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Investigation of User Trends and Recreational Service Relations in the Sample of Kadınçayırı Natural Park

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Abstract: With the increasing interest in outdoor recreation activities, the demand for national parks and natural parks has also increased. Natural parks, unlike National Parks, are natural parts that have protection, recreation and tourism areas with only natural resource values that are rare nationally and internationally. Today, natural parks are visited by many people for recreational purposes. For this reason, recreational activities in natural parks gain importance as a tourism activity. This study aimed to reveal the recreational potential by evaluating user trends and expert preferences with the surveys conducted in the Kadınçayırı Natural Park which is located between Çankırı and Kastamonu provinces. Analytical Hierarchy Process (AHP) analysis has been applied to the obtained data arranged in line with Gülez Method features. ArcGIS 10.5 software has been used to produce the maps and SPSS 25.0 software has been used to analyse of surveys. It has been determined that the recreational service and potential of the Kadınçayırı Natural Park showed enrichment. There are some criteria that affect the recreational activities in the area and in this context, suggestions have been developed in terms of the Landscape Architecture professional discipline.

Keywords: Recreation, User trends, AHP, Gülez Method, Çankırı, Kadınçayırı Natural Park.

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1. INTRODUCTION

Natural landscapes are natural areas where no human influence is observed and where the land structure, soil structure, air, water, vegetation and animal community create an ecological balance. International Union for the Conservation of Natural (IUCN) published a report on "Protected Areas Management Categories Purposes and Criteria" in 1978, and according to this report, protected areas were divided into 10 categories. These categories are Scientific Reserves/Absolute Nature Reserves, National Parks, Natural Parks, Nature Conservation Areas, Protected Landscapes, Resource Reserves, Natural Biotic Areas, Multi-Purpose Use Areas, Biosphere Reserves, World Heritage Sites. Protected areas are geographical areas defined and managed by legislation in order to ensure the long-term protection and continuity of ecosystem services and cultural values with natural areas. Protected areas include national parks, natural parks, natural monuments, natural protection areas and wildlife development areas (Mert and Kutluca, 2018).

With the increasing interest in tourism and outdoor recreation activities, the demand for natural parks and the variety of activities carried out in natural parks have also increased. There are few studies done on the anthropogenic impacts with user trends on protected areas. This may result from the complexity about the assessment indices. In the context of ecotourism and protected areas, education, technique and ecotourism topics were generally emphasized in the beginning of the researches. TIES (1990) introduced the definition and principles of ecotourism in the book titled “Description and Ecotourism Principles”. TIES provided information on topics such as training and technical assistance in the development of ecotourism. Erdoğan and Uslu (2003) examined the concept of ecotourism in their research titled "Evaluation of Kazdağı National Park in Terms of Ecotourism", revealed the ecotourism potential of Kazıdağı National Park and developed suggestions. Açıksöz,

Topay and Aydın (2006) revealed the potential of Bartın-Arıt Town in terms of trekking activity in their research titled "Determination of the Trekking Potential of Bartın-Arıt Town". Within the scope of the research, it has been suggested that if the determined tracks are evaluated within the scope of alternative tourism, it will contribute positively to the socio-economic structure of the local people. Lai and Nepal (2006) focused on local perspectives of ecotourism development in Tawushan Nature Reserve in Taiwan in their research named "Local perspectives of ecotourism development in Tawushan Nature Reserve, Taiwan".

In recent years, studies have been carried out that reveal the spatial relationship of urban people recreational trends and nature protection areas. Kaya (2007) mentioned the recreational tendencies and demands of the people of the city of Bartın in her research titled "A Research on the Determination of Recreational Tendency and Demands of Bartın Urban Residents" and developed suggestions for meeting these demands and increasing the quality of urban recreation areas. Akten, Yılmaz and Gül (2009) used the AHP method, which allows both quantitative and qualitative factors to be taken into account, in the selection of the best decision alternative in their research titled "Determination of Recreational Land Use Factors for Land Use Planning: Case of Isparta Plain". Kurtoğlu and Duzguneş (2011) explained the possibilities of the urban forest, which forms a part of the Kafkasör Plateau, the oldest recreation area for the city of Artvin and its immediate surroundings, with the research titled "Recreation Opportunities of the Artvin Urban Forest and Examination of User Preferences". Aydınözü, İbret and Aydın (2012) discussed the tourism and recreational potential of the area in the research named "Analysis of Land Use in Kastamonu Ilgaz Mountain National Park". As a result of this study, it was stated that its development for use harmed its natural structure. Polat, Aktaş Polat (2016) handled the nature parks in the sample area within the scope of protected areas in their research titled "Investigation of Recreational Nature Parks in Mersin as Protected Areas" and aimed to identify the recreational potentials of these parks. Surat (2016) highlighted the recreational potential of Deriner Dam Lake and its surroundings, located within the borders of Artvin province, in her research titled "Evaluation of the Recreational Potential of Deriner Dam Reservoir and According to Gulez Method and Development of Land Use Proposals". Genç, Şengel and Işkın (2017) stated in their research titled "Evaluation of the Eco Tourism Potential of Abant Nature Park" that ecotourism is an important tool for sustainable development, especially in underdeveloped and developing destinations, and they defined the types of ecotourism.

