Journal of Coastal Conservation (2026) 30:26
https://doi.org/10.1007/s11852-026-01208-3

RESEARCH

Determining landscape value of southern Black Sea Blue Flag beaches

Nilgun Guneroglu[1] · Abdulaziz Guneroglu[2] · Mustafa Dihkan[3] · Derya Sari[4]

Received: 14 October 2025 / Revised: 6 April 2026 / Accepted: 16 April 2026 / Published online: 25 April 2026
© The Author(s) 2026

Abstract

Coastal areas have historically been important and attractive areas for human settlements. The most important function of these areas is their proximity to water. Therefore, as the world population has increased, anthropogenic pressure on coastal areas has become an issue with high priority to be researched. This situation has necessitated the management of coasts with sustainable approaches. Türkiye, with its geographical location and climatic characteristics, has significant natural landscapes with tourism potential in the mediterranean basin. As stressed in European Landscape Convention in order to protect natural landscapes, identification is a first step to building necessary data inventories that help in planning stage. Therefore, determining landscape value of natural landscapes may help to build such inventories. In this context, this study was conducted to investigate the landscape value of beaches located on the Black Sea coast using expert-based evaluation technique. To this end, coastal sand formations that have received the Blue Flag label and are of a certain size in morphological terms were examined through field surveys. Accordingly, it was determined that the landscape value calculated for each beach is related to the composition and design of the vegetation cover, species diversity and density, and other services offered at the beaches. The highest Landscape Value (L_v) scores were calculated for Palm Beach, Cebeci, Kumcağız and Miliç beaches. It should also be stressed that Blue Flag beaches have great importance in terms of Southern Black Sea coastal management strategies.

Keywords Beach · Blue Flag · Landscape Value · Black Sea

Introduction

Coastal formations and settlements have been important and valuable since the earliest known existence of humankind. In this context, basic needs such as proximity to water resources, nutrition and transportation can be counted among the factors that forced people to be close to the coasts. Recent international EEZ (Exclusive Economic Zone) agreements show how important coasts remain today for settlement, nutrition, defense, energy and economy. Today, a significant portion of the world's population lives on the coast, as reported by Martinez et al. (2007) the number of coastal megacities is 21. There are more than 2.5 million km of coastline in the world with different characteristics. Some of these are natural formations, while others are mostly man-made constructions (Liu et al. 2019). When all coasts are evaluated, it can be said that the section that is important in sociological and commercial terms corresponds to a very small part of the total length. However, in addition to focusing on the morphological extension of the coastal zone, it would be a more accurate approach to

✉ Nilgun Guneroglu
nayhan@ktu.edu.tr

Abdulaziz Guneroglu
guneroglu@ktu.edu.tr

Mustafa Dihkan
mdihkan@ktu.edu.tr

Derya Sari
deryasari@artvin.edu.tr

[1] Faculty of Forestry, Dept. of Landscape Architecture, Karadeniz Technical University, Trabzon 61080, Türkiye

[2] Faculty of Marine Science, Dept. of Marine Ecology, Karadeniz Technical University, Trabzon 61080, Türkiye

[3] Faculty of Engineering, Dept. of Geomatics, Karadeniz Technical University, Trabzon 61080, Türkiye

[4] Faculty of Art and Design, Dept. of Landscape Architecture, Artvin Coruh University, Artvin 08200, Türkiye

consider the coast not only as a comfortable living space where commercial and physiological needs are met for humanity (Döring and Ratter 2018) but also as a socio-cultural area that can be perceived visually and provides psychological satisfaction. This psychosocial satisfaction requires a coastal landscape approach that leaves an impact on users. Today, conceptual studies on the integration of landscape design into coastal management strategies are being conducted to investigate how these areas can be managed together in a way that supports each other (Gonçalves and Pinho 2024). Without getting lost in the conceptual cycles of coastal management and coastal landscape integration, defining the landscapes of countries, including their coasts, as foreseen by the European Landscape Convention (ELC), is an approach that can primarily offer practical solutions. However, the lack of any coastal management strategy in terms of landscape management is an unacceptable shortcoming. Interestingly, especially in low-income countries, coastal landscape design as part of urban plans is often neglected (Crawford et al. 2022). In fact, the main issue that needs to be emphasized is the need to include both Integrated Coastal Zone Management (ICZM) and Marine Spatial Planning (MSP) strategies (Guneroglu et al. 2014) in the content of urban plans. Such a holistic approach will lead to coastal landscape management based on more rules and controls, especially for cities. It is important that the users have a sense of belonging to the space in the planning and design. Moreover, considering user requests in terms of sustainability will be beneficial in the long term (Kim and Kang 2009). In the ICZM approach, monitoring and control processes are as important as planning, rulemaking and management. Because the coasts under high anthropogenic pressure are exposed to intense degradation and therefore lose their environmental quality by the time (Guneroglu et al. 2014, 2024; Luijendijk et al. 2018; Güneroğlu et al. 2019; Aktürk and Güneroğlu 2021). This negative impact is even more pronounced in beach areas, which are among the most attractive coastal formations. Recent studies show that beach areas, which are extremely important in terms of tourism and economy, are under increasing danger of erosion. (Kuleli et al. 2011; Guneroglu 2015; Luijendijk et al. 2018). Therefore, the development of more effective protection and utilization strategies for these vulnerable coastal formations is a priority issue that needs to be emphasized. The protection and development of existing landscapes can only be possible by understanding their "Landscape Values". The protection of landscapes is an important issue as emphasized by the European Landscape Convention (ELS). According to the European Landscape Convention, "*Landscape is defined as the way in which people perceive areas whose character is shaped by the interaction of nature and human activities*" (Council of Europe, 2000). Within the scope of this agreement, strategies have been put forward on how to protect and develop all landscape areas including the sea and coastal areas. Actions such as increasing user awareness, reward system and monitoring are presented as known solution methods. Another topic where the landscape value of coasts is gaining importance is tourism. The value analysis of the coast will reveal opportunities to improve the tourism potential of these areas. Because improving the quality of coastal areas in terms of ecological and structural aspects has the potential to improve the quality of tourism services offered. Considering their contribution to the national income, the main component of "sea, sand and sun" tourism from a sectoral perspective is sandy beaches. Therefore, the landscape value of beach areas also gains importance from an economic point of view. For this reason, these areas need to be developed on a planning basis by including all kinds of environmental and infrastructure related variables. One of the best scientific measurement methods in which these variables are considered together is the "landscape value" analysis of these beach areas. The landscape value of coastal areas can be expressed as a combination of ecological, visual and cultural variables. Landscape value includes perceptions that emerge because of the interaction between humans and the environment and their mutual changes over time (Brown and Brabyn 2012). The demonstration of landscape value is partly related to the increasing prosperity of people. The higher the landscape value of an area, the more ecological, visual and functional opportunities that area will have, and these opportunities are to some extent proportional to the income per capita. Moreover, people are constantly influencing and shaping their environment to increase the usability of these landscapes (Tengberg et al. 2012). The landscape value of any area is related to usage type, because the ecology and economy of that area will be affected by the way it is used (Zube 1987). Therefore, users may perceive the space in different ways. Users' past experiences, education, needs and expectations enable them to perceive the area and attribute a cognitive value to it that does not have a monetary equivalent (Priego et al. 2008). The attributed value can be defined as landscape value for the relevant area, according to Zube (1987). In this context, there are two main approaches used in landscape value studies. The first of these is the expert approach, which is the determination of the landscape value of the area as a result of the evaluations of experts trained in relevant fields of landscape planning. The second approach is the technique known as the subjectivist approach, which is shaped mostly by the evaluations of the users. In literature, the expert approach is mostly used in landscape visual quality assessment studies. However, there are studies that combine both approaches in a hybrid way as in Solecka et al. (2022). Similarly, Sharafatmandrad and Mashizi (2020) divide landscape

