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AUTHORS: Hilal KAHVECI,Nilgün GÜNEROGLU

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PREFERABILITY OF GREEN AREA USAGE HAVING THE URBAN FOREST POTENTIAL IN THE EXAMPLE OF TRABZON CITY CENTER

Hilal KAHVECİ[1,*], Nilgün GÜNEROĞLU[2]

[1]Bilecik Şeyh Edebali University, Faculty of Fine Arts and Design, Department of Interior Architecture and Environmental Design, Bilecik, Türkiye

[2]Karadeniz Technical University, Faculty of Forestry, Department of Landscape Architecture, Trabzon, Türkiye

Corresponding author: hilal.kahveci@bilecik.edu.tr

Hilal KAHVECİ: https://orcid.org/0000-0002-4516-7491
Nilgün GÜNEROĞLU: https://orcid.org/0000-0002-0825-0405

ABSTRACT: The rate of unplanned urbanization has increased with modern industrialization and the increase in migration from rural to urban areas, and as a result, people have been exposed to environmental problems (decrease in natural resources, noise, pollution, etc.). With deteriorations such as irreversible environmental problems, loss of mental and physical health of the city-dwellers a decrease in productivity in business life and difficulties in socialization have occurred, which has made green infrastructure systems in and around cities important. In this context, urban forests, which is an important part of the urban green infrastructure system, were discussed. In the study, a survey was conducted with a group of 130 people and primarily the awareness of the citizens about the open space recreation tendencies and the concept of the urban forest was specified. Then, the preferability of the 100. Yıl Park, Atatürk Mansion and Boztepe forest areas, which are in the green area system of Trabzon city as urban forests was discussed. Obtained data were evaluated as recreational and functional in line with the needs of people. Consequently, it has been emphasized that the urban forests planned with ecological design approaches should be given priority in the city of Trabzon.

Keywords: Green area, urban forest, recreation, Trabzon

TRABZON KENT MERKEZİ ÖRNEĞİNDE KENT ORMANI OLABİLECEK YEŞİL ALAN KULLANIMLARININ TERCİH EDİLEBİLİRLİĞİ

ÖZET: Modern endüstrileşme ve kırsaldan kentlere göç artışı ile çarpık kentleşme oranı yükselmiş, bunun sonucunda ise insanlar çevresel problemlere (doğal kaynakların azalması, gürültü, kirlilik vb.) maruz kalmıştır. Geri dönüşü mümkün olmayan çevresel sorunlar ile kentlilerin ruh ve beden sağlığının kaybedilmesi, iş yaşamında verimliliğin azalması ve sosyalleşmede güçlükler gibi bozulmalar meydana gelmiş bu durum kent içi ve yakın çevresindeki yeşil alt yapı sistemlerini önemli kılmıştır. Bu bağlamda kentsel yeşil altyapı sisteminin önemli bir parçası olan kent ormanları konusu ele alınmıştır. Çalışmada 130 kişilik bir kullanıcı grubuyla anket çalışması gerçekleştirilmiş ve öncelikli olarak kent halkının açık alan rekreasyon eğilimleri, kent ormanı kavramı konusundaki farkındalıkları ölçülmüştür. Daha sonra Trabzon kenti yeşil alan sisteminde yer alan 100. Yıl Parkı, Atatürk Köşkü ve Boztepe ormanlık alanlarının kent ormanı olarak tercih edilebilirliği sorgulanmıştır. Elde edilen veriler insanların gereksinimleri doğrultusunda rekreasyonel ve fonksiyonel olarak değerlendirilmiştir. Sonuç olarak Trabzon kenti özelinde ekolojik tasarım yaklaşımları ile planlanan kent ormanlarına öncelik verilmesi gerekliliği vurgulanmıştır.
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Anahtar kelimeler: Yeşil Alan, kent ormanı, rekreasyon, Trabzon

INTRODUCTION

Cities have become places where air and water resources are polluted and climate changes and floods and erosion are seen due to unplanned urbanization and intense population pressures. In cities, where large amounts of energy are used and carbon dioxide is released into the atmosphere uncontrollably, the increase in population and geographical area accelerates fossil fuel consumption. The significant increase in greenhouse gases causes global warming. Plants are the most important elements that prevent global warming by consuming CO_2 from the air and converting it to biomass (Görcelioğlu 1999; Eroğlu et al., 2005). Considering that approximately 50% of the world's population lives in urban areas and this rate will double by two-thirds in 2050 (Dihkan, et al., 2018; Esringü et al., 2021), it is inevitable that environmental problems will increase and this will decrease the amount of green space per capita in urban areas. For these reasons, there is a need to increase green areas for the sustainability and livability of cities in the world (Tabassum et al. 2020; Ekren 2021).

The issue of open green space per capita in urban systems is still being discussed. In the twentieth century, experts from Germany, Japan and other countries recommend high quality 40 m² urban green area per capita or 140 m² forest area in the city periphery to achieve the carbon dioxide and oxygen balance that will provide the ecological balance of human health. Currently, developed countries are trying to implement the general standard of 20 m² green park area per capita (Singh et al. 2010). According to a regulation issued in 1999, the amount of green space per capita should be 10 m² (Ortaçeşme et al. 2005), while the average green area per person in cities in Turkey is 1.2 m² (Turna, 2017). When we look at some cities in developed countries, the amount of green space per capita is 37 m^2 in Berlin, 125 m^2 in Vienna, 144 m^2 in Edinburgh, and 5 m^2 in Istanbul. This rate is obviously quite low.