In this research, Analytical Hierarchy Method (AHP) was performed as one of the multicriteria decision-making methods (MCDM) and Gülez Method was used to carry out a simple and quantitative analysis in Kadınçayırı Natural Park. It was aimed to examine the user trends and recreational service relations with ecological approaches in the example of Kadınçayırı Natural Park. For this purpose, a survey was conducted involving users of the natural park. It has been concluded that more than one recreation activity is carried out in the area. In the light of the surveys conducted in the area and Gülez Method features, the landscape value, recreational facilities and negative factors were analyzed with AHP and suggestions were made.

This research is important in terms of providing the balance of protection and use of the Kadınçayırı Natural Park, which is one of the important nature conservation areas in the professional discipline of Landscape Architecture, evaluating the users expectations of the area, expert opinions and spatial relations with statistical methods, and in this sense, the first data about the area were produced.

2. MATERIAL AND METHOD

2.1. Research area

Kadınçayırı Natural Park is within the borders of Ilgaz district of Çankırı and forms a border with Kastamonu in the north. There are Kurşunlu in the west and southwest, Korgun and Çankırı city center in the south, Yapraklı district in the southwest, Kastamonu-Tosya district in the east, and Araç, İhsangazi and Kastamonu city center districts in the north of Ilgaz (Figure 1).

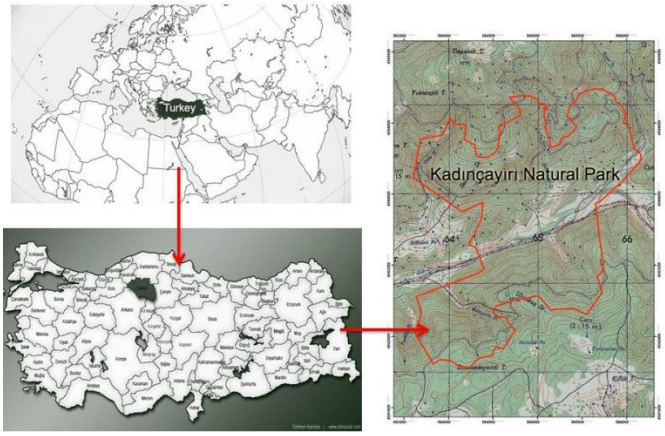

Figure 1. Location of research area

The research area was declared as a Natural Park with the approval of the Ministry dated 5 September 2012. The natural park area is located within the Çankırı Ilgaz Kadınçayırı-Yıldız hill Culture and Tourism Conservation and Development Zone (General Directorate of Natural Conservation and National Parks, 2016). The natural park area, located approximately 17.2 km northeast of Ilgaz district, on the southern slopes of the Ilgaz Mountains and covering an area of 422 ha, is located between 41 º 01′ 42″ – 41º 03′ 22″ northern latitudes and 33º 45′ 27″ – 33º 47′ 09″ eastern longitude. Natural park, which is a high mountainous land, is 63 km from the center of Çankırı. There is Gökçay Stream at the valley plain (Çankırı Kadınçayırı Natural Park, 2014).

2.2. Natural and cultural landscape features

Climate

In order to reveal the climatic characteristics of Kadınçayırı Natural Park, the data collected from two meteorology stations in Ilgaz and Çankırı were used. Since there is no meteorology station in the area, some of the data were interpolated and the climatic characteristics of the natural park area were revealed (Çankırı Kadınçayırı Natural Park, 2014).

The annual average temperature in Ilgaz is 10.6°C. The highest temperature was recorded on July 30, 2000 with 41.4°C. The lowest temperature was measured as -20.8°C on February 2, 2012. When the monthly temperature graph obtained by the interpolation method of Kadınçayırı Natural Park is examined, it is seen that the annual average temperature is 7°C and it drops to -4°C in January and rises to 18.4°C in July. The annual temperature difference is 22.5°C. The highest temperature was calculated in July with 37.8°C, and the lowest temperature was calculated in February with-24.4°C (General Directorate of Meteorology, 2013).

The annual average rainfall in the natural park is 805.0 mm. The highest average amount of precipitation was calculated in May with 103.39 mm, and the lowest average amount of precipitation was calculated in September with 42.47 mm. On a daily basis, the highest rainfall was calculated in June with 108 mm and the least precipitation was calculated in January with 38.05 mm (General Directorate of Meteorology, 2013) (Figure 2).

