APPLICATION OF ECOTOURISM OPPORTUNITIES SPECTRUM METHOD IN ECOTOURISM RESOURCES: A CASE STUDY OF SAMANDAĞ COASTAL AREAS IN SOUTHERN TURKEY

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Abstract. The aim of the study is to identify the areas that might serve as ecotourism focuses in the Samandağ coastal zone and its surroundings, located on the southern border of Turkey, and to develop an optimum ecotourism route. The methodology used is Ecotourism Opportunity Spectrum (ECOS). The methodology is comprised of three stages. In the first stage areas that can serve as ecotourism focuses have been identified. In the second stage ECOS method has been applied to the identified focuses. In this regard, 10 criteria and 40 sub-criteria that determine the level of suitability for identifying an ecotourism route have been identified. Both these criteria and the sub-criteria have been scaled and ecotourism opportunity spectrum value has been determined for each criterion. According to these calculations, the highest ecotourism opportunity spectrum value is 400. In the study, the focus that is closest to this value is considered as the most suitable for identifying an ecotourism route according to the planning criteria. As a result of the study, Samandağ coastal zone and its surroundings has very high importance with respect to preserving, planning and development of the resources with a sustainable approach. In this area, 20 focuses have been identified for being used for ecotourism. The highest spectrum value calculated by applying this method is 271.86 and it belong to Vakıflı focus, while the lowest spectrum value is 136.92 for the Milleyha focus.
Keywords: *ecotourism focuses, ecotourism route, natural resources, ecotourism activities, criteria and values*

Introduction

It is known that the idea of ecotourism, its use as a technical term and its applications had existed before it was termed conceptually. The concept of ecotourism had begun in the 1980s, with alternative tourism debates, as a search for a different kind of tourism that serves as a new alternative to mass tourism and does not cause negative social and ecological effects like mass tourism (Long et al., 2013). In the following years the concept of ecotourism developed with an increasing awareness towards environmental protection and the general acceptance of sustainability principles. Some researchers such as Fennell (2001), Blamey (2001), Goodwin (1996), who study ecotourism, define it basically as a sustainable kind of tourism that is based on learning and experiencing the nature, has lower ethical impacts, focuses on the local rather than consumption.

In this regard, ecotourism has strong ties with sustainable tourism due to its characteristics like preserving the natural habitats or taking the requirements of local people into consideration.

Suitable management for ecotourism development is essential in order to conserve and maintain the biological richness of the area. In addition, ecotourism can be defined as an opportunity to promote the values in the protected areas. In this respect, ecotourism evaluation should be regarded as an important tool for sustainable development of tourism in a protected area. This can be judged with the help of criteria and indicators approach, which is basically a concept of sustainable ecotourism

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planning developed in a set of principles, criteria and indicators (Bunruamkaew and Murayam, 2011).

The selected area of study is the Samandağ coastal zone and its surroundings located in the Hatay province of Turkey and it has numerous characteristics such being the habitat of Mediterranean seals, nesting area of sea turtles, buxus gene preservation forest, wild life development area, and involving endemic plants, monumental trees, and archaeological protected areas. The region has a high potential for ecotourism with its resources. Therefore, the purpose of the study has been to identify the areas that could serve as ecotourism focuses within the region of Samandağ coastal zone in the Hatay province and its surroundings, and identify an optimum ecotourism route. In this regard, Ecotourism Opportunity Spectrum Method has been used.

Materials and methods

Study area

The study area is the Samandağ coastal zone and its surroundings, located in the Hatay Province in the Eastern Mediterranean region of Turkey (*Fig. 1*). The area is approximately 14 km long. It is surrounded by Musa Mountain in the northwest, Keldağ in the southeast, and the Mediterranean in the south. The Orontes River that flows through the area is born in Syria and meets the Mediterranean in Samandağ. The delta formed by the river is the breeding ground for "Green Sea Turtles" (*Chelonia mydas*), which is an endangered species according to the International Union for Conservation of Nature (IUCN) criteria (IUCN, 2006). The study area is therefore highly rich in terms of biodiversity.