Urban green spaces fulfill the functions such as cleaning the air, providing climate, wind and erosion control, creating a pollen source, bringing nature into the city by making wildlife a part of the city (Tülek and Mirici 2019; Güneroğlu and Pulatkan, 2021; Sarı, 2021; Ekren and Çorbacı, 2022). In addition, urban green spaces reduce the effect of heat islands with their cooling effects and control environmental pressures (Hamada and Ohta 2010; Cohen et al. 2012). Considering the social benefits, it also has the potential to improve physical and mental health by reducing stress, crime and violence tendencies, improving health services and reducing aggressive behavior (Karaşah 2020). Considering all these functions, it is inevitable that cities and their immediate surroundings should be planned with green infrastructure systems. Parks, street and road plantings, green textures in public spaces, school and campus gardens, botanical gardens and urban forests are the most important parts of green infrastructure systems.

The urban forest and urban forestry refer to the whole of activities that contribute to the economic, social, cultural, and aesthetic values of the people within the urban green infrastructure systems. With urbanization, the concept of urban forestry has started to gain more importance. Especially since the 90s, learning of environmental and social benefits of trees by individuals living in the city, considering forest areas with urban planning, support of urban forests on ecology, balancing the relations between urban and urban periphery forests have accelerated the development of urban forests and urban forestry. Protection, planning and management of forests in urban environments and determination of the legal framework for urban forests and urban forestry constitute the most important activities related to urban forestry (Dirik and Ata, 2005; Yılmaz et al. 2009). With effective planning and management, urban trees and forests provide city-dwellers with a more beautiful, healthy and comfortable green environment to live and work in (Dwyer et al. 1992). The creation and management of urban forests to ensure sustainability is the long-term goal of urban foresters (Clark et al. 1997). Creating forests, planting trees and the management plans of these areas have been evaluated as a tool for environmental, social, and economic development in many cities. In the early days, urban forestry was considered as a landscape element that complemented the city and a source of income, but today it is also evaluated in terms of ecosystem services such as preventing air and sound pollution and regulating microclimate (Sağlam and Özkan 2011). Urban forests are defined as areas that are created naturally or artificially in the city or its immediate surroundings, that contribute to the physical environment of the city aesthetically and functionally, that have recreational opportunities for the socialization of the city-dwellers, that can be reached by foot or vehicle (Uslu and Ayaşlıgil, 2007). Another definition is that they are forest areas in cities and their immediate surroundings that can form forest formations, protected or formed by vegetation, within the transportation distance that the city-dwellers can benefit from and large enough to ensure the continuity of ecosystems (Yılmaz et al. 2006). As a result of these definitions, it can be said that urban forests are green areas that improve urban landscapes aesthetically and functionally and provide an image for cities to gain identity (Yılmaz et al. 2009). In addition, direct or indirect contributions of urban forests to urban ecosystems should not be forgotten. In this context, the contributions of urban forests to cities can be classified as social and aesthetic, ecological and engineering, and economic.

In this study, urban forests, which have healing properties for urban ecosystems and provide many benefits to society, were discussed in the city of Trabzon. Although there is currently no area as an urban forest in the city of Trabzon, 3 different open green areas having urban forest potential were selected as the working area. Accordingly, it was aimed to reveal the awareness and views of the individuals living in the city of Trabzon regarding the concept of urban forest

in their use of urban green areas, the preference for these areas as urban forests and the opportunities of these areas.

MATERIALS AND METHODS

Study Area

Located in the Eastern Black Sea region of Turkey, Trabzon is a coastal city with the provinces of Rize in the east, Giresun in the west, Gümüşhane and Bayburt in the south. The population of the city with an area of 4685 km² is 813684. The city, which receives precipitation in all seasons of the year, has a Black Sea climate with hot summers and mild winters. The sudden rise of the mountains from the coast prevents the transmission of precipitation to the interior; therefore, climatic differences occur in the city. On the slopes facing the Black Sea, pseudomaquis vegetation like the vegetative characteristic of the Mediterranean region is observed up to 500 m altitude. Then, in the region up to 1000-1200 m altitude, forests consisting of deciduous trees such as beech, hornbeam and chestnut dominate. Up to 2000 m altitude, forests consisting of coniferous trees dominated by spruce plants are seen (Anşin, 1980; Acar et al., 2014).