aesthetics studies into two categories; the perception-based method, that is, the approach in which both user and expert opinions are evaluated together, and the expert evaluation technique. A distinction can be made between landscape value and pure aesthetic value, especially in terms of environmental and cultural qualities. In fact, landscape value is a more comprehensive definition that includes perceived aesthetic value (Solecka 2019). Determining the landscape value of an area is extremely important for the management and making decisions on environmental planning (La Rosa 2011). For this reason, many landscape value studies have been carried out in literature and in practice using different analytical methods. For example, Gomez-Sal et al. (2003) used multi-criteria statistical methods to assess landscape value by considering ecological, economic and productive indicators. Similarly, Brown (2006) investigated how different landscape values can be associated with land uses and found that tourism development is associated with recreation, economic and ecological variables, while residential areas are more associated with recreation, economic and educational opportunities. Brown and Raymond (2007) used a scoring method to determine the relationship between place attachment and landscape value in Otways, Australia by conducting a survey to determine aesthetic, economic, recreation, sustainability, learning, biological, spiritual, intrinsic, heritage, future and therapy values. Brown et al. (2004), in their study in Alaska, aimed to determine the rate of overlap between the areas identified as biologically important by local people and scientists. The survey method was used to determine aesthetic, economic, recreation, sustainability, learning, biodiversity, spiritual, intrinsic, historical, future, subsistence, therapeutic and cultural value parameters. Gulinck et al. (2001) proposed a generic method for the assessment of landscape areas. In the proposed approach, it is stated that the descriptive composition, perception and diversity of the area, especially the land cover, are extremely necessary and important in landscape value determination studies. Anfuso et al. (2017), in their study on the visual quality of Cuban beaches, classified the beaches in the country using 26 different parameters. They used Coastal Scenery Evaluation System (CSES) originally developed by Ergin et al. (2004). Similarly, Casado-Arzuaga et al. (2014) produced aesthetic value maps of beaches in Northern Spain using field surveys and GIS (Geographic Information System) modeling. Kiper et al. (2017) conducted surveys with experts and other users in the visual quality landscape assessment they carried out in Kırklareli (Kıyıköy) and revealed that perceptible natural areas with green and coastal integrity are more preferred. Aşur and Alphan (2018) emphasized the importance of visual quality assessment of landscapes in land use and inventorying studies. They also stated that aesthetic, psychological and psychophysical evaluations with a multidisciplinary approach are required for visual quality assessments. Şahin et al. (2022) used stakeholders targeted questionnaire to reveal perceived landscape value and recreational needs as a basis beside ecological carrying capacity for their proposed landscape character-based visitor carrying capacity assessment technique. Indeed, carrying capacity was also important in terms of beach management and planning as explained in literature (Khodkar and Özyurt 2018; Rodella et al. 2020; Fredy et al. 2021). This study, which investigates the beaches of the Black Sea coast of Türkiye, is a comprehensive study that includes landscape value and visual quality analysis together in terms of content and geographical extent. The scope of this study is to reveal the landscape value of beaches with tourism potential on the northern coast of Türkiye. In the study, the entire Southern Black Sea coastal zone was investigated and blue flag beaches with average width of 35 m and length of 500 m for the corresponding research period were analyzed (Botero et al. 2014; Ballesteros et al. 2018) to reveal landscape value score and corresponding beach user evaluations.

Materials and methods

Study area

This coastal study of the Black Sea basin focuses on the recreational sandy beaches of the southern Black Sea coast, which are extremely important for the region. The study was conducted on beaches with specific physical dimensions that have been awarded the Blue Flag label in six provinces bordering the Black Sea. Blue Flag label program criteria is defined by Foundation for Environmental Education (FEE) (Merino and Prats 2020). Study area is unique in terms of many aspects such as, tourism, transportation and defense. The western shores of the study area correspond to an area of intense sediment accumulation under the influence of the Danube River basin. This basin, with a history of at least 6,500 years, continues to develop geomorphologically (Report 2002). The study area also includes the deltas of major rivers such as the Sakarya, Kızılırmak, and Yeşilırmak, as well as numerous small and large streams that feed the entire coastal zone. These rivers are important ecological links that keep the Black Sea alive (Report 2002). These wild streams are extremely important for the stabilization of beach areas. The countries bordering the Black Sea (Türkiye, Bulgaria, Ukraine, Russian Federation, Georgia and Romania) have an important historical background and civilization adventure. It is known that coastal areas are intensively used in almost all countries surrounding this watershed (Antonidze 2010). The Black

Sea, which managed to remain clean and pristine until the early 20th century, has lost this purity in recent years under intense anthropogenic pressure (Kosyan and Velikova 2016; Guneroglu et al. 2024). This situation has reached levels that may threaten the existence and health of the beaches. Thus, in order to mitigate the negative pressures on the Black Sea coast and develop beach tourism, a linear zone from west to east of approximately 1700 km along the coastal zone between Kırklareli and Artvin provinces, representing the Southern Black Sea coastal region was selected as study area for surveying landscape value of the blue flag beaches (Fig. 1).

While this area exhibits a heterogeneous topography, it has a narrow coastal structure in the eastern and western sides with the mountains extending parallel to the coast and relatively less rugged wide coastal plain in the central part. Especially in the eastern part, due to coastal geomorphology, the settlement shows a linear littoral pattern in the coastal zone as in the whole region. That means, there are limited number of wide beach areas due to rough topography. Considering Black Sea region, sandy coastal areas with certain recreational potential are generally in the form of narrow beaches (Görmüş et al. 2020). Beach width is one of the most important parameters in terms of beach activity and beach width <30 m considered as narrow or inadequate for recreational purposes (Botero et al. 2014; Cabezas-Rabadán et al. 2019; De Paula et al. 2022). Allenbach et al. (2015) reported that 62% of the all beaches on Black Sea coast are less than 25 m in width. Therefore, the beaches subject to the study were targeted to have a certain level of tourism potential, definite physical dimensions and awarded with "Blue Flag". As a physical dimension, roughly 35 m width and 500 m length was decided as convenient with declared aim of the current work and recreational comfort criteria. Except the current research, these dimensions are not absolute, and they can be changed in accordance with the aim of study. The reason for predefined beach dimensions is to overcome possible post processing problems of the field data comparison analysis.

According to the Köppen-Geiger classification, the Black Sea coastal climate type is coded as "C", that is, mid-latitude type with mild humid winters. This rainy climate with low evaporation is observed as "Cfa" subclimate type along the Black Sea coastal zone (Öztürk et al. 2017). Due to its climate type and geographical location, other than sun and sea there are many alternative forms of tourism in the region such as health, mountain, faith and plateau tourism. However, it is known that the Black Sea coast is an alternative to the unfavorable climatic conditions that may be experienced on the Aegean and Mediterranean coasts in parallel with the effects of global climate change (Karadeniz et al. 2018). Hence it is an issue of high priority carrying out studies to protect the unique cultural and natural texture of this area in order to ensure the sustainability of the region and its healthy transfer to the next generation.

Fig. 1 Study area (A:İğneada Resort; B1:Şile Resort; B2: Palm Beach; C: Bağırganlı; D1:Kumcağız; D2: Cebeci; E: Sahil Park; F:Çuhallı; G: Akevler; H1:İncesu; H2: Omtel; I:Denizkızı; J:İnci; K:Denizevler; L:Miliç)

The beaches subject to the study were selected from the beaches listed by TÜRÇEV (Turkish Environmental Education Foundation) as "Blue Flag" beaches in the Black Sea for the year 2020 with aforementioned physical dimensions. Similar physical dimension assumptions have been made in studies on recreational beach quality, user satisfaction or beach morphology in the literature (Ballesteros et al. 2018).

Considering the unique coastal morphological structure of each beach, it is very difficult to establish clear and precise boundaries. Therefore, predefined physical dimensions were acceptable with certain tolerance as a few meters. This is not a handicap in terms of declared aim of the study. However, care was taken to ensure that selected beaches had received the "Blue Flag" label. The "Blue Flag" label is an internationally recognized quality assurance indicator for beach tourism. This label is awarded to beaches that meet the necessary criteria stipulated by prestigious internationally recognized institutions and organizations. "Blue Flag" labeling in Türkiye is carried out by TÜRÇEV, which was established in 1993 with the support of the Ministry of Culture and Tourism, the Ministry of Health and TÜRSAB (TÜRÇEV, 2021). For this reason, the blue flag beaches identified within the scope of the study (Table 1) meet many criteria in terms of environmental quality. The temporal period of the study was determined as 122 days starting at the end of May and correspond to high tourism period or summer season in the region.

