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Evaluation of Outdoor Recreational Potential of Şarlan Nature Park According to Gülez Method

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Abstract

People living in the city tend to rural areas, especially protected areas such as nature parks, to meet their recreational needs. One of Turkey's most preferred protected areas within the scope of recreation/tourism activities is nature parks. Located within the provincial borders of Aydın, Şarlan was declared a Nature Park in 2014. It is a forest ecosystem that stands out with its floristic and faunistic features, dominated by Mediterranean vegetation in an area of 3700 hectares. This research aims to define the outdoor recreational potential of Şarlan Nature Park. The top items defined as the components of recreational potential were Landscape Value (L), Climate Value (C), Accessibility (A), Recreational Ease (RE), and Negative Factors (NF), and the sub-items of these items were scored by the scales included in the analysis method. According to the evaluations, the outdoor recreational potential in the forest has a "high" (61%-75%) value according to the Gülez (1990) method.

Keywords: Recreation, Recreation potential, Gülez Method, Şarlan Nature Park

Gülez Yöntemi'ne Göre Şarlan Tabiat Parkı'nın Açıkhava Rekreasyonel Potansiyelinin Değerlendirilmesi

Öz

Kentte yaşayan insanlar, rekreasyonel ihtiyaçlarını karşılamak için kırsala ve özellikle tabiat parkları gibi korunan alanlara yönelmektedir. Türkiye'de rekrasyon/turizm etkinlikleri kapsamında en fazla tercih dilen korunan alanlardan biri de tabiat parklarıdır. Aydın il sınırları içerisinde yer alan Şarlan 2014 yılında Tabiat Parkı olarak ilan edilmiş, 3700 hektar büyüklüğünde Akdeniz bitki örtüsünün hâkim olduğu, floristik ve faunistik özellikleri ile öne çıkan bir orman ekosistemidir. Bu araştırmanın amacı Şarlan Tabiat Parkı'nın Açıkhava rekreasyonel potansiyeli'nin belirlenmesidir. Rekreasyonel potansiyelin bileşenleri olarak tanımlanan üst öğeler Peyzaj Değeri (P), İklim Değeri (İ), Ulaşılabilirlik (U), Rekreatif Kolaylık (RK), Olumsuz Etkenler (OSE)ve bu öğelerin alt öğeleri inceleniş, yöntemde yer alan skalalara uygun olarak puanlandırılmıştır. Yapılan değerlendirmelere göre Şarlan Tabiat Parkı'nın Açıkhava rekreasyon potansiyeli %65 olarak hesaplanmıştır. Bu değer Gülez (1990) metoduna göre orman içi rekreasyon potansiyelinin "yüksek" (%61-%75) bir değerde olduğu anlamını taşımaktadır.

Anahtar kelimeler: Rekreasyon, Rekreasyon potansiyeli, Gülez Yöntemi, Şarlan Tabiat Parkı.

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1. Introduction

Due to the rapid concreting of cities and the disappearance of green areas, people living in the city tend to rural areas and especially to protected areas such as national parks and nature parks to meet their recreational needs (Altınöz et al., 2014; Özkan, 2001; Kurdoğlu & Düzgüneş, 2011; Akten et al., 2012). In addition, the development of technology, the increase in transportation opportunities, the increase in promotional opportunities with digitalization, and the increase in leisure time have made it easier for people to reach recreational activities that can be carried out in untouched, protected areas (Karakuş, 1999).

It is a center of attraction for individuals living in cities due to its natural and protected areas, vegetation and wildlife, natural beauty, and diversity, which are located in the city and have a high recreational potential (Akten, 2009). Protected areas due to their values affect people positively both physically and psychologically (Çalık et al., 2013; Yeşil, 2018).

Many natural and cultural areas in Turkey have been taken under protection by different institutions and organizations and with statutes (Bahat, 2011). National parks, nature parks, natural monuments, nature protection areas, and forest recreation areas are among the areas under protection status in our country to meet the recreation needs of people and to ensure tourism mobility (Forest Law, 1956).