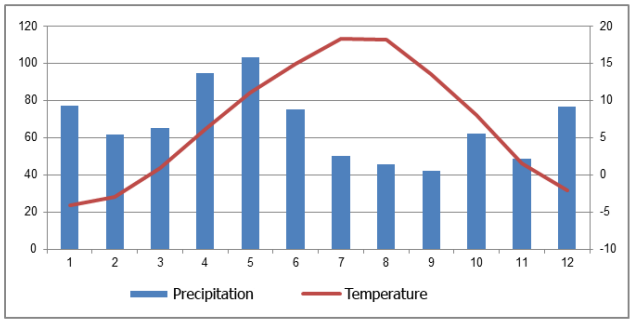

Figure 2. Kadınçayırı Natural Park monthly precipitation (mm), temperature (°C) values (General Directorate of Meteorology, 2013)

Vegetation and Wildlife

In Kadınçayırı Natural Park, mostly coniferous (coniferous) pure or mixed forests, wet and dry meadows, stream ecosystem, riparian ecosystem zone and swamp-peat ecosystem in a small area were observed. Deciduous shrubs and trees have also been observed in some areas where these ecosystems are intertwined. In this way, a rich ecosystem pattern is seen, which is mostly terrestrial, and some of it is seen in the form of rivers, wet pastures and swamps. Forest areas, aquatic ecosystems, grassland and shrub formations, the existence of thin stream branches in forests and open areas with moist and steep valleys are important for plant and animal species that have adapted to such ecosystems. In addition to seed plants, many moss, fungus and lichen species were able to find a living environment in moist-shady and organic matter-rich habitats in these ecosystems (National Parks Directorate, 2020).

Kadınçayırı Natural Park, Ilgaz Mountain National Park and Ilgaz Wildlife Development Area (YHGS) are located at the most important transition points between the Central Anatolian steppes and the Black Sea forest vegetation. Transition points are the most ecologically valuable areas. These areas are considered to *be the richest endemic species and biodiversity areas*. The Western and Central Black Sea forest ecosystems as a whole, together with Kadınçayırı Natural Park, Ilgaz Mountains National Park and Ilgaz Wildlife Development Area, are important reserves of biological diversity and wildlife. Roe deer, Red Deer, Lynx, Wolf, Fox, Marten, Weasel and Brown Bear are important species for a sustainable wildlife and forest ecosystem. Most valuable bird species of this special ecosystem are Falcon, Eagle, Eagle, Rooster, Nightingale, Partridge, Stork, Thrush (National Parks Directorate, 2020).

Topography

Ilgaz Mountains, which include natural park area, located in the Western Black Sea Region. In this region, there are Küre Mountains parallel to the coast. There is the Gökırmak gulley in the south of the Küre Mountains, and the Ilgaz Mountains in the same direction with the Küre Mountains are located in the south of the Gökırmak depression (Taş, 2006). The natural park area is located approximately 8 km southwest of Büyükhacet Tepe (2587 m), the highest peak of the Ilgaz Mountains, and approximately 4 km southwest of Küçükhacet Tepe (2546 m), the second highest peak (Kadınçayırı Natural Park Development Plan, 2014).

According to the slope map of the research area, there are high-very high slopes in the area. There is a slope of more than 45% in the areas outside the Gökdere valley plain within the natural park. The lowest slopes are found in the Gökdere valley plain. The hillsides in the north of the natural park generally have south and southeast aspects.

Hydrology

Gökdere Stream is located within the Devrez Sub-Basin of the Kızılırmak River Basin. Gökdere Stream reaches Gökçay Stream, Gökçay joins with Devrez Stream, and Devrez Stream mixes with Kızılırmak River (Çankırı Kadınçayırı Natural Park, 2014). Devrez Stream, which collects the waters of Orta, Kurşunlu, Ilgaz and Tosya and joins with Kızılırmak near Kargı, is one of the most important streams of the Kızılırmak Basin. Devrez Stream Valley stretches along a 140 km depression, roughly east-west parallel, between Ilgaz and Geçmiş Mountains (Taş, 2006).

Gökçay Stream, which is one of the important streams feeding Devrez Stream, starts in the Ilgaz Mountains and continues in the northeast-southwest direction and merges with Devrez Stream near Ilgaz. Approximately 1400 m of Gökdere passes through the natural park and merges with Gökçay Stream near Çomar Village. Gökdere maintains its flow throughout the year. There are valley plains formed from alluvial outcrops accumulated by Gökdere in the area (National Parks Directorate, 2020) (Figure 3).

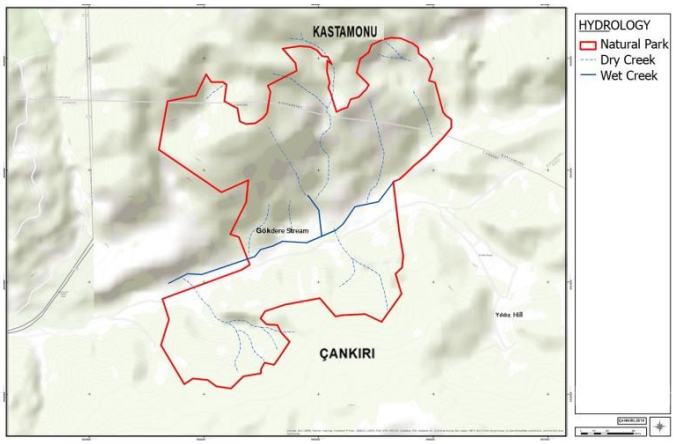

Figure 3. Hydrological characteristics of research area

Stone retaining walls (approximately 150 m long and 1.5 m high) were built on both sides of Gökdere Stream by the Çankırı Directorate of the Ministry of Agriculture and Forestry for the purpose of stream rehabilitation (Forest and Water Affairs Directorate, 2020) (Figure 4).