Field surveys and data collection

The methodology of the study consists of on-site observation, examination, analysis and evaluation stages. After an extensive literature review, field survey forms were prepared to collect data and take on-site photographs. In the next step, a geodatabase consisting of remote sensing and in-situ observation data was created for the beaches within the study area given in Fig. 1. Photographs taken during the field surveys were also stored in the same database to be used in landscape value analyses. As complementary basis for landscape value analyses, survey forms showing beach features and characteristics were created for each beach and relevant parameters were recorded. In addition, the structural and functional components of each beach were sketched on-site based on their current formation. Survey forms defining the landscape components used in the study

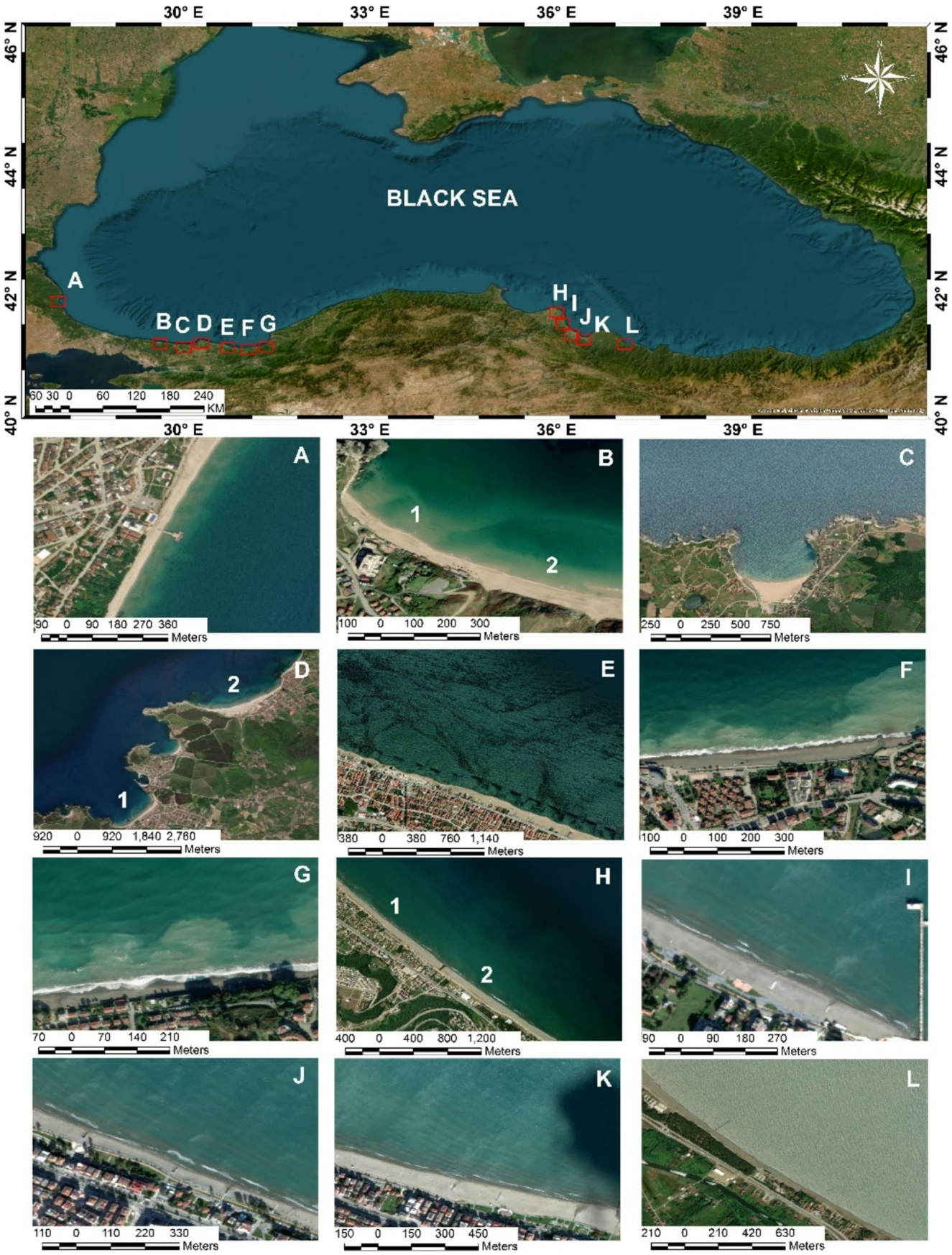
30° E
33° E
36° E
39° E
46° N
44° N
42° N
40° N
BLACK SEA
A
B C D E F G
H I J K L
60 30 0 60 120 180 240 KM
A
90 0 90 180 270 360 Meters
B
1
2
100 0 100 200 300 Meters
C
250 0 250 500 750 Meters
D
2
1
920 0 920 1,840 2,760 Meters
E
380 0 380 760 1,140 Meters
F
100 0 100 200 300 Meters
G
70 0 70 140 210 Meters
H
1
2
400 0 400 800 1,200 Meters
I
90 0 90 180 270 Meters
J
110 0 110 220 330 Meters
K
150 0 150 300 450 Meters
L
210 0 210 420 630 Meters

Table 1 Descriptive beach information

Beach Name	City	Type	Entrance Fee	Geographic Position			
				Left Up		Right Down	
İğneada Resort	Kırklareli	Private	Yes	41° 52.80′ K	27° 59.41′ D	41° 52.38′ K	27° 59.19′ D
Palm Beach	İstanbul	Private	Yes	41° 10.27′ K	29° 38.06′ D	41° 10.18′ K	29° 38.42′ D
Şile Resort	İstanbul	Private	Yes	41° 10.36′ K	29° 37.94′ D	41° 10.29′ K	29° 38.08′ D
Bağırganlı	Kocaeli	Public	No	41° 08.12′ K	30° 01.03′ D	41° 08.11′ K	30° 01.37′ D
Kumcağız	Kocaeli	Public	No	41° 09.50′ K	30° 13.12′ D	41° 09.85′ K	30° 13.68′ D
Cebeci	Kocaeli	Public	No	41° 11.29′ K	30° 14.95′ D	41° 11.51′ K	30° 15.44′ D
Sahil Park	Sakarya	Public	No	41° 06.71′ K	30° 41.42′ D	41° 06.33′ K	30° 42.45′ D
Çuhallı	Düzce	Public	No	41° 05.44′ K	31° 08.11′ D	41° 05.42′ K	31° 08.72′ D
Akevler (Kemos)	Düzce	Public	No	41° 05.67′ K	31° 11.07′ D	41° 05.68′ K	31° 11.38′ D
İncesu	Samsun	Public	No	41° 24.03′ K	36° 11.75′ D	41° 23.63′ K	36° 12.23′ D
Omtel	Samsun	Public	No	41° 22.84′ K	36° 13.14′ D	41° 22.67′ K	36° 13.44′ D
Denizkızı	Samsun	Public	No	41° 20.60′ K	36° 16.56′ D	41° 20.46′ K	36° 15.94′ D
İnci	Samsun	Public	No	41° 20.31′ K	36° 16.28′ D	41° 20.11′ K	36° 16.85′ D
Denizevler	Samsun	Public	No	41° 20.02′ K	36° 17.07′ D	41° 19.84′ K	36° 17.77′ D
Miliç	Samsun	Public	Yes	41° 11.19′ K	37° 02.04′ D	41° 10.79′ K	37° 02.66′ D

of beaches were prepared according to Roca et al. (2009), Ariza et al. (2010) and Lucrezi et al. (2016). The study area was visited in 2022 and 2023 consecutively with the survey forms created in the preparation phase and the data belonging to the areas were compiled. In terms of settlement characteristics, some of the beaches are classified as "urban" and some others are "rural". Remote sensing techniques were used to determine whether and to what extent the beaches are under urban influence (Defeo et al. 2024; Guneroglu et al. 2024). Expert evaluation method was used for landscape value analysis. Within the scope of the study, landscape photographs obtained for each beach from every possible angle in the field were evaluated by 75 experts to reveal the landscape value using Likert (1–5) scale. The parameters identified specific to the beach areas and scored by the experts are given in following sections. Parameters that are considered to reveal total landscape value of each blue flag beach are included in the study. The landscape value of coastal areas can be expressed as a combination of ecological, visual and cultural amenities. In this context, landscape value is the perception that emerges as a result of the interaction between humans and their environments. Moreover, it also includes the changes that these perceptions will gain over time according to their future status (Brown and Brabyn 2012). Here, the concept of value is considered not as an economic or monetary value (Zube 1987; Solecka et al. 2022), but as the whole of the attributes or essential qualities that constitute the landscape and make it distinct or enable it to be better perceived.

The expert group contributing to the landscape value analysis is mostly from the field of landscape architecture but also consists of people contributing from the scientific fields of coastal zone management, marine sciences and geomatics. Information about the evaluator expert group is given in Table 2. Landscape value calculations in the study were carried out according to Acar et al. (2013) and Guneroglu and Acar (2016).

Table 2 Expert profiles

Expert Details	Frequency	(%)	Expert Details	Frequency	(%)
Gender			Age Group		
Men	20	27	20–25	6	8
Woman	55	53	25–30	16	21
Total (#)	*75*	*100*	30–35	15	20
Academic Title			35–45	20	27
Graduate Student	21	28	45 <	18	24
Research Assistant	16	21	**Total (#)**	*75*	*100*
Lecturer	2	3	**Education**		
Assist. Professor	8	11	MSc.	28	37
Assoc. Professor	21	28	PhD.	47	63
Professor	7	9			
Total (#)	*75*	*100*	**Total (#)**	75	100

In addition, visitors' opinions about the area were recorded through peer-to-peer interviews using beach user surveys. The degree to which user evaluations align with the data obtained using expert techniques was explored in the discussion section. The profile of the beach visitors interviewed during the field surveys is depicted in Table 3.