One of Turkey's most preferred protected areas within the scope of recreation/tourism activities is nature parks. Nature parks; intend to be parts of nature that have vegetation and wildlife characteristics and are convenient for the recreation and entertainment of the public within the integrity of the landscape (National Parks Law, 1983). There are a total of 262 nature parks in Turkey

Approaches for determining the recreational potential of an area have appeared in the literature since the mid-1900s. The method developed by Knetsch (1969) for the evaluation of outdoor recreation demand, a scoring method developed by Lier (1971) according to the weights of geophysical and landscape elements in recreation areas, The method developed by Clark & Stankey (1979) to manage recreational opportunities (ROS) based on factors can be given as examples.

One of these studies is the method that forms the basis of many economic and social methods and studies, which was developed by Clawson (1959) and adapted to the conditions of Turkey by Gülez (1980) as "Detection of Outdoor Recreation Potential (Gülez method)".

The aims of the study were (a) to determine the Outdoor Recreational Potential of Şarlan Nature Park, located within the borders of Aydın province using the Gülez Method and (b) to offer solutions for the development of the elements that are insufficient for the development of the current potential.

2. Material and Method

2.1. Material

Study field: The study area is located in Çine district of Aydın province, 59km from the center and 21km from Çine. Its size is 3700 ha and it was declared as a Nature Park with the approval of the Ministry of Forestry and Water Affairs, dated 12.03.2014 and numbered 469. (Şarlan Nature Park Development Plan, 2018). Şarlan Nature Park, located in Çine district of Aydın province, is located between 37040'00" - 37039'38" northern latitudes and 28010'24" - 28010'56" east longitudes within the country coordinate system, and its altitude is changing between 1200-1250 m. The location information of the research area is given in Figure 1.



Figure 1. Şarlan Nature Park Location Map

2.2. Method

Firstly, the literature related to the method and research area was collected, the information and images obtained from the institutions were examined. In the field studies carried out in the second stage; Arrangements, land structure, and land use forms in Şarlan Nature Park since 2014 have been examined, and infrastructure, superstructure, and equipment have been identified and photographed. In the third stage, the recreational potential of the study field was determined by using the Gülez Method. Finally, suggestions are given for the development of the recreational potential of the area.

Gülez Method: In the second stage of this study; The method developed by Gülez (1990) in the conditions of Turkey, and which allows the outdoor potential of a recreation area to be determined easily was used. This method brings a very practical form of calculation and is expressed by a simple mathematical formula, which is also shown below.

RP (%)=L + C + A + RE + NF

The meaning of the symbols with certain weights in the formula and the distribution of the maximum scale (or weights) they can get are shown in Table 1. As can be seen in the table, since the maximum score can be at most 100, the sum of the scores that the items can get will define the outdoor recreation potential of a park as a percentage.

According to Gülez (1990), the items in the formula are scored according to the following features.

Symbol	Meaning	Maximum Score (Weighted Score)
L	Landscape Value	35
С	Climate Value	25
А	Accessibility	20
RC	Recreational Facilities	20
NF	Negative Factors	0 (Minimum-10)
RP	Recreation Potential	100

Table 1. The Items in the Formula and The Maximum Points They Can Get

(L) Landscape Value: Landscape potential is one of the most important features in the evaluation of recreational potential. Therefore, the landscape value is evaluated with a weight of 35%. It is calculated by considering the sub-items in Table 2.

Landscape Value sub-items	Maximum Score
Size of the Field	4
Flora	8
Sea, Lake, Streams	8
Superficial Situation	5
Visual Quality	4
Other Features	6

Table 2. Landscape Value Sub-Items and The Maximum Points They Can Receive

(C) Climate Value: Climate has a great influence on the viability of recreational activities. For this reason, it was deemed appropriate to include the climate in the assessment with a weight of 25%. It is calculated by considering the sub-items in Table 3.