Figure 4. A view from Gökdere stream (Original, 2020)

Transportation to Kadınçayırı Natural Park

Natural park is connected to the highway transportation network by the Çankırı-Kastamonu State Highway numbered D765. Natural park is reached after 3.5 km (from Çankırı) from the junction near Mülayim-Yenice Village on this state highway. Also, the closest district center to the Natural Park is Ilgaz (Çankırı Kadınçayırı Natural Park, 2014) (Figure 5).

Figure 5. A view from the transportation routes of research area (Original, 2020)

Access to the natural park from the north is provided by the same highway, approximately 55 km after Kastamonu. In addition, it is possible to reach the natural park from different directions (Figure 6).

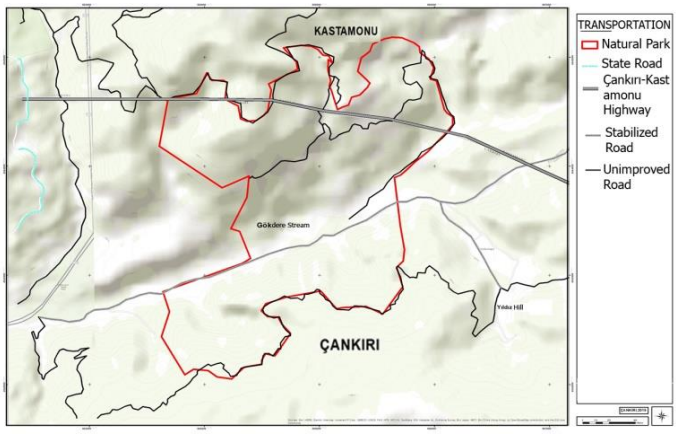

Figure 6. Transportation network in research area

Actual Land Uses and Recreational Opportunities

There is a meadow (approximately 5.1 ha) in the area where the border of the natural park begins and where Eskiyayla Stream valley joins with Gökdere. Along the east and west of the meadow area, there is a mixed forest (mainly Scotch pine, Black pine and Fir). Approximately 700 m from this meadow area, the border of the northern part of the natural park begins. At this point, there is a natural park entrance control point built by Çankırı Special Provincial Administration in 2013. Beginning from this point, meadows and shrubs are seen along the Gökdere (Çankırı Kadınçayırı Natural Park, 2014).

An iron bridge was built to cross the north of Gökdere (Forest and Water Affairs Directorate 2020). The unpaved road deviating from the stabilized road passes through the middle of this area, reaches Gökdere and continues from the north of the stream. At this point, there is a meadow area (approximately 1.6 ha) in the north of Gökdere (Çankırı Kadınçayırı Natural Park, 2014). To the west of this area, there are opened-covered picnic tables, a children's playground on the stream side of the area, and toilet-masjid building built by the Çankırı Special Provincial Administration.

There are skilift and zipline construncions in the Kadınçayırı Natural Park. The skilift has double seat and their carrying capacity are 250 kg. There are 320 seats on the skilift (1560 meters long) in the Kadınçayırı Natural Park. Also, the zipline construction is located in Ilgaz district of Çankırı. This construction (25-meter-high and 530-meter-long) is the longest zipline in Turkey. It has two rope wires and these ropes carry a weight of 100-150 kg depending on the weather conditions. The average time between the start and finish points of the zipline is 30-40 seconds (Yelekçi, 2021) (Figure 7).

Figure 7. Natural park zipline point (Original, 2020)

7 bungalows called *Orman Köşkü* were built in Natural Park in order to develop tableland tourism. These bungalow houses (two-roomed and 72 square meters) have a living room and kitchen on the ground floor and two bedrooms on the upper floor. In addition, the wide meadows in the Yarpınar region and on both sides of Gökdere are suitable areas for recreational activities. Although there is no regular recreational activity within the borders of the natural park, the area is used by the local people for daily picnic activities. Picnic areas are used extensively in all seasons (Figure 8).

Figure 8. Bungalows (Original, 2020)

2.2. Data set

Protected areas, plant richness and geomorphological structure are the main features of the research area. The recreation potential of Kadınçayırı Natural Park is high and it is one of the most important recreation areas of Çankırı province. The research area is regularly visited by many users and provides opportunities for various recreational activities.

Rural recreation areas, trekking, camping-caravan, botanical tourism, photo safari, scientific studies, chairlift, teleski, zipline, winter sports, bungalows, grass fields and picnic areas are used for various purposes in the area. The data sets used in research can be listed as follows:

• 1/25.000 scaled analysis and synthesis reports and maps regarding the research area prepared and updated in 2014 by Çankırı Directorate of Forestry,
• Climatic data taken from Çankırı meteorology stations,
• Materials such as on-site observations, surveys and photographs, and video recordings taken during these observations were analyzed.