Since the study area contains protected areas such as breeding sites for sea turtles and features venues that shall support religious tourism, it has been declared as "Hatay Samandağ Tourism Zone" in the official journal no. 21731 dated 17.10.1993 based on the decree of the Cabinet of Ministers no. 93/4833 within the framework of the Tourism Strategy Action Plan of Turkey.

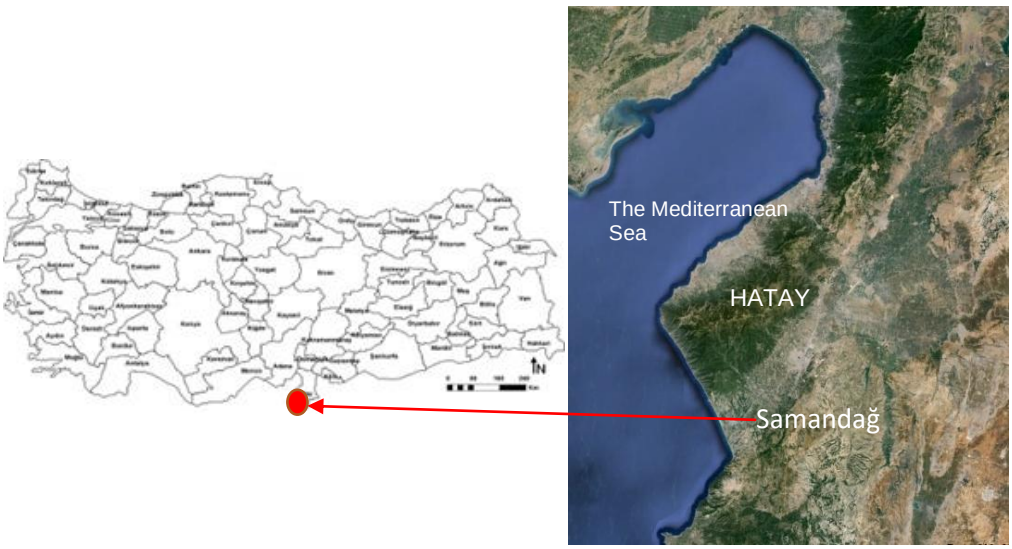

Figure 1. *Site location of study area*

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Methodology

The methodology of the study, which was formed to identify an ecotourism route involving quality ecotourism resources, is as follows:

1. Identifying the areas that can serve as ecotourism focuses,
2. Applying the ECOS method in order to determine the source values of the identified spots,
3. Identifying the optimum ecotourism route in line with the data obtained through applying ECOS.

Identifying the focuses

The areas that are mentioned as ecotourism areas and fall within the study area according to the Hatay Province 2016 Environmental Status Report, UCTEA Samandağ Study Group Report, Hatay Province Tourism Strategy and 2018-2023 Action Plan Report and maps obtained from the local administrations related with the study area, have been accepted as ecotourism focuses.

Applying the ECOS method on the identified spots

When the studies on the planning of ecotourism areas are analyzed, it is seen that methods like Limits of Acceptable Change-LAC, Environmentally Based Tourism Planning Model-EBT, Recreation Opportunities Spectrum (ROS), and Tourism Opportunities Spectrum (TOS) have been used. Drawn up on the basis of all these methods, the Ecotourism opportunity spectrum (ECOS) attracts attention as both an opportunity and a new method put forward depending on the available approaches for the development of ecotourism in rural areas.

Even though the ECOS method was developed to provide a conceptual management approach to ecotourism, it depends on the already available models in the literature. The method particularly combines the methods of ROS and TOS and this is called the Ecotourism Opportunity Spectrum (ECOS) with several fundamental alterations and pluses. The method comprises eight sub-components in total; (1) accessibility, (2) relationship between ecotourism and other resource uses, (3) attractions in a region, (4) presence of existing tourism infrastructure, (5) level of user skill and knowledge required, (6) level of social interaction, (7) degree of acceptance of impacts and control over level of use, (8) type of management needed to ensure the viability of areas on a long-term basis. Such 8 criteria are the determinative amongst decision-makers and users in long-term use of the area as an ecotourism area (Body and Butler, 1996).