Climate Value sub-items	Maximum Score	
Heat	10	
Precipitation	8	
Sun Period	5	
Windiness	2	

Table 3. Climate Value Sub-Items and Maximum Points They Can Get

(A) Accessibility: Accessibility is another important criterion in terms of recreational potential. Recreational areas with convenient and comfortable transportation attract more attention and demand. For this reason, the element of accessibility was included in the recreation evaluation method with a weight of 20% (Table 4).

Table 4. Accessibility Sub-Items and Maximum Points They Can Get

Accessibility sub-items	Maximum Score
The tourist importance of the region	4
The region in which it is located must be a city with a population of at least 100,000	5
Reached period	4
Transportation (except taxi and private car)	4
Other conveniences in transportation	3

(*RF*) Recreational Facilities: The existing superstructure facilities in recreation areas are another important issue that affects the physical carrying capacity of the area and thus the recreation potential. Recreation areas, which are inadequate in terms of sanitary facilities and superstructure facilities, are less preferred by visitors. For this reason, a weight of 20% has been given to recreation facilities.

Table 5. Recreational Ease Sub-Items and Maximum Points They Can Receive

Recreational Facilities sub-items	Maximum Score	
Picnic facilities	4	
Water condition	3	
Overnight facilities	2	
WC	2	
Car park	2	
Country casino, sales kiosk	2	
Guard and attendants	2	
Other amenities	3	

(NF) Negative Factors: Physical or natural elements that may adversely affect the quality of the recreation experience negatively affect the potential of recreation areas. For this reason, negative factors in the study were

defined as minus (-) in the evaluations and thus they were excluded from the total. Negative factors are calculated by considering the sub-items in Table 6.

Adverse Factors sub-items	Maximum Score
Air pollution	-3
Lack of security	-2
Water pollution	-1
Neglect	-1
Noise	-1
Other negative factors	-2

Table 6. Negative Factors Sub-Items and Maximum Possible Scores

The recreational potential values to be obtained as a result of the application of the above-mentioned method are classified as follows (Table 7).

Classification of recreational potential values	%
Very low	< 30%
Low	30%-45%
Middle	46%-60%
High	61%-75%
Very high	>75%

Table 7. Classification of Recreational Potential Values

3. Findings

3.1. (L) Landscape Value

The study area is 37.00 hectares.

Located within the borders of the Mediterranean Phytogeographical Region, the Nature Park has a xeric, evergreen Mediterranean vegetation. In addition, many or extensive geophytes (plants with bulbs, tubers and rhizomes), therophytes (annual plants such as wheat) and camephytes (shrub and herbaceous plants) are among the characteristic plants of this region. There is a stream ecosystem in and around the Şarlan Stream, which is located in the Nature Park (Şarlan Nature Park Development Plan, 2018).

The average height in Şarlan Nature Park is 1250 meters and the area is higher than the district center. The height of the Nature Park tends to decrease from south to north. The slope of the Nature Park is generally over 20%. In the east of Şarlan Creek, the slope is 30% and above, while in the west it is between 0%-30%. The area with the least slope is the area where the forest road enters the area in the west of the Nature Park (Şarlan Nature Park Development Plan, 2018).

In order to determine the visual quality of the Nature Park, photographs were taken at different locations in the area and evaluated on a 5 scale Likert (1=very weak, 5=very strong). Some of the photographs taken into consideration are presented in Figure 2.



Figure 2. Images from the Şarlan Nature Park

4 amphibian species, 11 reptile species, 31 bird species, and 13 mammal species living in and around Şarlan Nature Park have been identified (Şarlan Nature Park Development Plan, 2018).

Landscape value scores of the study area are presented in Table 8.