The mountains rising parallel to the coast also cause the linear development of the city in the east-west direction (Dikhan et al., 2017). With the increase in the population of the city in recent years, the development of the city in the south direction has gained momentum. Although Trabzon is a city that draws attention with its green texture, the amount, size, and connectivity of green areas within the urban texture are not sufficient (Güneroğlu et al., 2013). The imbalance between construction and the amount of green texture negatively affects the urban ecosystem (Öztürk and Elmalı Şen, 2021). Green areas should be increased in the city for both ecological and social purposes and should be planned in an interconnected way. Considering the rate of urbanization, the need for recreational coasts and open green spaces is increasing day by day. With the urban renovation works carried out in the city center, it is aimed to bring green texture to the city and recreational areas for the city-dwellers (Güneroğlu and Pulatkan, 2021). Every part of the existing urban green systems in the city of Trabzon is of great importance for urban health. Accordingly, the 100. Yıl Park, Atatürk Mansion forestry and Boztepe forestry, which have the potential to be evaluated as an urban forest in Trabzon, are considered as working fields (Figure 1).
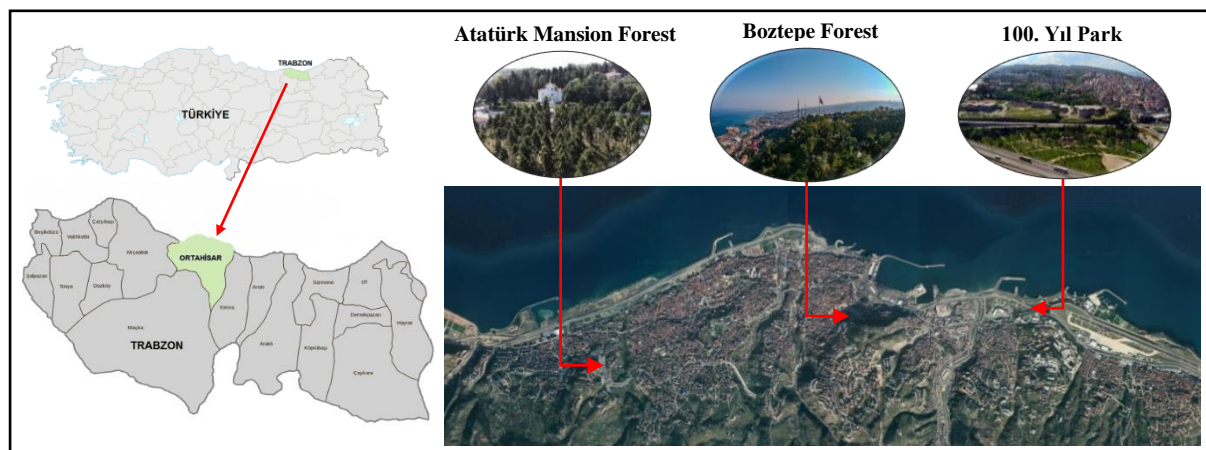

Figure 1. Study areas

Method

The study consists of a literature review, fieldwork, results and discussion and conclusion sections. In the study, it was aimed to evaluate the study areas that have the potential to become an urban forest by examining the urban forest awareness of the dwellers of Trabzon (Figure 2). For these purposes, a literature review was conducted on the subject and working fields. Observation, photographing and field surveys were carried out by visiting the study areas in 2021. During the fieldwork, information regarding the spatial characteristics of the areas such as size, location, transportation, parking, presence of social areas, recreational facilities, equipment, usage assets, main plant elements and historical structure was examined. According to the formula of Kalıpsız (1981), the number of survey participants was determined as 73 at the 95% confidence interval, considering the population of Trabzon Ortahisar. In order to increase the level of reliability, survey study was conducted with a group of 130 field users.

$$n = \frac{Z^2 NPQ}{ND^2 + Z^2 PQ}$$

n = Sample size
Z = Confidence coefficient (1,96)
P = The probability that the property to be measured will be found in the mass (%95)
Q = 1-P (0,05)
N = Main mass size (27631)
D = Accepted sampling error (%5)