The Ecotourism Opportunity Spectrum (ECOS) method has been applied in order to evaluate the availability of the focuses identified in the study. Since the study area involves critical regions, the criteria used in the ECOS method have been enhanced and applied accordingly.

In this regard, 10 criteria have been determined relying on the studies of Hvenegaard (1994), Boyd and Butler (1996), Fennell and Weaver (2005), Tsaur et al. (2006), Bender (2008), Barzekar et al. (2011), Yılmaz et al. (2013), Ashok et al. (2017), Dhami et al. (2017), Nino et al. (2017). These 10 criteria have been presented in *Table 1*. These criteria have been divided into sub-criteria in order to offer relative values that define the level of availability for determining an ecotourism route (*Table 1*).

It has been observed that researchers who study ecotourism assign relative values that vary between 1-3, 1-5, -3-+3, 1-10, 1-100 to the sub-criteria. Gold (1980) and

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Giles-Corti et al. (2005) emphasize that the range of weight values may be small if the elements under evaluation are similar in terms of concept. Additionally, the literature used as references of the study and the opinions of experts and scholars of the subject have been taken into consideration. As a result, each sub-criteria has been given relative values between 1-4 in accordance with their suitability for determining an ecotourism route. High values between 1-4 represent the availability for being an ecotourism focus and high sustainability of naturalness. In low values this situation is the contrary.(4. Extremely Important, 3. Important, 2. Unimportant, 1. Extremely Unimportant).

Table 1. *The criteria, sub-criteria and relative values for ECOS method*

Criteria	Sub-criteria	Relative values
1. Accessibility	Presence of road easily accessible during all seasons of the year	4
	Presence of road accessible during certain seasons of the year	3
	Presence of road where transportation is frequently interrupted	2
	No means of transportation	1
2. Level of responding to distinct ecotourism activities	High	4
	Medium	3
	Low	2
	Not usable	1
3. Source diversity of the focus	Rich and preserved flora and fauna presence	4
	Partially damaged flora and fauna presence	3
	Extremely damaged flora and fauna presence	2
	Insignificant flora and fauna presence	1
4. Protected ecosystem elements	High level of specific habitat presence	4
	Medium level of specific habitat presence	3
	Low level of specific habitat presence	2
	No specific habitat present	1
5. Visual attractiveness of the focus	High	4
	Medium	3
	Low	2
	Conditions with negative effect on attractiveness	1
6. Available tourism infrastructure	Adequate recreational infrastructure	4
	Inadequate recreational infrastructure, but suitable for improvement	3
	Inadequate recreational infrastructure	2
	No recreational infrastructure	1
7. Available tourism superstructure	Adequate recreational superstructure	4

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	Inadequate recreational superstructure, but suitable for improvement	3
	Inadequate recreational superstructure	2
	No recreational superstructure	1
8. Social interaction level	Intense interaction level between both the local populace and the eco-tourists	4
	Intense interaction level between eco-tourists and the local populace	3
	Intense interaction level only between eco-tourists	2
	Insignificant interaction level between all groups	1
9. Knowledge level of the eco-tourists on both the area and the source, and their attitude and behavior concerning the core of the ecotourism activities	High	4
	Medium	3
	Low	2
	Very inadequate knowledge and behaviors	1
10. Effects of visitor use on the ecotourism source	High level of positive impact due to use	4
	Positive impact due to use	3
	Negative impact due to use	2
	High level of negative impact due to use	1

While finalizing the planning decisions the comparative weighted scores of criteria should be determined. This stems from the fact that the level of importance of each criterion in terms of identifying an ecotourism route is not the same. Thus, the criteria have been weighted in the second stage. In this regard, a total of 30 experts with at least 5 years of professional experience from Mustafa Kemal University Faculty of Architecture Department of Landscaping Architecture (4 individuals), Hatay Metropolitan Municipality (10 individuals), Hatay Provincial Directorate of Culture and Tourism (5 individuals), Hatay Directorate of Environment and Urbanization (6 individuals), Branch Offices of Forestry and Rural Affairs (5 individuals) were given a questionnaire. During the execution of the study, 34 experts working in these institutions were identified and 30 of them could be given the questionnaire. A score ranging from 1-10 was assigned for each criterion at the questionnaire. All the points obtained for each criterion have been added and their weighted arithmetic mean scores were calculated. The weighted arithmetic mean scores have determined the weighted score of each criterion that ranges from 1 to 10. The ecotourism opportunity spectrum value of each criterion was calculated by multiplying the weighted scores and the score each focus has according to *Table 1*. According to these calculations, the highest total value is 400. In the study, the focus that is closest to this value is considered as the most suitable for identifying an ecotourism route according to the planning criteria.