Determination of the Landscape Value

Within the scope of the landscape value analysis based on expert opinion, images of each blue flag beach collected during field studies were scored by experts on a Likert scale (1–5) using 25 predetermined parameters. The 25 parameters

Table 3 Beach users' profile

Variables	Frequency	%	Variables	Frequency	%
Marital status			Gender		
Married	861	54	Male	751	47
Single	723	46	Female	833	53
Occupation			**Age**		
Unemployed	87	5	15–20	98	6
Student	270	17	20–25	318	20
Officer	384	24	25–30	218	14
Worker	186	12	30–35	339	21
Housewife	206	13	35–45	326	21
Retired	117	7	45 +	285	18
Merchant	91	6	**Education level**		
Others	243	15	Uneducated	0	0
Income status			Primary school	61	4
No income	540	34	Secondary school	50	3
10,000–15,000	12	1	High school	430	27
15,000–30,000	5	0	University	895	57
30,000–45,000	29	2	Postgraduate	148	9
45,000 +	998	63	**Total (#)**	1584	

used were categorized as "aesthetic value", "natural value", "therapeutic value", "tourism value", "economic value", "cultural value" and "sustainability value" to reflect different landscape evaluations. Experts evaluated each parameter based on photographs of these beach areas as 'Strongly agree', 'Agree', 'No opinion', 'Disagree' and 'Strongly disagree' corresponding to numerical values between "1–5" respectively. Related landscape value parameters are given in Fig. 2 below. For clarification purposes, definition of each value cluster and associated parameters were explained in Table 4 as similarly indicated by Brown and Brabyn (2012).

In the next step, the scores obtained were converted into numerical values for each parameter and descriptive statistics of the relevant parameters were calculated for all beach areas. Descriptive statistics and factor analysis results (Table 5) were used in the equations given below to calculate the final landscape value "L_v" for each beach area. In this way, perceived intrinsic qualities are converted into measurable numerical values to reveal total landscape value



Fig. 2 Landscape Value parameters used in the study

Table 4 Definition of Landscape Value and Parameters

Landscape Value	What makes it valuable?
Aesthetic value	*This place is valuable as it reflects beauty, uniqueness and impresses the evaluators with combination of sea and vegetation that makes them wish to visit again*
Natural value	*This place is valuable as it is rich in terms of vegetation and reflects native continues infinite character*
Therapeutic value	*This place is valuable as it has relaxing impact for triggering revitalization and refreshment*
Tourism value	*This place is valuable as it has recreation opportunities, reachable, memorable and well preserved*
Economic value	*This place is valuable as it provides income, food and new jobs for humans*
Cultural value	*This place is valuable as it reflects history, authenticity and character with its setting*
Sustainability value	*This place is valuable as it can be transferred to future generations due to regular improvements and maintenance*

Table 5 The most important factor loads describing landscape value (L_v)

Intrinsic Values	Parameters	Factor Loads			Variance
		1	2	3	
Aesthetic Value	Beautiful	**0.770**	0.230	0.092	0.655
	Unique	**0.730**	0.210	0.096	0.586
	Impressive	**0.777**	0.248	0.048	0.667
	Sea effect	**0.679**	0.222	−0.011	0.511
	Vegetation effect	**0.655**	−0.130	0.026	0.446
	Wilingness to visit	**0.768**	0.289	0.057	0.677
Natural Value	Pristine	**0.650**	−0.111	0.143	0.455
	Endless	**0.672**	0.157	−0.040	0.477
	Continous	**0.673**	0.230	0.042	0.507
	Vegetative richness	**0.556**	−0.170	0.109	0.350
Therapeutic Value	Relaxing	**0.765**	0.108	0.065	0.601
	Revitalizing	**0.685**	0.331	0.068	0.584
	Regenerative	**0.773**	0.213	0.069	0.648
Tourism Value	Accessible	−0.015	**0.673**	0.046	0.455
	Memorable	0.430	**0.662**	0.047	0.626
	Recreative	0.308	**0.538**	0.033	0.386
	Conservation	0.168	**0.604**	0.077	0.399
Economic Value	Creating jobs	0.120	**0.818**	0.059	0.686
	Providing nutrition	0.222	**0.606**	0.308	0.511
	Profitable	0.180	**0.778**	0.182	0.670
Cultural Value	Authenticity reflection	0.313	0.333	**0.549**	0.510
	Building character	0.080	0.278	**0.699**	0.572
	Land use	0.364	0.127	**0.487**	0.386
Sustainability Value	Enhancement	−0.016	−0.125	**0.523**	0.290
	Renovation	−0.294	−0.172	**0.508**	0.374
	(%) Variance	**36.3**	**9.3**	**6.4**	**52**

of each beach area. In this study statistical analysis were carried on using IBM SPSS 23 software and ArcGIS 10.6 for visualizations and geodatabase creation.

According to factor analysis results given in Table 5, the first 3 components that can explain more than 52% of the total variance are represented by a variance value of 36.3% (factor 1), 9.3% (factor 2) and 6.4% (factor 3). The variance analysis tables and factor analysis results used in landscape value calculations were used together in the landscape value calculation stage as explained in the equations below. In the first stage, it can be assessed that aesthetic, natural, and therapeutic values are at the forefront according to the factor analysis results. In addition, it can be understood from the results that tourism and economic value reflect the most effective secondary variables. Moreover, it is determined that beach areas are also important in terms of cultural and sustainability characteristics.

$$L_n = F_{L_n} \times F_{Lv_n} \tag{1}$$

$$F_{L_n} = \frac{\sum (S_{Ort_n} \times B_{L_n})}{\sum B_{L_n}} \tag{2}$$

$$L_V = \frac{\sum L_n}{\sum F_{Lv_n}} \tag{3}$$

where,

L_v : "total landscape value", L_n : "landscape value load of each component",

FL_{vn} : "variance load of each landscape component", FL_{n} : "index of each factor",

S_{Ortn} : "mean score of landscape value" and BL_n : "factor load of landscape value component".

Results

In expert group evaluations considering the specifications of studied blue flag beach areas, it was found that the total scores of the top 1st, 2nd, and 3rd factors explained only 52% of the variance, and it was mainly dominated by aesthetic value parameters. This situation emphasizes that aesthetic is an important regulator that shapes the perception of a space. Considering the first factor of calculated results variables such as "impressive, beautiful and unique" which constitute parameters of aesthetic value, account for a significant portion of the total variance. It is clear that these variables also reveal the desire to visit the relevant beach area based on evaluator perception. Considering the first effective factor, the perceptional view of the expert evaluators is also shaped

by the therapeutic value of the beaches. This result may be related to the level of cognitive impact of visual assessments as well as professional backgrounds. In addition to these, the second factor, which accounts for a significant portion of the total variance, is clearly influenced by "tourism and economic" value, and it has been revealed that the value or perception of blue flag beach areas by experts is shaped by parameters such as "job creation, profitability, accessibility and memorability". The third component, which was obtained as a result of factor analysis, contributed 6.4% to the total variance and emerged mostly under the influence of the "building character, authenticity and sustainability" parameters. Based on expert evaluations and scoring, obtained results are evaluated together and the landscape value load of each parameter, "L_n" is calculated and documented in Table 6. One of the inputs for the landscape value calculation as explained in methodology section, the "L_n" value, reveals the distinctive characteristics of each beach area studied. Therefore, the scores that each landscape value parameter will take for the relevant beach will affect the "L_v" value calculated in the final stage.

Within the scope of the study, as a result of field surveys, expert evaluations, and the proposed landscape value calculation technique, the highest landscape value score of 3.90 was revealed for Palm Beach. In addition, among the examined beach areas, Cebeci Beach in Kandıra, Kocaeli, ranked second with a score of 3.86 for its landscape value. However, considering expert opinions, the blue flag beach with the lowest landscape value is the Akevler-Kemos beach on the coast of Akçakoca, Düzce, possibly due to its inadequate built environment characteristics and unplanned green texture composition. Furthermore, the calculated "L_v" scores are generally represented by values higher than 3. The calculated landscape value scores for the examined blue flag beaches are provided in detail in Table 7.

Figure 3 below shows the thematic landscape value map of the blue flag beaches obtained by using the proposed methodology as a result of field and desk studies for all beaches. Proportional sign distribution was used to highlight the "L_v" value on the map. When the obtained data are evaluated, it can be said that the coastal morphology, climatological effects and blue flag management strategy are effective in the emergence of the landscape value of blue flag beaches. It has been determined that beaches that stand out in terms of landscape value are also of higher quality than other areas in terms of built environment design and plant species diversity.