Landscape Value sub-items	Descriptions	Score	Study Area Score
	greater than 10 ha	4	
Cine of the Field	5-10 ha	3	Δ
Size of the Field	1-5 ha	2	4
	0.5-1 ha	1	
	woodland, bush, meadow	7-8	
	lonely woods and meadows	6-7	
	scrub, meadow, sparsely wooded	5-6	
<u>Eleve</u>	grassland, sparsely wooded	4-5	0
Flora	Lonely meadow and bush	3-4	8
	thicket, sparsely wooded	3-4	
	grassland, sparse brush	2-3	
	lonely meadow	1-3	
	seashore	7-8	
Can Jaka Stream	lakeside	6-7	2
Sea, Lake, Stream	river bank	4-5	3
	streams	1-4	
	flat area	5	
	slightly wavy	4	
Superficial Situation	Slightly sloping, flat in places	3	1
	less bumpy	2	
	moderately bumpy	1	
	panoramic views	3-4	
Visual Quality	nice view and vistas	2-3	2
	the overall visual aesthetic value of the area	1-3	
Other Features	for example, natural monuments, waterfalls, caves, historical and cultural values: wildlife, birds, etc.	6	3
Total	, , , , , , , , , , , , , , , , , , , ,	35	21

 Table 8. Landscape Value score table of Şarlan Nature Park

3.2. (C) Climate Value

The graph of the lowest, highest and average temperature values of Şarlan Nature Park is in Figure 3. Accordingly, when the temperature data of the Şarlan Nature Park are examined, it is seen that the annual average temperature is 17.9 °C and it drops to 8.0 °C in January and rises to 29.4 °C in July. (Aydın Meteorology Station Directorate,2022).



Figure 3. Average Temperature Data of Şarlan Nature Park

The rainlest month in the Çine region is December, with an average precipitation of 127 millimeters. The rainless period of the year lasts for 3.1 months from June 11 to September 14. The least rainy

month in the Çine region is July, with an average precipitation of 2.7 millimeters. Average precipitation is 10.5 mm in June and 3.11 mm in August. Çine day length varies considerably throughout the year.

In 2022, the shortest day will be on December 22 with 9 hours and 34 minutes of daylight, while the longest day will be on June 21 with 14 hours and 46 minutes of daylight. The prevailing wind direction in the area is northwest (NW). In addition, north (N) and south (S) winds are also second-degree effective. The average wind speed in summer is 1.6 m/s.The fastest wind is 22.6 m/s from the south (S) direction and occurred in the January-February-March period (Aydın Meteorology Station Directorate,2022).

The scores obtained from the climatic characteristics of the study area are presented in Table 9. (Fuller, 2014).

Climate Value sub-items	Descriptions	Score	Study Area Score
Heat	Average of summer months (Jun – Jul – Aug) (OC) 16, 17, 18, 19, 20, 21, 22, 23, 24, 25 34, 33, 32, 31, 30, 29, 28, 27, 26, 25 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10	1-10	7
Precipitation	Summer months (Jun – Jul – Aug) totals (mm) -50,-100,-150,-200,-250,-300,-350,-400 8 – 7 – 6 – 5 – 4 – 3 – 2 – 1	1-8	8
Sunning	Average Cloudiness in Summer 0-2, 2-4, 4-6, 6-8, 8-9 5 – 4 – 3 – 2 – 1	1-5	4
Windiness	Average wind speed in summer 1 m/ sec less than 1 -3 m/ sec 2 1	1-2	1
Total		25	20

Table 9. Şarlan Nature Park Climatic Characteristics Score Table

3.3. (A) Accessibility

Şarlan Nature Park is a region of touristic importance with its natural and cultural resource values. There are important ancient cities around Nature Park, and it is 43 km from Nysa Ancient City, 44 km from Antiokhia Ancient City, 50 km from Mastayra Ancient City, and 102 km from Aphrodisias Ancient City.

Şarlan nature park is located in the Çine district. The population of the Çine district in 2021 is 48.734. It is 59 km from the center of Aydın. Aydın's 2022 population is 1.145.371. Access to the area can only be provided up to a certain distance by private vehicles or minibusses departing at certain times. The natural park can be reached in an average of 1 hour from the center of Aydın and half an hour from the center of Cine by private vehicle. A certain part of the road is a stabilized and dirt road.