In the first part of the survey study consisting of three parts, the socio-demographic characteristics of the subject group and the use cases of the study areas that have the potential to be urban forests were determined by questioning 11 multiple choice questions. In the second part, the level of knowledge and awareness of the users about urban forests was evaluated by questioning the level of participation to the definitions given. In the last part, with 10 questions, the reasons for choosing work areas that have the potential to be urban forests in Trabzon were questioned. Again, in this section, with 16 questions, the possibilities that the study areas have when they are evaluated as urban forests were investigated. In addition, the potentials of 3 different selected working areas to become urban forests were compared. In the second and third parts of the survey, participation to the statements was determined by using the 5-grade "Likert Attitude Scale" representing the statements "I strongly disagree", "I do not agree", "I have no idea", "I agree", "I strongly agree". The survey, which was evaluated by people who know and use the areas, was carried out in a digital environment, not face-to-face, due to the pandemic. All the results obtained were converted into numerical data and evaluations were made.
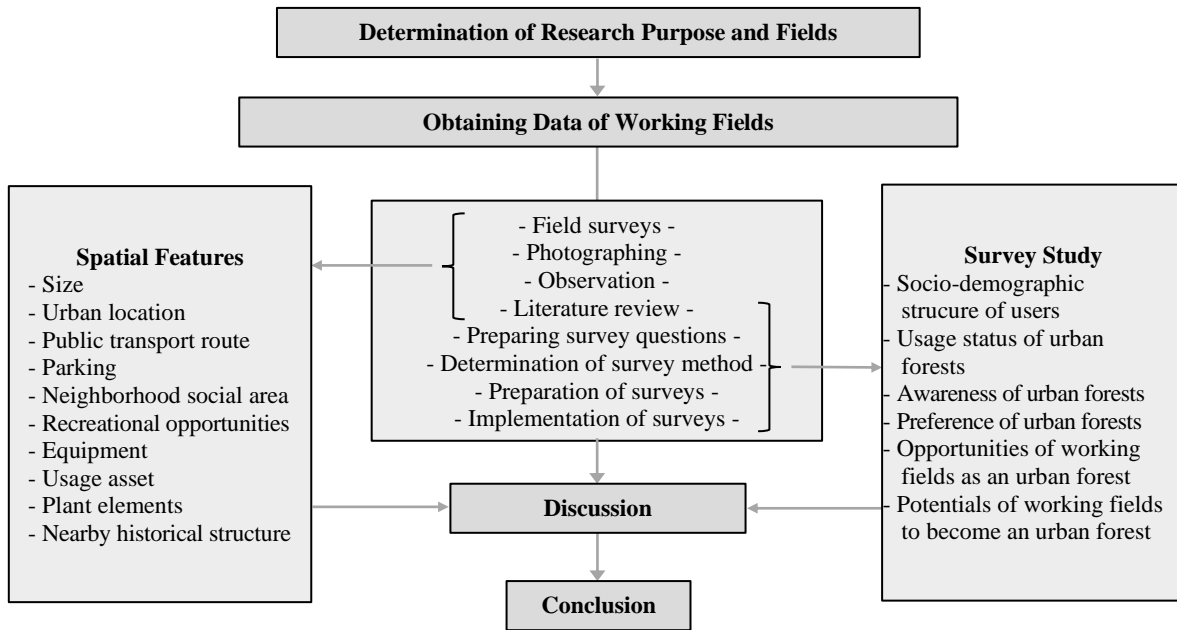
Figure 2. Flow chart.

RESULTS AND DISCUSSION

In the study, the awareness of the city-dwellers about the urban forests was examined, and the preferability of the selected working areas in the city of Trabzon as urban forests and the opportunities they had were investigated. The findings are given below.

Table 1 was prepared according to the spatial characteristics of the areas during the fieldwork. It has been determined that while the 100. Yıl Park are among the top positions in terms of size, Atatürk Mansion forestry has the smallest area. In terms of location, Atatürk Mansion forestry are the farthest area from the city center, while the closest area to the center is the Boztepe forest area. The most important features of urban forests are that they are close to the city center and accessible (Uslu and Ayaşlıgil, 2007). When evaluated from this point of view, it is seen that all areas are on public transport routes, and they can be easily reached by minibuses and buses. In terms of parking facilities, the 100. Yıl Park is in the first place due to the presence of a shopping mall near to it. However, during the fieldwork, it was observed that the parking lots are insufficient due to the intense usage of the city-dwellers in the spring and summer seasons, and the green areas and roadsides are used as parking areas. Although there is a parking lot near the Atatürk Mansion forest, this parking lot is mostly used by the visitors of the Atatürk Mansion. It has also been determined that the visitors coming to the forest area use the roadsides as parking lots. The parking lot located near the Boztepe forest area cannot provide sufficient parking for the users of the area. While there are general recreational opportunities for sitting, resting, playing, taking photos in the areas, walking and picnicking in the 100. Yıl Park, viewing and cultural opportunities in the Atatürk Mansion forest and Boztepe forest are at the forefront. Recreational activities are attractive opportunities for urban forests. In addition, it should be ensured that the field equipment is maintained and renewed when necessary (Cengiz and Ertem Mutlu, 2017). While there is no field equipment in Atatürk Mansion and Boztepe forest areas, 100. Yıl Park is considered to be quite well equipped with

the equipment. In terms of usage assets, it has been evaluated that the 100. Yıl Park has the area with the most usage assets, while Atatütk Mansion and Boztepe forest areas do not have these opportunities. When evaluated in terms of green elements, tall tree species were taken into account in the fields. Species diversity is low but tree density is high in Atatütk Mansion and Boztepe forest areas. It is seen that especially evergreen trees are in the foreground in these areas. In the one area, there are wooded areas with broad-leaved plants and evergreen plants. In the forest area of Atatürk Mansion, plant losses have occurred due to aging, neglect and compaction in the soil. For this reason, after 2018, improvement works were started by creating mixed forests with natural evergreen and deciduous plant species such as hornbeam, beech, linden, elm, maple, and cedar (Turna et al., 2021). Atatürk Mansion Forest is located near the Atatürk Mansion, and the Girls Monastery and Ahi Evrene Dede Mosque are located in the immediate vicinity of the Boztepe forest area.