In addition, research and publications on physical planning, landscape planning and landscape ecology, interviews with experts and academicians, and informations obtained from institutions and organizations working on natural resources were used as material.

2.3. Research methodology

The research method consists of 5 basic steps. *In the first step*, a literature review was carried out for the purpose and field of the research. National and international resources have been researched about landscape ecology, ecological approaches and recreational potential. Data and maps that may be necessary to determine the recreational potential with ecological approaches have been collected and transferred to the digital data.

In the second step, important environmental features and tourism resources of the research area were determined by field studies and their structural-functional definitions were made. Selection of factors and sub-factors, analysis and evaluation of environmental characteristics and tourism resources constitute process steps. Environmental characteristics and tourism resources were examined in 3 groups. These are;

• Abiotic features (Climate, topography, geology, geomorphology, soil and hydrology)
• Biotic features (Vegetation, wildlife)
• Cultural features (Actual land use, historical and archaeological sites, attraction points)
Maps related to land use capability, land cover, topography, soil, hydrology, geology, protected areas and existing areas were produced with ArcGIS 10.5.

The resampled images were sensetively combined, digitized and transferred to GIS. New maps were created with the help of collected data and satellite images to be used in the analysis of landscape units. In order to produce a map of ecological units in the research area, a parametric method-based structure was generated by examining the Belgian landscape description and evaluation method, French Landscape Atlas studies, CORINE and EUNIS habitat classification methods, which are among the ecological landscape classification methods. Evaluation and separation principles of McHarg (1969), Ndubisi (2002), Erol (2005), Steiner (2008), Koç & Şahin (2008), as well as land cover and ecological unit studies from Coordination of Information

on the Environment (CORINE), European University Information Systems organisation (EUNIS), Belgium and France Land Cover Studies established the principles of the method. Aiming to create homogeneous landscape units;

1. Topography (Slope, Aspect)
2. Geology
3. Major Soil Groups
4. Land Use Capability Classes
5. Land Use values were used.

In order to determine the recreational potential of the research area, the method developed by Gülez (1990) in accordance with the conditions of Turkey and which allows the outdoor potential of a forest recreation area to be determined easily was used. AHP was first introduced by Myers and Alpert in 1968 and was developed as a model by Saaty in 1977 and made usable in solving decision making problems. According to Akten et al. (2009), AHP is a powerful and easy-to-understand multi-criteria decision-making technique in which both quantitative (objective) and qualitative (subjective) factors are taken into account in the selection of the best decision alternative. According to Zahedi (1986), the following steps are applied in solving a decision-making problem using the AHP technique:

Step 1: A decision hierarchy consisting of decision elements is established to define the decision-making problem.
Step 2: Data are obtained by comparing the decision elements among themselves in pairs.
Step 3: By using the eigenvalue method, the relative priority (importance, weight) values of the decision elements are estimated.
Step 4: According to the relative priority values of the decision elements, the overall priority values and ranking of the decision alternatives are obtained.

AHP method brings a very practical way of calculation and is expressed with a simple mathematical formula shown below (Surat 2016).

$$RP\ (\%)=P + I + U + RK + OSE$$

The meaning of the symbols that enter the formula with certain weights and the distribution of the highest (maximum) score (or weights) they can get are shown in Table 1. As seen in the chart, the total score will theoretically be at most 100, so the sum of the scores that the items in the formula can get will give the outdoor recreation potential of an area as a percentage. According to Gülez (1990), the items in the formula get scores according to the following features.

Table 1. Formula items and the scores

Symbol	Meaning	Maximum Score (Item's Weight Score)
P	Landscape value	35
İ	Climate value	25
U	Accessibility	20
RK	Recreational convenience	20
OSE	Negative factors	0 (Min. -10)
ARP	**Recreational potential**	100

To determine user trends, a survey form was designed with the actual informations from local people, experts and field managers. In field surveys, the sample group was selected from the local people of Çankırı. The population of Çankırı in 2020 is 192,428 (TUİK, 2021). Statistical formulas created by Özdamar (2003) were used to determine the sample size (Table 2). The number of surveys to be applied to the local people was determined as 100, taking into account the 95% confidence interval (Özdamar, 2003) and the possibility of data loss. Participants were selected by random sampling technique.

Table 2. Statistical formulas of sample size

Sample Size	±0.03 sampling error (d)			±0.05 sampling error (d)			±0.10 sampling error (d)		
	p=0.5 q=0.5	p=0.8 q=0.2	p=0.3 q=0.7	p=0.5 q=0.5	p=0.8 q=0.2	p=0.3 q=0.7	p=0.5 q=0.5	p=0.8 q=0.2	p=0.3 q=0.7
100	92	87	90	80	71	77	49	38	45
500	341	289	321	217	165	196	81	55	70
750	441	358	409	254	185	226	85	57	73
1000	516	406	473	278	198	244	88	58	75
2500	748	537	660	333	224	286	93	60	78
5000	880	601	760	357	234	303	94	61	79
10000	964	639	823	370	240	313	95	61	80
25000	1023	665	865	378	244	319	96	61	80
50000	1045	674	881	381	245	321	96	61	81
100000	1056	678	888	383	245	322	96	61	81
1000000	1066	682	896	384	246	323	96	61	81
100 million	1067	683	896	384	245	323	96	61	81

In the third step, landscape units were created in the context of the landscape plan. Within this scope, the study area is divided into 5 ecological units including *agricultural areas, inland waters, natural areas, semi-natural areas* and *plant exchange areas* by overlapping climate, geomorphology, large soil groups, land use capability classes and land cover classes.

