perfect getaway from boredom and offers options to appeal to the masses for new pursuits. As an alternative to regular day-to-day activities, in recent years, there has been an increased interest in sports such as rock climbing and hiking. Many regions of Turkey represent a suitable environment for such activities. Mountaineering is a physical challenge which requires a certain economic strength and technical knowledge; the relatively limited number of reasons such as natural adaptation to the living conditions of people with disabilities could be attracted.

National park is an area of natural and historical features. The visual beauty of natural areas other than the visual beauty of the historic sites is also an important feature of the park. Especially in Spring, rich color of vegetation, endemic plants, wild texture, abundance of animal species living in the park, and historic buildings in the area draw attention to photography. Photography can be held in all national parks as a part of recreational activities.

Historical and cultural tourism resources have been identified and shown in **Figure 9**. These resources must be registered, and illegal excavations should be prevented. This should be considered to allow tourism without damaging the position of ecotourism measures.

The natural park offers significant opportunities for wildlife tours, which is ideal for the observation of wild animals. Ideal areas with plateaus for wildlife tours are shown in **Figure 9**. A wildlife observation deck that does not disrupt the wildlife of the area should be established, along with proper protection and employment of local people as guides.

The area contains many caves useful for cave tourism, as shown in **Figure 9**. The natural and cultural landscape values are indicated as well. The entrance should be controlled and protected from the point of view of access. A natural park with a transportation network can be defined as a park with high standard of forest roads. In terms of cycling tourism, the natural park is of sufficient quality and standard and is ideal for cycling tourism. Appropriate resting areas and drinking water fountains that visitors can use to relax are sufficient to meet the needs and specifications of the area. Proper studies can be conducted for the purpose of landscaping bike paths, as route selections should not adversely affect wildlife.

The number of tourists visiting the natural park should be increased with the improvement of existing sites, and the ecotourism concept should be used to meet these needs; however, this will also require constructing new spaces to accommodate demand. For this purpose, the upper structure is created, depicting the zones in **Figure 9**, which can be chosen according to the centers and the creation of spaces that reflect the local architecture and culture. With this creation, a great number of tourists will be attracted to the park.

Regional transportation is available in the area, in addition to various facilities along the road that allow for seamless transportation. Moreover, the region is very safe. A homogeneous

social structure, with highly hospitable locals, leads to almost no crime in the region. This feature is important for researchers who want to conduct research in the field. Ilgaz Mountain can invite researchers from universities, research centers, and natural scientists to the natural park.

At the entrance of the parking area, a map of the area, along with information panels should be placed when necessary. Similarly, in accordance with the opinion of the expert guidance of the natural park space and wildlife habitat, the area should be prohibited from placing of advertisements.

While preparing introductory materials to increase awareness for tourists who come to ski in areas of this region, information about Ilgaz Mountain was provided as a gift. Lack of direction signs to the natural park, despite its close proximity to a major highway, complicates accessibility to the park, and therefore, steps should be undertaken to rectify this situation. The natural park is the responsibility of two provinces. This makes it mandatory for the coordination of development strategies, and hence, establishment of a joint working committee on this subject would be useful. Due to its proximity to many other cities, Ilgaz Mountain's location and accessibility by various transportation facilities make it an excellent alternative for weekend and day trips. Ilgaz Mountain should be added to the tour itineraries of surrounding areas to ensure the promotion of the mountain and the range of sports clubs and other activities. The existing accommodation should be used more effectively in the modern ski area close to the reorganization, and introduction of sports facilities will be positive.

Creating pedestrian places open to tourism in the area, including local product outlets, cafes, restaurants, tea gardens, living and recreation areas, and areas with realization of cultural activities to stimulate social performance will add charm to the area. Routes suitable for walking and hiking should be identified, and wooden walkways should be added to give the tourists the opportunity to walk in all seasons. Areas depicting the activities of transport, road maps containing information and images, advertising billboards, posters, brochures, and booklets should be prepared. Construction of the high-point cableway line to access difficult areas will be an important tool, enabling the discovery of different points of attraction. The traditional way of life and the protection of the culture of the Ilgaz Mountain plateau should be depicted.

People think of spending their free time in nature, involving in many recreational activities. Most research on the protection of national parks and recreation areas considers the activities carried out in these areas. According to the characteristics of the activities, the Ilgaz Mountain National Park hosts and classifies many recreational activities. A study to determine the recreational potential of Ilgaz Mountain National Park conducted in recent years has determined the areas to be suitable for recreation, as shown **Figure 10** [13].