Discussion

Coastal management problems are observed in the Southern Black Sea coasts as in the world scale. The solution to these problems requires a holistic approach involving all stakeholders. As a part of such an approach, an ecological landscape plan that can be implemented, measured and monitored on a continental scale is essential for the healthy transfer of coastal attractive assets to future generations. One of the most important activities that make the coastal area attractive is its high tourism potential. The main focus of this study investigating the Southern Black Sea coast is to reveal the landscape value of blue flag beaches that have tourism potential and a certain organization in terms of environmental variables and management. In this context, beaches, which are the most important attraction centers of coastal tourism, are places where activities such as swimming, sunbathing, resting and various water sports can be performed. Türkiye is a country with high coastal tourism potential due to its geographical location and climatic characteristics. Although the Black Sea Region, located in the

Table 6 Distribution of calculated "L_n" score for each landscape value of per beach

Beach Name	Aesthetic Value	Natural Value	Therapeutic Value	Tourism Value	Economic Value	Cultural Value	Sustainability Value
İğneada	1.23	1.18	1.30	0.33	0.25	0.18	0.26
Şile Resort	1.38	1.25	1.37	0.30	0.24	0.17	0.24
Palm Beach	1.59	1.38	1.52	0.33	0.25	0.18	0.23
Bağırganlı	1.45	1.27	1.44	0.36	0.30	0.20	0.24
Kumcağız	1.46	1.27	1.42	0.37	0.34	0.22	0.24
Cebeci	1.50	1.34	1.43	0.38	0.34	0.21	0.24
Sahil Park	1.21	0.98	1.17	0.38	0.34	0.19	0.25
Akevler	0.93	0.84	0.91	0.24	0.22	0.16	0.28
Çuhallı	1.20	1.13	1.27	0.35	0.30	0.19	0.26
İncesu	1.15	1.21	1.24	0.30	0.25	0.17	0.26
Omtel	1.03	1.10	1.18	0.28	0.23	0.17	0.26
Denizkızı	1.39	1.27	1.45	0.39	0.34	0.19	0.24
İnci	1.21	1.20	1.28	0.36	0.30	0.18	0.26
Denizevleri	1.30	1.28	1.37	0.39	0.30	0.19	0.25
Miliç	1.37	1.38	1.40	0.34	0.29	0.20	0.25

Table 7 Calculated landscape value "L_v" for surveyed blue flag beaches

Beach Name	City	Type	Entrance Fee	Landscape Value (L_V)
İğneada	Kırklareli	Private	Yes	3.36
Şile Resort	İstanbul	Private	Yes	3.53
Palm Beach	İstanbul	Private	Yes	3.90
Bağırganlı	Kocaeli	Public	No	3.75
Kumcağız	Kocaeli	Public	No	3.78
Cebeci	Kocaeli	Public	No	3.86
Sahil Park	Sakarya	Public	No	3.21
Akevler	Düzce	Public	No	2.55
Çuhallı	Düzce	Public	No	3.33
İncesu	Samsun	Public	No	3.26
Omtel	Samsun	Public	No	3.02
Denizkızı	Samsun	Public	No	3.75
İnci	Samsun	Public	No	3.40
Denizevleri	Samsun	Public	No	3.61
Miliç	Samsun	Public	Yes	3.72

north of Türkiye, is not as well-known for beach tourism as the Aegean and Mediterranean regions, it has a different and attractive atmosphere (Güçlü 2011). In recent years, this situation, with the impact of global warming and climate change, has increased the potential for sea, sand and sun tourism. In general, within the 8592 km coastline of Türkiye, there are 6107 beaches with a total length of 3714 km along the seashore (Yılmaz 2023). Approximately 500 of these beaches are Blue Flag beaches and they are mostly located on the coasts of the Aegean, Mediterranean and Marmara seas. In recent years, with the efforts of local authorities and other stakeholders, the number of blue flag beaches on the Southern Black Sea coast has also increased. For this reason, the Southern Black Sea coast blue flag beaches constituted the main focus of the current study. As a result of the field surveys carried out within the scope of the study, feedback was obtained in the context of users' preference, access, use and services offered at Blue Flag beaches. The first beaches in the eastern part of the study area are located in Samsun province. Blue flag Miliç Beach is the first one on the east-west axis. This beach area is a national nature park recreation area in Terme district, offering both day-trip and camping opportunities. The other 5 blue flag beach areas extending linearly on the same axis are located in Samsun-Atakum district. Regarding the beaches of Samsun, when the origin of the survey participants was analyzed, it was determined that the users were mostly from Samsun province. However, according to survey data both Miliç and Atakum beaches also attract visitors from surrounding provinces, including major cities such as Istanbul and Ankara. For this reason, especially during the summer season, even if not in large numbers, the fact that users from surrounding provinces choose these areas for holiday purposes reveals that the area has tourism potential and attraction. While it is seen that the visitor group on Miliç beach mostly uses tents and camping facilities, on Atakum beaches they have their own private houses or houses belonging to their relatives as accommodation places. According to the data obtained, it was revealed that a high proportion of