In Table 10, the scores obtained from the Accessibility parameters are presented.

Accessibility sub-items	Descriptions	Score	Study Area Score
	Mediterranean, Aegean, Marmara coastline	3-4	
Touristic Importance of the Region	Black Sea coastline	2-3	3
rounstle importance of the negion	Important highway routes, regions in tourism	1-2	-
	Distance up to 20 km	4-5	
Being a city with at least 100,000	distance up to 50 km	3-4	F
inhabitants in its region	distance up to 100 km	2-3	5
	distance up to 200 km	1-2	
	Up to 1 hour on foot or 0- ½ hours by car	4	
lime duration reached (at least	½-1 hour by vehicle	3	2
inhabitants)	1-2 hours by vehicle	2	5
iiiiauitaiitsj	2-3 hours by vehicle	1	

Transportation (except taxi and	Ability to walk or find a vehicle at any time	3-4	2
private car)	Finding a vehicle at certain times	1-3	3
Other conveniences in transportation	For example, being a cable car, being accessible from the sea	1-3	0
Total		20	14

3.4. (RF) Recreational Facilities

There are 14 fixed picnic tables and 9 barbecues in the nature park. There is an underground water source in the Şarlan Nature Park. People living in the vicinity visit the area to meet their water needs from here. There are no accommodation facilities in the Şarlan Nature Park. It can be used for daily excursions and picnic nature walks. There are 2 WCs and a 6-car parking lot at the park. There is no restaurant or buffet in the area. No guard constantly checks the area, except during the summer months. There are walking paths created within the forest ecosystem where natural beauties can be seen in Şarlan Nature Park.

The scores obtained from the recreational facilities parameters are presented in Table 11.

Recreational facilities Conveniences sub-items	Descriptions	Score	Study Area Score
Picnic Facilities	Fixed picnic table, stove, etc. (according to qualifications)	1-4	4
Water Condition	Drinking and using water possibilities (according to qualifications)	1-3	3
Overnight Facilities	Fixed overnight facilities	2	
	Camping with or without a tent	1-2	0
WC	According to their qualifications	1-2	2
Land	According to their qualifications	1-2	1
Country Casino, Sales Kiosk	According to their qualifications	1-2	0
Guard and Attendants	Permanent caretaker/attendant	2	1
	Attendant on weekends	1	T
Other Amenities	For example beach, cabin and shower facilities, rental boat facilities, ball, etc. playgrounds and sports fields, facilities, etc.	1-3	2
Total	(according to qualifications)	20	13

Table 11. Şarlan Nature Park Recreational Facilities Score Table

3.5. (NF) Negative Factors

Şarlan Nature Park Its air is clean because it is far from the city center, there are no settlements in it and it is included in the forest ecosystem. Residential center, industry, etc. near the area or within the area. There is no noise source. It has clean underground springs used as drinking water. Except during peak usage seasons, there is no security personnel working continuously in the area. However, access to the area is problematic. A certain part of the road is a dirt road. In addition, it is not possible to reach Nature Park by public transport from Aydın or Çine. The garbage bins in the area are insufficient, which causes environmental pollution.

Scores from negative factors are presented in Table 12.

Adverse Factors sub-iter	ns Descriptions	Score	Study Area Score
Air pollution	According to the degree of pollution	-1-(-3)	0
not safe	According to the security situation	-1-(-2)	-1
Water pollution	For sea, lake, and rivers	-1	0
Neglect	Insufficient maintenance on site	-1	-1
Noise	Traffic, crowd, etc. noises	-1	0
Other negative factors	Stone and gravel quarries, construction and factory ruins, etc.	-2	-1
Total		-10	-3

Table 12. Şarlan Nature Park Negative Factors Score Table

According to the findings, the factor scores of the study area are (L) Landscape Value 21, (C) Climate 20, (A) Accessibility 14, (RF) Recreational Facilities 13, and (NF) Negative Factors -3 scores. Thus, the total recreation value score was determined as 65 (Table 13). This value corresponds to the "high" (61%-75%) level of recreation potential in the Gülez method.