In the fourth step, AHP analysis developed from the Gülez method was integrated into the surveys conducted in the field and was revealed with the main and sub-criteria that will determine the recreational potentials. In order to determine the suitability of the recreation areas, the land suitability criteria and the suitability values of the sub-criteria of these criteria were examined by AHP analysis. Landscape units are classified according to their suitability for each type of use. In order to determine the suitability of recreation areas, *Landscape value, Recreative Facilities* and *Negative Factors*, which are the features of Gülez Method, were taken into consideration, and these criteria were applied to the surveys as land suitability criteria. Pairwise comparison matrices were filled in by each of the landscape experts (n=10). As a result, criteria priorities were obtained by calculating the *Consistency Rates*, which was carried out to control the consistency of the data (Akten et al., 2009) (Figure 9).

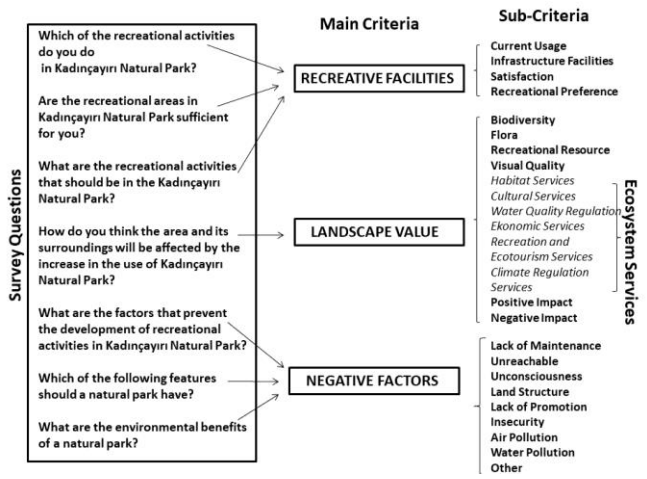

Figure 9. A diagram showing the flow of process (Original, 2021)

In order to support the types of landscape units and ecological units, surveys were practiced on the local people and the Gülez Method and AHP analysis were applied by experts, their use potentials were revealed with main and sub-criteria. Landscape units are classified according to their suitability for each type of use.

In the last step, recreational potentials in Kadınçayırı Natural Park were analyzed by relating with ecological units, and conclusions and recommendations were made.

3. DISCUSSION AND CONCLUSIONS

3.1. Ecological units of reseach area

In order to determine landscape units of the research area 23 Landscape Units were produced as a result of overlapping the topography (slope and aspect groups) and geology (7 groups) layers. The research area was divided into 359 Landscape Units, with the addition of major soil groups (3 groups), land use capability classes (3 groups) and land use layers. Landscape Analysis (Landscape Diagnosis) was carried out in order to better understand the core values of the landscape unit result.

Following the determination of the landscape units, the ecological units in the area were classified as *agricultural areas*, *inland waters*, *natural areas*, *semi-natural areas* and *plant exchange areas* according to the CORINE habitat classification. In this context, it has been observed that natural and semi-natural areas have an important place in the area and inland waters make significant contributions to the ecological structure of the area. Agricultural areas are not actively used in the research area (Figure 10).

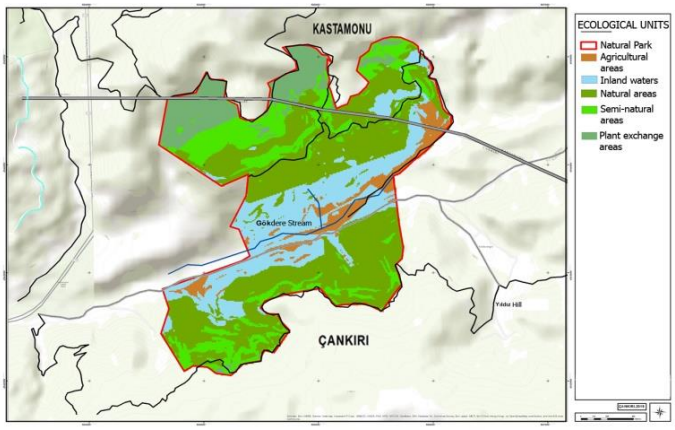

Figure 10. Ecological units of research area

3.2. Survey application

In this research carried out in Çankırı Kadınçayırı Natural Park, the expectations and preferences of the park users (n=100) were revealed. Survey results showed that the area is mostly used by men, the majority of them are between the ages of 21-30, research area is more preferred by married individuals and is visited by all income groups. In addition, natural and recreational features of Çankırı Kadınçayırı Natural Park appeal to all age groups.