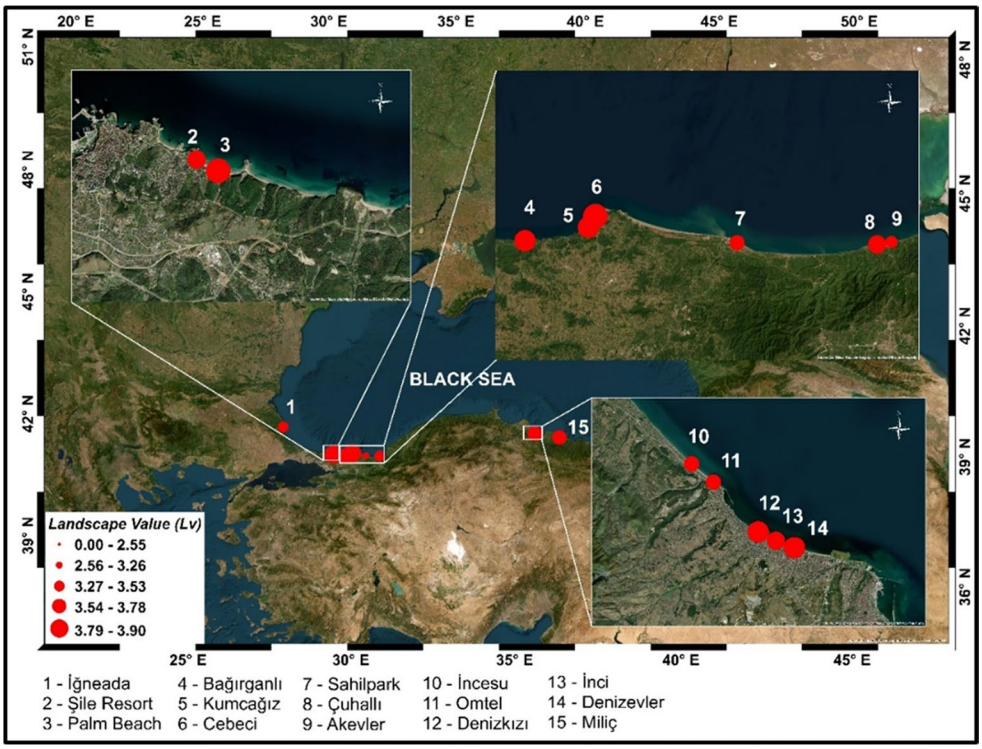

Fig. 3 Thematic map of landscape values of Southern Black Sea blue flag beaches

visitors coming from outside the province of Samsun resided in hotels, hostels or with relatives. Comparing "L_v" scores with beach users survey results in terms of beach preferability in Samsun, Miliç (L_v =3.72) has the highest value and correspondingly the most crowded and preferred beach where as Omtel has the lowest (L_v=*3.02*) and the least preferred beach among the Samsun province blue flag beaches. This can be attributed to the vegetation and some other blue flag beach management related factors such as available facilities and infrastructure of the Miliç beach. Similarly, other blue flag beaches on the east-west axis are the coastal recreation areas of Çuhallı and Akevler (Kemos) beaches within the borders of the Akçakoca district of Düzce province. Considering the two beaches in Düzce, the density of users coming from İstanbul and Ankara is remarkable. The reason for this is that Akçakoca district is particularly accessible due to its location and distance from major cities. Considering the blue flag beaches of Düzce province, Çuhallı (L_v =3.33) beach maintains its importance in terms of landscape value, beach management and facilities, while this is not the case for Akevler (L_v =2.55) beach. This is also reflected in beach users' surveys as they mostly have negative statements about revisiting and quality issues of the Akevler (Kemos) beach. Another important blue flag beach is the Sahil Park (L_v =3.21) beach within the administrative borders of Karasu district of Sakarya. One of the most important current problems of this area is coastal linear urbanization. In a scientific study on secondary housing in Karasu, it has been emphasized that in recent years, there has been a construction that threatens the future of Karasu (Küçük 2016). It is known that people from the middle-income group living in İstanbul prefer this region for summer holiday and secondary housing. Similarly, this has also been observed and revealed from the users' evaluations as they mostly complain about carrying capacity-related issues. Another significant problem facing Sahil Park beach is coastal erosion and occasionally unfavorable hydrodynamic conditions (Aydın and Uysal 2014; Görmüş and Ayat, 2020). No significant shortcomings were identified in terms of the beach's blue flag management, infrastructure, and other services as it is reflected in landscape value score of the beach. However, due to intense coastal urbanization, compared to other beaches, Sahil Park beach is quite poor in terms of green texture. Another group of beaches included in the study are Kumcağız (L_v =3.78), Bağırganlı (L_v =3.75), and Cebeci (L_v =3.86) beaches in Kandıra, Kocaeli. According to survey results, these beaches are important in terms of green infrastructure and naturalness. Although the proportion of impervious surfaces in these beach areas has increased over the last 35–40 years (Guneroglu et al. 2024), coastal settlement is less than all other beaches except Miliç Beach. These beaches are attractive areas with high tourism potential, with their unique natural coastal formations and green textures. According to survey results conducted with beach visitors, these beaches possess features that reflect their relatively high landscape value scores. Possible reasons for this could be their natural landscape, green texture, and good beach management. After Kocaeli beaches, Palm Beach (L_v =3.90) and Şile Resort (L_v =3.53) private beaches in Şile district were examined on the east-west axis. Considering the survey period, no deficiencies were identified in terms of blue flag beach management. When all beaches are taken into consideration, the highest landscape value was calculated for Şile Palm Beach (L_v =3.90). As with all other areas, construction and the increasing proportion of impervious surfaces are emerging as one of the biggest problems at these beaches. A study conducted on second homes in İstanbul's coastal areas found that İstanbul residents view second homes as an investment, leading to dense construction in Silivri, Sarıyer, and Şile, and threatening coastal recreational areas (Yazgan 2018). According to the user profile, it can be said that Şile beaches are under pressure from visitors coming from İstanbul. Similar to the beaches examined in İstanbul, the İğneada beach (L_v =3.36) in Kırklareli is also a private beach located in front of a touristic hotel. The visitor profile here has also been identified as predominantly originating from İstanbul. According to the results, İğneaada Resort beach has been rated below average in terms of landscape value. In the studies conducted on beaches in the literature, it has been determined that the most important factors affecting the preferences, behaviors and satisfaction of beach users are water and sand quality, service, security, accessibility, general appearance and cleanliness along with the immediate environment (Duman and Öztürk 2005; Alegre and Cladera 2006; Botero et al. 2013; Brscic and Sugar 2020; Bahar et al. 2020). This situation has been confirmed in a similar manner in this study. Many factors such as sand quality, cleanliness, service, safety, accessibility, maintenance and amenities have been identified as factors affecting user satisfaction. Moreover, it is known that the general appearance of beaches and their surroundings also influence user preferences and satisfaction (Roca and Villares 2008; Roca et al. 2008; Rodella and Corbau 2020). The landform, vegetation, water presence, color, texture, continuity, and combination of cultural elements ensure the perceptibility of an area and, consequently, increase its aesthetic value (Kalın 2004; Wu et al. 2006; Güneroğlu 2017; Aşur 2017). Manmade features that complement the natural settings also have a potential to increase landscape value (Aşur and Alphan 2018). Undoubtedly, the location of beaches is an important factor that increases their appeal, but the presence and diversity of vegetation in the immediate vicinity of beaches is also an important variable that increases their landscape value as it is observed in thi study.

For example, although the vegetation on private beaches has been designed by humans, the well-maintained green areas and their color scheme have increased the appeal of the beaches as inferred from both user and expert opinions. In addition, plant designs in green areas near the beach incorporate both aesthetic and functional features for shade. Aesthetic and functional solutions have again been effective in user satisfaction. The ecological characteristics of plants, such as reducing ambient temperature and improving air quality, increase the landscape value of spaces (Rosenthal et al. 2008; Chen and Ng 2012; Sarı et al. 2020). For example, the dense vegetation at Samsun Miliç beach provides shade for the close vicinity, protecting it from the sun and keeping it cool. At the same time, it has enhanced the overall appearance of the beach by creating continuity in the beach silhouette. For this reason, Miliç beach has become a recreational area with high landscape value. However, according to the literature, sea side, sunlight, water, impressive views and beaches are important elements that increase the attractiveness of coastal recreation (Atik 2010). This study confirms the relevant literature according to user preferences gathered from the field surveys. Moreover, among the most significant shortcomings common to all blue flag beaches surveyed, the lack of water-related recreational activities can be highlighted. In terms of tourism activities, the popularity of the area is one of the main elements that increases the tourist density and visiting frequency. The attractiveness of the area is enhanced by the natural beauty and amenities offered in close vicinity (Duyar and Bayram 2019). However, temporary and seasonal intense tourist pressure in popular tourism destinations can negatively affect the daily comfort of local people (Aylan and Aylan 2020). In this context, when all beaches are evaluated in terms of popularity, it is noteworthy that the most popular beaches are Şile Resort and Palm Beach beaches in İstanbul and Kumcağız beach in Kocaeli. Since the beaches in Şile are close to Istanbul, they are subject to intensive use especially on weekends and in summertime. While beaches provide rich environments for tourism and recreational use, they also pose deadly hazards such as high waves and rip currents as widely observed on the western coast of the Southern Black Sea littoral zone. Drownings and similar accidents are reported every year in this area (Öztürk and Maraş 2022; Castelle et al. 2024). It has been determined that there are necessary information boards and emergency response equipment regarding these issues on the blue flag beaches investigated. Considering the 15 blue flag beaches examined, no problems were observed in terms of "blue flag" management within the framework of the existing blue flag criteria. In addition, it is seen that responsible organizations such as TÜRÇEV and municipalities are very willing and active in monitoring the blue flag labels. However, the increasing number of buildings in areas close to beach areas and exceeding the carrying capacity of beaches, especially during holidays, puts pressure on these areas and affects their sustainability. In order to protect the quality of these beaches and the blue flag label in the long term, it is important to solve this problem by considering the tourism sector and surrounding environment.

Regarding the applied methodology, it should be emphasized that there are both advantages and disadvantages that should be mentioned and discussed. Even though, the expert-based landscape evaluation technique is quite straightforward. it potentially suffers from issues related to sense of place, such as lack of scale and depth of the real environment as well as emotional and contextual structure. On the other hand, this technique is very useful for large scale studies, relatively cost effective and creates standard comparable results. Moreover, this technique ensures that the experience and opinions of many experts (75 for this study) are taken into consideration. As a result, a cumulative landscape value is calculated for each area. Thus, instead of relying on the opinion of a single expert, the areas are evaluated according to the opinions of many experts. It should also be stressed that the expert-based technique has the potential to contribute to coastal management strategies and plans by quantitatively evaluating landscapes and identifying critical points. Thus, restoration or improvement projects can be practically developed for areas with low landscape value.

Recommendation and Conclusion

This study on Blue Flag beach areas, with reference to the European Landscape Convention, emphasizes that the conservation and management of landscapes can only be possible if they are truly investigated and recognized. In this context, it is important how the areas are evaluated by both experts and users. While expert evaluations reveal the value of the areas in terms of ideal landscape functionality, the evaluations made by users are taken into account more in terms of practical aspects. On the other hand, the attitude of the local residents and management authority responsible for the beaches subject to assessment will also be important. The best management of these areas can thus be achieved through adaptive planning that takes into account the participation of all stakeholders. The increasing tourism popularity of the Southern Black Sea coast should be seen as an opportunity for better management of these areas. Managing the Blue Flag beach areas on the Southern Black Sea coast by considering the balance between usage and protection can ensure that these areas are passed on to future generations in a healthy manner without compromising the quality of service they offer. As inferred from the study, it

is clear that the Blue Flag beaches on the Southern Black Sea coast have a definite tourism potential which could be linked to available landscape setting of surrounding vegetation such as the density, continuity and species richness of the plants. Whether natural or built, vegetative quality positively affects both the landscape value of the area and user satisfaction. Therefore, it is recommended that the presence of plants and their functional composition would be taken into account, along with all other criteria, in the management of blue flag beaches. Moreover, in order to enhance or at least preserve the existing landscape value of the beach areas, surrounding built environment should be regularly monitored. The infrastructure and services required for the continuity of tourism revenues from beach areas must be developed in a way that protects the natural environment. It is recommended that beach's vegetation, view and other perceptual features can be included in Blue Flag procedure as a new criterion based on landscape value score as explained in methodology section. In addition, in terms of sustainable management of the blue flag beaches, the satisfaction level of beach users can be incorporated into a new landscape value methodology that periodically measures user satisfaction and transfers it to the responsible organizations. Finally, taking these recommendations into consideration in order to improve the tourism potential of the Black Sea coast beaches is extremely important for decision makers in terms of effective coastal management. Türkiye's national development plans envisage increasing sustainable tourism revenues. This can only be realized through a good beach inventory system and a sound coastal management strategy.