Table 1. Spatial Features of Study Areas

Spatial Features	100. Yıl Park	Atatürk Mansion Forest	Boztepe Forest
Size	7.2 ha	2.5 ha	3.7 ha
Urban location	It is 3.9 km away from the city center, in the Development District, in the east of the city, at an altitude of 25 m.	It is 5.8 km away from the city center, in the Soguksu neighborhood, in the southwest of the city, at an altitude of 400 m.	It is 2.5 km away from the city center, in Boztepe District, in the south of the city, at an altitude of 160 m.
Public transport route	Minibus and bus stops available around the area	Minibus and bus stops available around the area	Minibus and bus stops available around the area
Parking	Parking available near the field	Parking available near the field and roadsides are used as parking lots.	Parking available near the field
Neighborhood social area	Mall, University, Airport	Tea Garden	5 Star Hotel, Tea Garden
Recreational opportunities	Sitting, Relaxation, Picnic, Play, Hiking, Photographing	Sitting, Relaxation, Picnic, Playing, Culture, Photographing, View	Relaxation, Picnic, Play, Culture, Photographing, View
Field equipment	Floors, lighting elements, seating units, signs and information signs, barbecue, fountains, garbage cans	-	-
Usage asset	Playgrounds, buffet, restroom	-	-
Plant elements	*Platanus orientalis* L*.,* *Populus tremula* L., *Fagus orientalis* L*.,* *Cupressus arizonica* Greene*, Picea orientalis* (L.)Link., *Cedrus deodora* G.Don*, Cedrus libani* A.Rich*, Laurocerasus officinalis* L*., Sequoia sempervirens* Endl*., Phoenix canariensis* Chabaud	*Picea orientalis ,* (L.)Link., *Pinus sylvestris* L*., Sequoia sempervirens* Endl.,	*Picea orientalis* (L.)Link.*,, Pinus pinea* L.*, Pinus sylvestris* L., *Pinus pinaster* Ait., *Populus tremula* L.*, Acer negundo* L., *Fraxinus angustifolia* Vahl, *Robinia pseudoacacia* L.
Nearby historical structure	-	Atatürk Mansion	Girls Monastery, Ahi Evren Dede Mosque

Acording to survey results socio-demographic status of the participants (age, gender, marital status, education, occupation, income level) are given in Table 2. According to Table 2; 55%

of the participants are women and 45% are men. 61% of the participants are married and 39% are single. 27% of the participants are civil servants, 23% are between the ages of 26-35 and 47% are university graduates.

According to the surveys conducted on the usage habits of study areas that have the potential to be urban forests, the frequency of going to the study areas with 42% was determined as "several times a month". In the literature, the frequency of going to the urban forests was evaluated as several times a month with a rate of 73% (Uzun and Müderrisoğlu, 2007), and 1-3 times a year with a rate of 32.4% (Çay, et al., 2020). Karaşah (2017) stated that Kafkasör Urban Forest is the most preferred recreational area in Artvin. In the study of Tolunay et al., (2004) on the evaluation of Gölcük Nature Park as an urban forest, it was determined that 65.9% of the users went to the area with their families (87.1%) at weekends with their private vehicles (98.6%). In this study, it was obtained that the mode of transportation of 49% of the users to the study areas is "Private vehicle", 48% of the users go to the study areas at "Weekends", 40% of the users go to the study areas "with friends" and 45% of them go to the study areas in "Summer". The results were given in Table 2.

Table 2. Socio-demographic status and usage habits of users

Features	Definitions	Number of people	Percentage (%)
Gender	Female	72	55
	Male	58	45
Marital status	Married	79	61
	Single	51	39
Age	15-25	23	18
	26-35	30	23
	36-45	17	13
	46-55	27	21
	56-65	20	15
	66 years and older	13	10
Education	Primary school	8	6
	Middle school	3	2
	High school	24	19
	University	61	47
	Graduate	34	26
Occupation	Unemployed	7	5
	Student	29	22
	Civil servant	35	27
	Employee	14	11
	Housewife	11	9
	Retired	9	7
	Other	25	19
Income	1000 TL or less	26	20
	1001-2000 TL	15	12
	2001-3000 TL	12	9
	3001-5000 TL	29	22
	More than 5001 TL	48	37
Frequency of going to study areas that have the potential to become urban forests	1-2 times a week	19	15
	3-4 times a week	10	8
	Several times a month	55	42
	Several times a year	46	35
The mode of transportation to the study areas that have the potential to be urban forests	on foot	19	15
	by bike	2	2
	by private vehicle	64	49
	by taxi	3	2
	by bus	42	32
Time to use study areas that have the potential to become urban forests.	Weekdays	23	18
	Weekend	62	48
	Changes	45	34
With whom he/she goes to areas that have the potential to be urban forests.	Alone	5	4
	with family	38	29
	with friends	52	40
	Mixed	35	27
Season when he/she goes to areas that have the potential to be urban forests.	Winter	6	5
	Spring	42	32
	Summer	59	45
	Autumn	23	18

32% of users preferred to define the urban forest as "the green areas that enable the city-dwellers to rest and meet the need for natural areas", 30% as "green areas in the city center and its immediate surroundings consisting of tall plant communities" (Table 3). The least chosen definition of the urban forest with the rate of 12% is "areas where timber needs are met". In the study conducted by İnanç (2019), 80% of the participants chose the definition: wooded areas with social and environmental functions for users. Similarly, in the study conducted by Kiper and Öztürk (2011) urban forests, with a rate of 47%, were defined as wooded areas that allow the city-dwellers in and around the city to rest and have fun. When the urban forest awareness of the users is evaluated, this study has similar results with the literature.