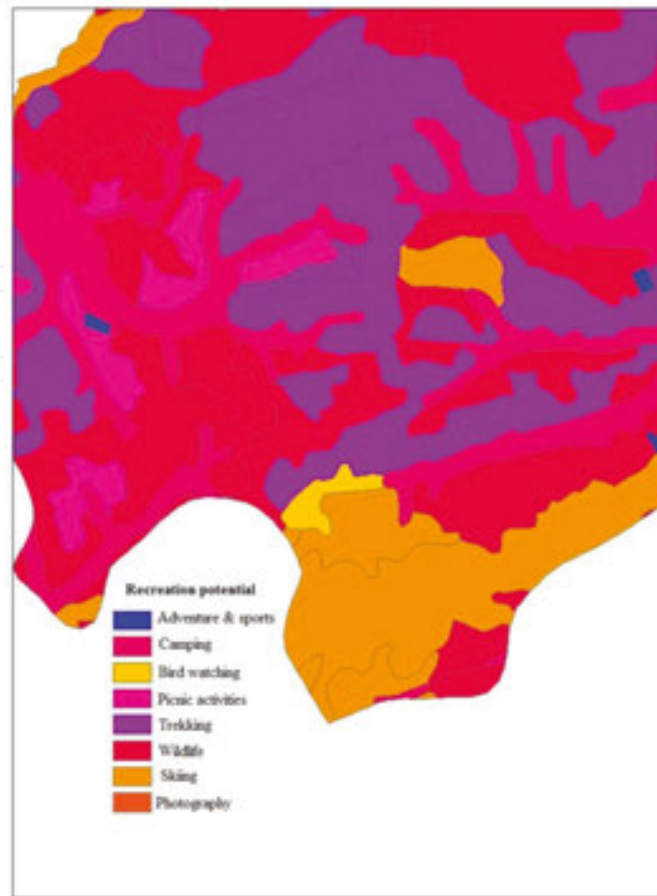


Figure 10. Recreational potential for Ilgaz Mountain National Park [13].

In this protected area that hosts recreational activities, leisure time, as a getaway from boredom and hectic life of citizens resulting from urbanization plays an important role in evaluating and renewing themselves. Especially today, due to difference in recreational preferences of the citizens of this state, and the increase in the number of natural areas, it is possible to say that there are reasons to shift to recreational activities. The purpose of national parks and protected areas is to promote education about nature and ethical behavior toward nature in the community and to instill awareness of the environment and nature's protection. For these reasons, services and activities will be offered in these areas, which will determine the circumstances in which they can be used. The introduction of the National Park visitors will inform the unit that directs trips to the field, with the information explaining the resource values guide. Maps will be provided to get to know the area, and the importance of protecting these resource areas will be highlighted. So, it will have space and will protect society.

Quick return of value to natural and cultural resources of the area in the national park of recreation understanding that the implementation of development that cannot be given damages. Hence, for tourism, recreation activities have negative effects on the sustainable development of the national park, and for this, a number of criteria need to be identified and applied. These criteria, appropriate for the nature and continuity of national parks and park

resources, are of great importance in terms of sustainable development. Fun, relaxation, and recreational activities in nature are more closely defined as self-renewal functions, and the benefits of such activities include nature conservation and increase in environmental awareness. However, recreational activities lead to soil compaction, damage to the vegetation, disturbance to fauna, creation of solid waste, noise, and other adverse effects due to tourism. Therefore, they need to be planned so as not to disturb the natural environment. Protection of users in order to understand the expectations of the user relationship for healthy walks and taking management decisions in this direction are required. For the protection and use, the relationship should first be clarified with the purpose of identifying the ecotourism potential of Ilgaz Mountain. This is shown in **Figure 10**. User stability in the context of the national park protection requires modifications. The definition of national park tourism cases where a decision granting. While keeping international development in mind, the requirements of Turkey and Ilgaz tourism to shape national park tourism must be fully described. Thus, after determining the ecotourism potential of the area, recreation should be permitted within these limits.

The fact that ecotourism depends on natural resources is indisputable. Therefore, the environmental sector, to be sustainable, social, and cultural, must predict the effects that may determine plans and strategies to counter these effects. However, sustainability depends on retaining the original value of the resources by using them rationally.

Ilgaz Mountain must first assess the protection needed to better preserve its resources. Sustainable tourism in the area with the purpose of economic activity and income of the local people will enable better preservation. The fundamental attractiveness of ski tourism offers potential for ecotourism. In terms of tourism, the national park has the possibility to encourage the alternative tourism movement. However, while currently the park offers a wealth of potential, its utilization is limited. The recommendations made for the transformation of the national park's economic value should be implemented. At this point, along with the joint efforts of the local people—especially in the private sector—and the local and central government, managing ecotourism activities in this region is of great importance.

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