The protection and development of tourism activities, one of the most important benefits of coastal areas in the world, can only be achieved through the continuity of the provided ecosystem services. Addressing and planning these services within the framework of coastal zone management principles could be ensured through comprehensive landscape value research. The current study may contribute to future works related to coastal landscape assessments.

Acknowledgments This research was supported by the Scientific and Technological Research Council of Türkiye (TÜBİTAK) with Project Number:221O281. Special thanks also send to all involved persons and organizations during the field works.

Author contributions NG (research design, data curation, field surveys, data analysis, writing, editing and reviewing), AG (research design, data curation, field surveys, data analysis, writing, visualization and reviewing), MD (field surveys, data analysis, visualization, writing, editing and reviewing), DS (data analysis, writing, editing and reviewing).

Funding Open access funding provided by the Scientific and Technological Research Council of Türkiye (TÜBİTAK). This work was supported by The Scientific and Technological Research Council of Türkiye -TÜBİTAK under Grant Agreement No 221O281.

Data availability No datasets were generated or analysed during the current study.

Declarations

Ethical statements The authors agree that this research was prepared in accordance with ethical norms including all permissions, confidentiality and consents. They also want to declare that all results were published by following ethical standards.

Competing interests The authors declare no competing interests.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0/.

References

Acar H, Eroğlu E, Acar C (2013) Landscape Values of Rocky Habitats in Urban and Semi-Urban Context of Turkey: A Study of Tokat City. J Food Agric Environ 11:1200–1211

Aktürk E, Güneroğlu N (2021) Degradation of coastal ecosystem services in southern Black Sea: A case study of Trabzon city. Ocean Coastal Manage 213:105837

Alegre J, Cladera M (2006) Repeat visitation in mature sun and sand holiday destinations. J Travel Res 44(3):288–297

Allenbach K, Garonna I, Herold C, Monioudi I, Giuliani G, Lehmann A, Velegrakis AF (2015) Black Sea beaches vulnerability to sea level rise. Environ Sci Policy 46:95–109

Anfuso G, Williams AT, Martínez GC, Botero CM, Hernández JC, Pranzini E (2017) Evaluation of the scenic value of 100 beaches in Cuba: Implications for coastal tourism management. Ocean Coastal Manage 142:173–185

Antonidze E (2010) ICZM in the Black Sea region: experience and perspectives. J Coastal Conserv 14:265–272

Ariza E, Jimenez JA, Sarda R, Villares M, Pinto J, Fraguell R, Fluvia M (2010) Proposal for an integral quality index for urban and urbanized beaches. Environ Manage 45(5):998–1013

Aşur F (2017) Van kenti yakın çevresi kıyı alanı örneğinde sulak alanlar ve görsel peyzaj kalite değerlendirmesi. Türk Tarım ve Doğa Bilimleri Dergisi 4(4):506–515

Aşur F, Alphan H (2018) Görsel peyzaj kalite değerlendirmesi ve alan kullanım planlamasına olan etkileri. Yuzuncu Yıl Univ J Agricultural Sci 28(1):117–125

Atik M (2010) Environmental protection in coastal recreation sites in Antalya, Turkey. Coastal Manage 38(6):598–616

Aydın M, Uysal M (2014) Risk assessment of coastal erosion of Karasu coast in Black Sea. J Coastal Conserv 18(6):673–682

Aylan S, Aylan FK (2020) Sosyal Medyada Overtourism Etiketi İle Yapılan Paylaşımların İncelenmesi: Twitter Örneği. J Tourism Gastronomy Stud 8(4):411–422

Bahar AM, Maizaldi M, Putera N, Widiestuty R, Chaniago S, Eliza Y (2020) The Effect of Tourism Facilities, Service Quality and

Promotion of Tourist Satisfaction in South Pesisir District. J-MAS 5(1):5–9
Ballesteros C, Jiménez JA, Valdemoro HI, Bosom E (2018) Erosion consequences on beach functions along the Maresme coast (NW Mediterranean, Spain). Nat Hazards 90(1):173–195
Botero C, Anfuso G, Williams AT, Zielinski S, Silva S, Cervantes CP, Silva O, L., Cabrera JA (2013) Reasons for beach choice: European and Caribbean perspectives. J Coastal Res 65:880–885
Botero CM, Pereira C, Anfuso G, Cervantes O, Williams AT, Pranzini E, Silva CP (2014) Recreational parameters as an assessment tool for beach quality. J Coastal Res 70:556–562
Brown G (2006) Mapping Landscape Values and Development Preferences: a Method for Tourism and Residential Development Planning. Int J Tourism Res 8:101–113
Brown G, Brabyn L (2012) The Extrapolation of Social Landscape Values to a National Level in New Zealand Using Landscape Character Classification. Appl Geogr 35:84–94
Brown G, Raymond C (2007) The relationship between place attachment and landscape values: Toward mapping place attachment. Appl Geogr 27(2):89–111
Brown G, Smith C, Alessa L, Kliskey A (2004) A comparison of perceptions of biological value with scientific assessment of biological importance. Appl Geogr 24(2):161–180
Brscic K, Sugar T (2020) Users' perceptions and satisfaction as indicators for sustainable beach management. Tour Hosp Manag 26(1):33–48
Cabezas-Rabadán C, Pardo-Pascual JE, Almonacid-Caballer J, Rodilla M (2019) Detecting problematic beach widths for the recreational function along the Gulf of Valencia (Spain) from Landsat 8 subpixel shorelines. Appl Geogr 110:102047
Casado-Arzuaga I, Onaindia M, Madariaga I, Verburg PH (2014) Mapping recreation and aesthetic value of ecosystems in the Bilbao Metropolitan Greenbelt (northern Spain) to support landscape planning. Landscape Ecol 29(8):1393–1405
Castelle B, Dehez J, Savy JP, Marieu V, Lyser S, Bujan S, Carayon D, Brander R (2024) Environmental controls on lifeguard-estimated surf-zone hazards, beach crowds, and resulting life risk at a high-energy sandy beach in southwest France. Nat Hazards 120(2):1557–1576
Chen L, Ng E (2012) Outdoor thermal comfort and outdoor activities: A review of research in the past decade. Cities 29:118–125
Council of Europe (2000) The European Landscape Convention, Strasbourg CETS no: 176
Crawford J, Walsh C, Sielker F, Smith G (2022) Planning for Sea Spaces II: Towards an Agenda for Research. Plann Pract Res 37(3):269–275
De Paula DP, Vasconcelos YG, de Sousa FRC (2022) Effects of beach width variability on recreational function: a case study of NE Brazil. 51:102182Regional Studies in Marine Science
Defeo O, Licandro JA, Olalde J, Bausero-Jorcin S, Celentano E, de Álava A, Rangel-Buitrago N (2024) Assessing the health and scenic quality of sandy beaches: A large-scale evaluation using expert judgement. Ocean Coastal Manage 259:107468
Döring M, Ratter BM (2018) Coastal landscapes: The relevance of researching coastscapes for managing coastal change in North Frisia. Area 50(2):169–176
Duman T, Öztürk AB (2005) Yerli turistlerin Mersin Kızkalesi destinasyonu ve tekrar ziyaret niyetleri ile ilgili algılamaları üzerine bir araştırma. Anatolia: Turizm Araştırmaları Dergisi 16(1):9–23
Duyar M, Bayram M (2019) Aşırı Turizm ve Turizm Korkusu: Yerel Halk Ve Turizm İlişkisinin Evrimi. lnternational J Geogr Geogr Educ 40:347–362
Ergin A, Karaesmen E, Micallef A, Williams AT (2004) A new methodology for evaluating coastal scenery: fuzzy logic systems. Area 36(4):367–386
Fredy E, Tejada GADC, Trinidad Betty PDG, Eusebio Walter CR, José Alberto FR (2021) Determination of the carrying capacity of the beaches of the District of Mollendo Islay Arequipa Peru. Turkish J Comput Math Educ (TURCOMAT) 12(14):2171–2181
Gomez-Sal A, Belmontes J-A, Nicolau J-M (2003) Assessing Landscape Values: a Proposal for a Multidimensional Conceptual Model. Ecol Model 168:319–341
Gonçalves C, Pinho P (2024) A manifesto for coastal landscape governance: Reframing the relationship between coastal and landscape governance. Ambio, 1–12
Gormus T, Ayat Aydoğan B (2020) Vulnerability assessment of southwestern Black Sea. J Fac Eng Archit Gazi Univ, *35*(2)
Görmüş T, Ayat B, Aydoğan B (2020) A database of Black Sea beaches, EGU General Assembly 2020. Online, 4–8 May 2020, EGU2020-579 https://doi.org/10.5194/egusphere-egu2020-579
Güçlü Y (2011) Sinop-Ordu Kıyı Kuşağında İklim Konforu Ve Deniz Turizmi Mevsiminin İklim Koşullarına Göre Belirlenmesi. Doğu Coğrafya Dergisi 15(23):119–144
Gulinck H, Múgica M, de Lucio JV, Atauri JA (2001) A framework for comparative landscape analysis and evaluation based on land cover data, with an application in the Madrid region (Spain). Landsc Urban Plann 55(4):257–270
Guneroglu A (2015) Coastal changes and land use alteration on Northeastern part of Turkey. Ocean Coastal Manage 118:225–233
Guneroglu A, Karsli F, Dihkan M (2014) Dynamic management of the coasts: marine spatial planning. In *Proceedings of the Institution of Civil Engineers-Maritime Engineering* (Vol. 167, No. 3, pp. 144–153
Guneroglu N, Guneroglu A, Dihkan M, Sari D, Onur M, Demirsoy EH, Hamzaoglu C, Yilanci G (2024) Determining anthropogenic pressure on the Southern Black Sea blue flag beaches. J Coastal Conserv 28(3):1–12
Güneroğlu N (2017) Akarsu rehabilitasyonunun peyzaj kalitesi üzerindeki etkileri. Artvin Çoruh Üniversitesi Orman Fakültesi Dergisi 18(1):10–20
Güneroğlu N, Acar C (2016) Çay (Camellia sinensis) Alanlarının Peyzaj Değeri. Artvin Çoruh Üniversitesi Orman Fakültesi Dergisi 17(1):38–51
Güneroğlu A, Samsun O, Feyzioğlu M, Dihkan M (2019) The Black Sea—The Past, Present, and Future Status. Coasts and Estuaries. Elsevier, pp 363–375
Kalın A (2004) Çevre tercih ve değerlendirmesinde görsel kalitenin belirlenmesi ve geliştirilmiş: Trabzon sahil bandı örneği. Karadeniz Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Peyzaj Mimarlığı Anabilim Dalı, Doktora Tezi, 132s. Trabzon.
Karadeniz CB, Sarı S, Çağlayan AB (2018) İklim Değişikliğinin Doğu Karadeniz Turizmine Olası Etkileri. 1. Uluslararası Eğitim ve Sosyal Bilimlerde Yeni Ufuklar Kongresi Bildiriler Kitabı, 9–11 Nisan 2018, İstanbul-Türkiye, 170–179
Khodkar G, Özyurt G (2018) Plajlarda Taşıma Kapasitesinin Değerlendirilmesi: Sürdürülebilir Kullanım İçin Örnek Çalışma, Kuşadası Plajları, 9.Kıyı Mühendisliği Sempozyumu Bildiriler Kitabı 421–432 s. Adana Türkiye (In Turkish)
Kim NH, Kang HH (2009) The aesthetic evaluation of coastal landscape. KSCE J Civ Eng 13:65–74
Kiper T, Korkut A, Topal TÜ (2017) Görsel Peyzaj Kalite Değerlendirmesi: Kıyıköy Örneği. Kahramanmaraş Sütçü İmam Üniversitesi Tarim ve Doga Dergisi 20(3):258–269
Kosyan RD, Velikova VN (2016) Coastal zone –Terra (and aqua) incoginita- Integrated Coastal Zone Management in the Black Sea, Estuarine. Coastal Shelf Sci 169:A1–A16
Küçük H (2016) Karasu ilçesinde (Sakarya) ikincil konutların gelişimi. Bilecik Şeyh Edebali Üniversitesi, Sosyal Bilimler Enstitüsü, Coğrafya Anabilim Dalı, Yüksek Lisans Tezi, 141s. Bilecik
Kuleli T, Guneroglu A, Karsli F, Dihkan M (2011) Automatic detection of shoreline change on coastal Ramsar wetlands of Turkey. Ocean Eng 38(10):1141–1149