Table 3. Users' level of participation in definitions of urban forest awareness

Definitions	Strongly disagree (%)	Disagree (%)	No idea (%)	Agree (%)	Strongly agree (%)
They are green areas in the city center and its immediate surroundings consisting of tall plant communities.	12	16	0	42	30
They are green areas that can be reached in a short distance and that have recreational activities.	7	14	0	51	28
They are green areas that enable the city-dwellers to rest and meet the need for natural areas.	9	0	3	56	32
These are areas where timber needs are met.	56	30	2	0	12
They are areas that create habitats for wildlife.	23	14	14	31	18

When the level of participation of the users in the definitions regarding the functions of urban forests is questioned; "It contributes to the health of the city-dwellers." with a rate of 68%. ranks first, then "It improves the urban climate and air quality." with 63% and "It creates visual beauties in the city." with 61% were found to be the second and third choices. The functions "It provides recreational services to the city-dwellers." and "It conserves biodiversity in the city." with the rates of 54% were also evaluated as important (Table 4). Since urban forests are one of the most important parts of urban green space systems, they provide many services to their cities and city-dwellers. There are many studies proving that urban forests are very important for both the psychological and physical health of urban users (Li, 2010; Mao, et al., 2012; Zhou, et al., 2019; Park, 2022). In these studies, it is also seen that urban forests are effective in curing chronic diseases, depression and anxiety. In addition, it has been determined that it has positive effects on pulse rate and stress hormone level. In addition, the positive effects of urban forests on the climate and air quality of cities cannot be ignored. Green areas consisting of trees rather than grass surfaces are of great importance in reducing urban heat island effects. Hamada and Ohta (2010) carried out temperature measurements in green areas and urban environments at different times of the year in the city of Nogaya. Their results show that urban green spaces prevent heat generation and regulate air quality. In another study, 62 different green areas in Leipzig, Germany were examined and it was found that urban forests provide higher maximum temperature differences and cooling distances than parks (Jaganmohan et al., 2016). When all these studies are taken into account, it is seen that the benefits of urban forests are similar to those in the literature.

Table 4. The level of participation of users in the definitions of urban forest functions

Functions	Strongly disagree (%)	Disagree (%)	No idea (%)	Agree (%)	Strongly agree (%)
It improves the urban climate and air quality.	7	0	0	30	63
It ensures the protection and use of water resources in the city.	7	5	7	44	37
It protects city lands.	7	0	9	46	38
It helps to rehabilitate the idle areas in the city.	9	7	16	38	30
It conserves biodiversity in the city.	5	5	2	34	54
It creates a habitat for wildlife in the city.	9	5	9	42	35
It creates visual beauty in the city.	4	5	0	30	61
It contributes to the health of the city-dwellers.	5	0	2	25	68
It creates an environment for environmental education of the city-dwellers.	5	9	9	45	32
It provides recreational services to the city-dwellers.	5	0	2	39	54
It contributes to the nutritional needs of the city-dwellers.	12	18	16	31	23
It contributes to the raw material needs of the city.	18	14	14	31	23
It contributes to the tourism of the city.	2	12	0	37	49

In the survey conducted on the reasons for the users for the preference of study areas that have the potential to become urban forests, it was determined that the study areas were preferred by 44% for the purposes of resting and getting fresh air (Table 5). In addition, it was determined that 40% use the study areas for socializing, 37% for walking and 35% for having fun. The reasons for taking photographs and examining nature with a rate of 30% were also among the other important reasons in the preference of study areas. In the study conducted by Kurdoğlu and Duzguneş (2011) on urban forests, it is seen that the primary activity of the users in the urban forest is to relax with a rate of 51.2%. Again, there are many studies that have determined that urban forests are used for socializing, doing sports and having fun (Tomićević-Dubljević et al., 2017; Gerstenberg et al., 2020). When the results are evaluated from this point of view, this study again presents similar results with the literature.

Table 5. Reasons for users to prefer study areas

Activity Opportunities	Strongly disagree (%)	Disagree (%)	No-idea (%)	Agree (%)	Strongly agree (%)
I use the study areas in Trabzon for picnics.	12	9	5	56	18
I use the study areas in Trabzon for socializing.	2	16	-	42	40
I use the study areas in Trabzon for resting.	2	5	-	49	44
I use the study areas in Trabzon for photographing.	-	21	5	44	30
I use the study areas in Trabzon for examining nature.	-	14	11	45	30
I use the study areas in Trabzon for walking.	5	7	-	51	37
I use the study areas in Trabzon for sports.	7	23	5	49	16
I use the study areas in Trabzon for research.	9	28	5	42	16
I use the study areas in Trabzon for having fun.	7	9	3	46	35
I use the study areas in Trabzon for getting fresh air.	-	5	2	49	44

When the preference rate of the areas selected as the study area in the research as the urban forest was questioned, 100. Yıl Park got the highest value with 72%, Atatürk Mansion Forest area was the second with 68%, and Boztepe forest area was the third preferred area with 66% (Figure 3).
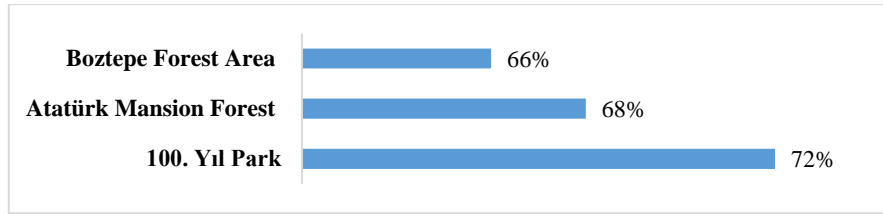
Figure 3. Preference rates of study areas as urban forest