Symbol	items	Maximum Value	Actual Value
L	Landscape Value	35	21
С	Climate Value	25	20
A	Accessibility	20	14
RF	Recreational Facilities	20	13
NF	Negative Factors	0 (Minimum-10)	-3
RP	Recreation Potential	100	65

Table 13. The Outdoor Potential of Şarlan Nature Park

4. Discussion and Conclusion

In this study, which was carried out to determine the outdoor recreation potential of Şarlan Nature Park, the method developed by Gülez (1990) was used. In the method, 5 factors (landscape value, climate value, accessibility, recreational suitability, and negative factors) that are thought to affect the landscape potential were evaluated in terms of sub-factors and their weighted scores were determined. As a result of the evaluation, the recreational potential value of Şarlan Nature Park was found to be 65%. According to Gülez (1990) method, this value means that the recreational potential in the forest has a "high" value.

Outdoor recreation potentials of some of the different protected areas in Turkey were calculated with the same method. Çalık et al. (2013) determined that the recreation potential of Ballıkayalar Nature Park is 75% as a result of their study named "Sportive Recreation Potential Modeling of Nature Parks (Ballıkayalar Nature Park Example)". Türker, Türker & Güzel (2014) found the recreational potential of Dalyan destination as 79% as a result of their study named "Assessment of the Recreation Potential of Dalyan Destination in the Scope of Touristic Product Diversification". Birinci (2016) reported that the recreational potential of Limni Lake Nature Park (Gümüşhane) is 59% as a result of the study named "Recreation potential". Ayhan (2019) calculated the recreation potential as 69% in his study titled "A Study on the Determination of Recreation Potential of Ayazmapınarı Nature Park (Bayramiç, Çanakkale)". Altunöz, Tırıl & Arslan (2014) reported that the recreation potential of Hamsilos Nature Park is 68% as a result of their study titled "A Research to Determine the Recreation Potential of Hamsilos Nature Park". Polat & Aktaş Polat (2016) calculated that the recreation potential of Çamdüzü Nature Park is 63% and the recreation potential of 100th Yıl Gümüşkum Nature Park is 85% as a result of their study titled "Examination of Recreational Nature Parks within the Scope of Protected Areas: Mersin Province Example". When the results of the studies are examined, it is revealed that the recreation potential of Şarlan Nature Park is high, but it can be increased more.

While the size of the study area and its floristic and faunistic features increase the landscape value of the study area, the fact that the area is not on any waterfront and a large part of the area has a slope so high that it does not allow recreational activities are important factors that reduce the recreational potential. However, providing direct access to the area only by private vehicles and providing transportation to a certain place by public transportation are among the important factors that reduce its recreational potential. In addition, the inability to ensure the safety of the area, the maintenance and repair of the superstructure facilities, and the lack of continuous cleaning of the area are seen as other factors that reduce the recreation potential.

In this context, the following suggestions have been developed to improve the recreational potential:

• Minibus and bus services should be organized to provide transportation to Şarlan Nature Park by public transport, and the number of trips should be increased during the weekends of the spring and summer months when Nature Park is most preferred.

• It is considered important to meet the need for personnel who will provide security at all hours of the day in the area.

• The reinforcement elements in the area should be strengthened. Direction, information, and warning boards should be placed at various places in the area. Existing picnic tables and garbage cans should be regularly maintained and repaired.

• Walking tracks should be arranged in the forest, these tracks should be coordinated and processed on digital maps, and brochures showing the tracks should be prepared.

• Enjoyable views can be offered to the visitors by designing landscape viewing terraces for the vistas.

• By increasing the variety of recreational activities offered in the area, it can be ensured that different seasons are demanded by different groups.

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Author Contribution and Conflict of Interest Disclosure Information

All authors contributed equally to the article. There is a conflict of interest among the researchers.

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