The answers to the questions posed to the users are as follows:

- "What is your marital status?" "Married" with a rate of 56%,
- "What is your education status?" "University" with a rate of 43%,
- "What is your job?" "other profession group" with a rate of 46%,
- "What is your average monthly income?" "2000-3000 TL" with a rate of 43%,
- "Where are you coming from now?" "10-50 km" by 55%,
- "Who are you making this visit with?" "with my friends" with a rate of 41%,
- "How many people do you usually visit with?" "5-8 people" with a rate of 44%,
- "Why did you choose to come here today?" "picnic" with a rate of 51%,
- "Which seasons do you come in mostly?" "summer season" with a rate of 69%,
- "Which days do you prefer to visit?" "Weekends" with a rate of 56%,
- "How often do you come?" "1-2 per year" with a rate of 26%,
- "What time do you arrive earliest?" "between 10-12 hours" with a rate of 49%.

3.3. Gülez method application

Gülez method were conducted on an expert group. To apply the method, a total of 10 evaluations were made, including 2 experts from Çankırı Special Provincial Administration and 8 faculty members from Çankırı Karatekin University, Faculty of Forestry, Department of Landscape Architecture. Giving a brief information about the area, experts were asked

to evaluate the field in the light of the criteria in the survey form (Tülek, 2021).

According to the Gülez method, created based on the relationship between *the landscape value, climate value, accessibility, recreational facilities, negative factors and the recreational potential of the area* and *the characteristics of the landscape value* and *the recreational potential of the area* were carried out to experts. The result of the analysis is 66.3%. Despite the value obtained, the landscape value of the research area has been determined as *high* (Tülek, 2021).

4. RESULTS

Among these criteria, *Landscape Value* was the criterion that most affected and determined the recreational potential in the area. Examining the sub-criteria regarding the landscape value, *Visual Quality* was found to be the sub-criteria that determined and increased the landscape value the most (Table 3).

Table 3. Result table of the AHP method

Main Criteria	Sub-Criteria	L Weights	Inconsistency
Recreative Facilities	Current Usage	2,84	3
	Infrastructure Facilities	3,2	
	Satisfaction	2,95	
	Recreational Preference	3,01	
Landscape Value	Biodiversity	3,65	**3,57**
	Flora	3,4	
	Recreational Resource	3,52	
	Visual Quality	3,9	
	Habitat Services	3,88	
	Cultural Services	3,69	
	Water Quality Regulation	3,08	
	Ekonomic Services	3,31	
	Recreation and Ecotourism Services	3,76	
	Climate Regulation Services	3,48	
	Positive Impact	3,61	
	Negative Impact	3,66	
Negative Factors	Lack of Maintenance	3,54	3,37
	Unreachable	3,02	
	Unconsciousness	3,57	
	Land Structure	2,92	
	Lack of Promotion	3,84	
	Insecurity	3,22	
	Air Pollution	3,03	
	Water Pollution	3,68	
	Other	3,55	

Other criteria following this sub-criteria was; *Habitat Services, Recreation and Ecotourism Services, Cultural Services*. Ecosystem services concept was stated in the Millennium Ecosystem Assessment (MEA) report published in 2005 as *benefits that people derive from ecosystems* (MEA, 2005). In MEA (2005) report, ecosystem services are discussed in 4 main categories as resource-providing, regulating, supporting and cultural services (MEA, 2005). According to this research, these services basically constitute ecosystem services. In this context, ecosystem services became prominent in terms of increasing the landscape value of the area.

Some factors that negatively affect the recreational potential in the area have also emerged as a result of the analysis. The most prominent sub-criteria negatively affecting the recreational potential of the area is *Lack of Publicity of the Area*. This criteria is followed by criteria such as *Water Pollution, Unconsciousness, Negligence* in the study area, respectively. Promoting the natural park as an important natural area for Çankırı and Ilgaz in local, regional, national and international platforms will minimize this negative situation in the natural park.

The criterion that least affects and determines the recreational potential in the area is *Recreational Facilities*. Among the sub-criteria, the *Infrastructure Facilities* is the most determinant; *Current Use* sub-criterion was the least decisive sub-criteria. This result again shows the existence of some negative factors in the area.

In the research, it was revealed that 69% of the users of the area preferred the summer season, while the recreational use remained at a very low level in other seasons.

Due to the low income level of users in Çankırı and the majority of them being students, regular trips to the area are not possible. In field studies, it has been observed that users mostly come to the area with their private vehicles. Poor public transport facility is the main reason for this situation.

Users who come to the area for one day prefer this area because of its magnificent view and quietness. These users aim to get away from the stress and tiredness of the day and to feel good about themselves. Therefore, recreation and picnic activities in the area come to the fore.

The destruction caused by stream improvement and recreational activities in the area has already increased concerns about the future. This area is used as a recreational area with unsustainable methods and without considering the protection-use balance. Despite the destruction caused by the pressure of anthropogenic effects on the area, the area has the potential to renew itself.

When a general evaluation is made about the area, it is concluded that the majority of users find the facilities in the area inadequate. In addition, the lack of publicity of the natural park also affects the user potential.