In this research, the opportunities of study areas that have the potential to be urban forests were evaluated separately for each selected area (Figure 4). Each opportunity, which is an evaluation criterion, is expressed with sentences containing positive judgment. For this reason, the positive responses (4-5) given to the questions were taken into account while making the evaluation. According to this evaluation; 100. Yıl Park with 24% was chosen as the area closest to the city center. In terms of easy accessibility, 100. Yıl Park was preferred with a rate of 24%, while 100. Yıl Park received the highest value in terms of parking facilities with a rate of 27%. A place gains value with its accessibility, and the accessibility of the place increases the number of users. For these reasons, accessibility is one of the important reasons for the preferability of places (Yılmaz et al., 2009). As 100. Yıl Park is the most accessible place, this is one of the most important factors in its preference as the urban forest. The safest area was chosen as 100. Yıl Park (21%). Security is the second most basic human need. In addition to individual security, the safety of the living environment depending on environmental factors that directly affect the person should also be ensured. The perception of security is very effective on the choice and use of the place (Çelik, 2018). The safety factor is also among the important parameters in the preference of the spaces. The urban forest with the best environmental cleanliness was determined as Atatürk Mansion with 22% and 100. Yıl Park with 21%. While Atatürk Mansion with 24% and Boztepe with 23% were chosen as the best area in terms of air quality, the Boztepe with 25% and Atatürk Mansion with 24% were chosen as the most important areas for their natural and scenic beauty. Atatürk Mansion with 23% and Boztepe with a rate of 22% were considered as the foreground areas for walking and photographing. These two areas, located at a high altitude in the city, have viewpoints of the city and sea. For this reason, the activities of photographing and walking were also preferred with high percentages for these two areas. The area showing the highest percentage in terms of sports activities is 100. Yıl Park with a rate of 27%. The 100. Yıl Park is on the seafront and the slope is not very steep. Deciduous species dominate as vegetation in the area. For these reasons, it is suitable for many activities such as running, cycling, skateboarding, jumping rope, playing ball and kite flying. Atatürk Mansion (24%) was preferred as the quietest and calmest area. Plants in the Atatürk Mansion (23%) was found to be healthy and well-maintained. In terms of historical and cultural values, Atatürk Mansion has the highest percentage with 35%. As a result of the evaluation in terms of playgrounds, 100. Yıl Park with 27% received the best percentage. 100. Yıl Park (23) was determined as the most preferred area in terms of field equipment. The aesthetic features of the field equipment, which add character to the spaces with their functional features, should not be forgotten. They add dynamism to the spaces they are in with their material, color, form and ergonomic features. Equipment that facilitates people's lives and provides socialization opportunities completes the spaces by defining them (Bulut and Yeğli, 2008).
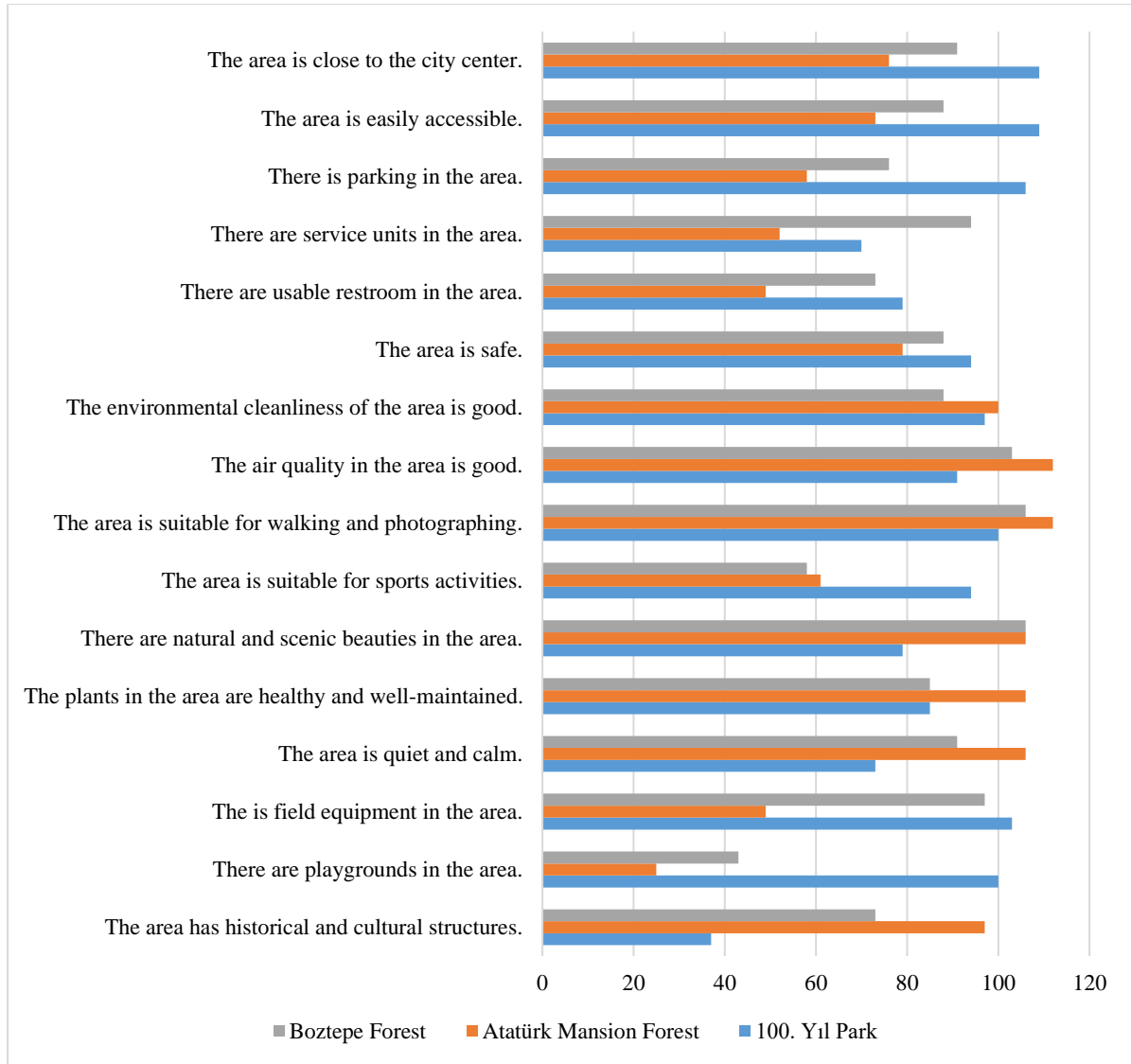
Figure 4. Percentages of study areas in terms of opportunities