La Rosa D (2011) The Observed Landscape: Map of Visible Landscape Values in The Province of Enna (Italy). J Maps 7:291–303
Liu C, Shi RX, Zhang YH, Shen Y, Ma JH, Wu LZ, Zhu YQ (2019) Land areas, and how long of shorelines in the world? Vector data based on google earth images. J Global Change Data Discovery 3(2):124–148
Lucrezi S, Saayman M, Van der Merwe P (2016) An assessment tool for sandy beaches: A case study for integrating beach description, human dimension, and economic factors to identify priority management issues. Ocean Coastal Manage 121:1–22
Luijendijk A, Hagenaars G, Ranasinghe R, Baart F, Donchyts G, Aarninkhof S (2018) The state of the world's beaches. Sci Rep 8(1):1–11
Martinez ML, Intralawan A, Vázquez G, Pérez-Maqueo O, Sutton P, Landgrave R (2007) The coasts of our world: Ecological, economic and social importance. Ecol Econ 63(2–3):254–272
Merino F, Prats MA (2020) Sustainable beach management and promotion of the local tourist industry: Can blue flags be a good driver of this balance? Ocean Coastal Manage 198:105359
Öztürk D, Maraş EE (2022) Samsun-Atakum Kıyılarının Rip Akıntı Tehlikesinin İncelenmesi. Afet ve Risk Dergisi 5(1):122–137
Öztürk MZ, Çetinkaya G, Aydın S (2017) Köppen-Geiger iklim sınıflandırmasına göre Türkiye'nin iklim tipleri. Coğrafya Dergisi 35:17–27
Priego C, Breuste JH, Rojas J (2008) Perception and value of nature in urban landscapes: a comparative analysis of cities in Germany, Chile and Spain. Landsc Online 7(1):22
Report EEA (2002) Europe's biodiversity-biogeographical regions and seas, Report no:1/2002
Roca E, Villares M (2008) Public perceptions for evaluating beach quality in urban and semi-natural environments. Ocean Coastal Manage 51(4):314–329
Roca E, Riera C, Villares M, Fragell R, Junyent R (2008) A combined assessment of beach occupancy and public perceptions of beach quality: A case study in the Costa Brava, Spain. Ocean Coastal Manage 51(12):839–846
Roca E, Villares M, Ortego MI (2009) Assessing public perceptions on beach quality according to beach users' profile: A case study in the Costa Brava (Spain). Tour Manag 30(4):598–607
Rodella I, Corbau C (2020) Linking scenery and users' perception analysis of Italian beaches (case studies in Veneto, Emilia-Romagna and Basilicata regions). Ocean Coastal Manage 183:104992
Rodella I, Madau F, Mazzanti M, Corbau C, Carboni D, Simeoni U, Parente L (2020) Carrying capacity as tool for beach economic value assessment (case studies of Italian beaches). Ocean Coastal Manage 189:105130
Rosenthal JK, Crauderueff R, Carter M (2008) Urban heat island mitigation can improve New York city's environment: Research on the impacts of mitigation strategies. Sustainable South Bronx Working Paper, New York, USA
Şahin Ş, Hoşgör E, Doğan D, Kaymaz I (2022) Park tasarımında peyzaj temelli ziyaretçi taşıma kapasitesi analizi. J Architectural Sci Appl 7(1):101–118
Sarı D, Kurt S, Resne Y, Çorbacı ÖL (2020) Kent Parklarında Kullanılan Ağaç Türlerinin Sağladığı Ekosistem Hizmetleri: Rize Örneği. J Anatol Environ Anim Sci 5(4):541–550
Sharafatmandrad M, Mashizi AK (2020) Visual value of rangeland landscapes: A study based on structural equation modeling. Ecol Eng 146:105742
Solecka I (2019) The use of landscape value assessment in spatial planning and sustainable land management—a review. Landsc Res 44(8):966–981
Solecka I, Rinne T, Martins RC, Kytta M, Albert C (2022) Important places in landscape–investigating the determinants of perceived landscape value in the suburban area of Wroclaw, Poland. Landsc Urban Plann 218:104289
Tengberg A, Fredholm S, Eliasson I, Knez I, Saltzman K, Wetterberg O (2012) Cultural ecosystem services provided by landscapes: assessment of heritage values and identity. Ecosyst Serv 2:14–26
TÜRÇEV (2021) http://www.mavibayrak.org.tr (08.01.2021).
Wu Y, Bishop I, Hossain H, Sposito V (2006) Using GIS in landscape visual quality assessment. Appl GIS, 2 (3), 18.1–18.20.
Yazgan A (2018) İstanbul Kıyı Alanlarında İkinci Konutun Değişim ve Gelişimi. Megaron 13(3):422–430
Yılmaz B (2023) Türkiye'deki plaj ve kıyı kumulu alanlarının uzaktan algılama yöntemleri ile incelenmesi. Balıkesir Üniversitesi Sosyal Bilimleri Enstitüsü, Coğrafya Anabilim Dalı, Yüksek Lisans Tezi, 76s. Balıkesir.
Zube EH (1987) Perceived land use patterns and landscape values. Landscape Ecol 1:37–45

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.