With its natural resource values and recreational features, Kadınçayırı Natural Park offers various recreational opportunities to the users. Despite this, the park hosts visitors below its physical potential. The main reasons for this situation is that the area allows mostly summer use and remains idle in other months, and the transportation infrastructure is not sufficient.

As a result of the improvement of the transportation infrastructure in the area, more efficient use of the ski center will be ensured. Furthermore, it will provide easy access to the area for the social layers with low income levels.

Activities in the research area include photography, trekking / trekking, camping-caravan, picnic areas, plant research and wildlife (fauna) observation, chairlift, teleski, zipline, bungalows, football fields and winter sports. The intensity of ecotourism activities increases even more especially in summer months. There is a need to protect the research area, to encourage recreational participation, to support tourism investments, to increase environmental awareness, to protect

natural and cultural landscape values and to transfer them to future generations, to disseminate ecotourism planning with the participation and support of responsible and relevant institutions, and to promote the area on a national and international scale.

Infrastructure and facilities for sports activities, as well as the possibility of recreational activities, accommodation and ease of communication/transport increase the recreational attractiveness of the area.

3 main criteria (landscape value, negative factors, recreational facilities) and 25 sub-criteria were evaluated in the field through user surveys and AHP analysis. As a result of the evaluations, it has been determined that the most important main criteria affecting the recreational potential of the area are the landscape values (47%). This criterion was followed by negative factors (25%) and recreational facilities (28%). Among the landscape values, ecosystem service values come to the fore. The prominent ecosystem services are habitat services, recreation and ecotourism services, cultural services, climate regulation services, economic services and water quality regulation services, respectively. The landscape and ecosystem values can be increased by minimizing the effects of the negative factors criteria on the area.

Negative factors in the area are lack of infrastructure, lack of publicity, inadequacy of health facilities, transportation-distance problems, lack of awareness of natural parks-lack of education, lack of security, unsuitable land conditions, climatic conditions, entrance fees, and pollution of water source. The most prominent negative factor according to AHP analysis is the lack of publicity. If the negative factors are eliminated, the number of users of the area will increase (Figure 11).

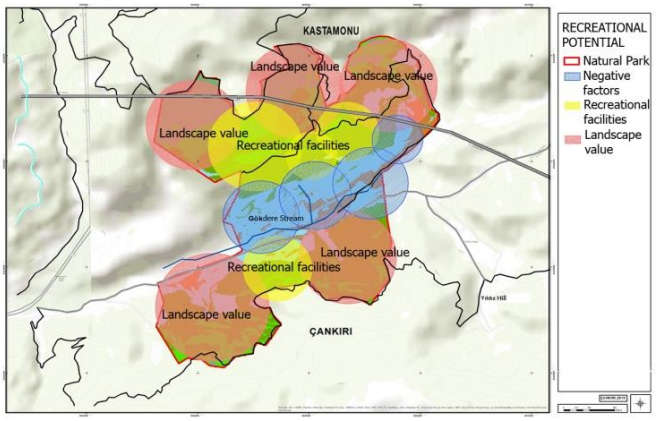

Figure 11. Recreational potential of research area

Akten, et al. (2009) obtained the coefficients of suitability in terms of recreational area use criteria with the AHP method and determined the recreational potential of the area. In our study, it has been revealed that the recreational potential of the area is quite high in line with the data obtained by the Gülez method.

Demir and Demirel (2018) mentioned that the landscape ecology approach should be based on landscape planning, taking land use decisions in landscape management studies, risk management, and abiotic-biotic relationships in the landscape. According to Balık &Türkyılmaz (2021), AHP statistical method is used to prioritize ecological risk factors in Lake Gala National Park. The ecological risk level in the wetland section is higher than the ecological risk level in the terrestrial section. In this context, in the example of Kadınçayırı Natural Park, the necessity of ecological approaches comes to the fore in terms of the recreational potential, the management and planning decisions that affect it.

As a result of the analysis of the data prepared with GIS for Kadınçayırı Natural Park, the ecological unit map of the area was created. Çankırı Kadınçayırı Natural Park Landscape Plan Strategies have been developed as a result of the interpretation of the analysis sheets prepared for the research area and the evaluation of the results of the surveys with the local people and experts. These strategies are:

1. Rare and diverse areas in terms of natural landscape characteristics should be protected. Use areas with endemic species and/or rich biodiversity should be protected by defining appropriate zoning and boundaries.
2. Solution proposals should be developed to increase, protect and improve the quality of valleys, streams and stream beds, which are very important as a resource value. Afforestation areas should be determined for erosion and landslide control purposes.
3. Due to its agricultural character, agricultural types and practices in the region should be supported and their relations with natural and cultural factors should be balanced.
4. Touristic and recreational resources should be evaluated and appropriate activities should be defined for these resources. As recreation types; camping, mountain biking, trekking, botanical tourism, wildlife, trekking, skilift, teleski and zipline should be included in the scope of evaluation. Alternatives should be developed considering the legal regulations in the location and use of tourism facilities and second housing areas.
5. Development directions for residential areas should be proposed.

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