CONCLUSIONS

As cities move away from nature, they have become monotone living spaces where air, water, visual and noise pollution occur and the quality-of-life decreases. For these reasons, emphasis has been placed on the preservation and development of existing green areas to improve urban environments, as well as on the creation of sustainable green areas in the vicinity of the city. In addition, focus is given to the contribution of green spaces to the social, physical and mental health of the city-dwellers. Among the green areas, especially urban forests are considered as the closest areas to the city where people can escape from their monotone daily life and have a good time by contact with nature. In the city of Trabzon, which is trying to meet its geographically open green space needs by the sea fill, where urbanization is increasing day by day, the urban forests in green areas are studied and 100. Yıl Park, Atatürk Mansion and Boztepe forest areas, heavily used by locals and visitors, were evaluated.

These areas are among the important green areas purification the air and improving the climate of the city of Trabzon. For the city-dwellers, urban forests are the places where they get away

from the busy city life and meet with nature. The results indicate that the recreational needs of users who visit urban forests a few times a month are at an average level. In addition, it is also clearly seen from the results that the users are conscious about the definition and functions of the urban forest.

The 100. Yıl Park ranks first in terms of accessibility, parking facilities, proximity to the center and size, in terms of evaluation as an urban forest. Compared to other areas, its opportunities of barbecue, picnic, playgrounds, being by the sea, sufficient open green grounds for the visitors, restrooms, sitting area, fountain are important factors in evaluating the area as an urban forest. They are the effective factors in being in the first place. Since 100. Yıl Park is also next to the shopping mall, which has a lot of visitors, it serves both domestic and foreign users. It has the potential to be the first urban forest preferred by the users near the city, as it has been an important green area for the city-dwellers from past years to the present. Among the urban forests considered in this study, barbecue is only allowed in the 100. Yıl park and there is the opportunity to reach the sea. For all these reasons, the area is in the first place in the choice of an urban forest. Despite the fact that Atatürk Mansion and Boztepe forest areas have transportation opportunities close to the city center, the lack of parking lots, the absence of seating areas, restrooms and cafes within the area have been determined as the most effective factors in their least preference in the evaluation of these areas as urban forests.

It is very important for the sustainability of these green areas to carry out maintenance that can eliminate the deterioration of the plants in the areas due to drying, aging and being affected by adverse conditions. However, recreational use can be provided to a certain extent in every area, especially for urban residents. The equipment made of natural materials can be used in the forest areas of Atatürk Mansion and Boztepe. It is thought that the user preferences will be increased in these two areas by designs such as sitting and resting places and playgrounds. Due to intensive use in the 100. Yıl Park, the number of equipment may be increased. Necessary maintenance works can be carried out in these areas and they can be presented to the usage of the city-dwellers. With the completion of these works, the preference of the areas selected as urban forests within green areas would be more.

As a result, it should not be forgotten that urban forests, which are planned with ecological design approaches, would be the most preferred resources of urban residents to meet their recreational needs.

AUTHOR CONTRIBUTIONS

Hilal Kahveci: Developed the idea, wrote manuscript and approved final version. **Nilgün Güneroğlu**: Carried out the field work, wrote the manuscript and approved the final version.

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The authors declare no conflict of interest.

ETHICS COMMITTEE APPROVAL

This study does not require any ethics committee approval.

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