Identifying the optimum ecotourism route

In order to take correct and rational planning decisions, the obtained ecotourism opportunity spectrum values have been categorized, taking the level of availability to be used as ecotourism areas into consideration and the areas that would form the optimum ecotourism routes have been determined.

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Results

The results of the study have been gathered under three titles as 1. Findings about ecotourism focuses, 2. Findings obtained by applying ecotourism opportunity spectrum, 3- optimum ecotourism route.

Findings about ecotourism focuses

In accordance with the reports and maps obtained from the local administrations 20 focuses suitable for ecotourism purposes were identified in the study area (*Fig. 2*). Six of these focuses are located in Samandağ coastal zone and the remaining 14 are located in the surroundings of Samandağ coastal zone.

The identified focuses incorporate many features in terms of both nature and culture. The availability of such focuses for ecotourism activities has been evaluated relying on the basic approach of the institutions and organizations conducting research on ecotourism, such as "World Tourism Organization-UNWTO" (UNWTO, 2002), "The International Ecotourism Society-TIES" (TIES, 2005), and the works of researchers such as Butler and Waldbrook (2003), Turoğlu and Özdemir (2005), Stepanova (2008), Şenkaya et al. (2012), Shieh et al. (2014). The types of activities applicable on the focuses within this context are given in *Table 2*.

Findings Obtained From "Ecotourism Opportunity Spectrum"

First, the condition of the focuses in accordance with the specified criteria was propounded in order to implement the ecotourism opportunity spectrum method. The results obtained are presented in *Table 3*.

According to the accessibility criteria presented in *Table 1*, the focuses that are accessible throughout the year are Hıdırbey, Çubukçu, Tomb of St. Hızır and surroundings, Çevlik port and surroundings, Eriklikuyu, Yoğunoluk and Sutaşı. Therefore, the ECOS method relative value of these focuses is set as 4 (*Table 3*).

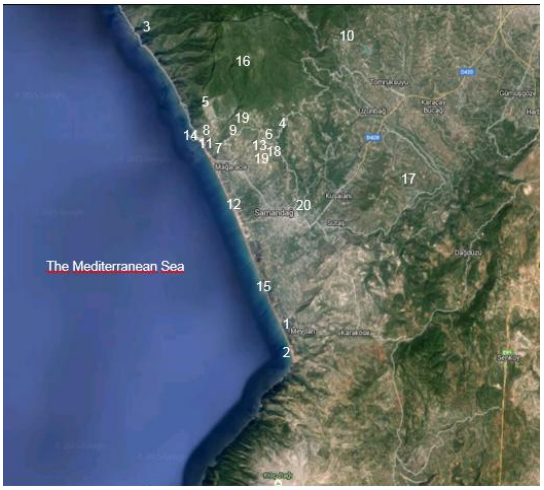

Figure 2. *Ecotourism focuses in the study area. (1. Meydan village, 2. Keldağ, 3. İskenderun-Arsuz wildlife improvement site, 4. Yaylıca, 5. Amanos mountains Musa mountain zone, 6. Batıayaz, 7. Mağaracık, 8. Kapısuyu village, 9. Hıdırbey village, 10. Çubukçu, 11. Titus tunnel and surrounding, 12. Tomb of St. Hızır and surrounding, 13. Vakıflı village, 14. Çevlik port and surrounding, 15. Milleyha wetland, 16. Çamlıyayla, 17. Aknehir, 18. Eriklikuyu, 19. Yoğunoluk, 20. Sutaşı)*

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Table 2. *Ecotourism activities applicable on the ecotourism focuses*

EF*	EA**																			
	P	**B**	**CUT**	**AGT**	**MAT**						**CAT**	**HİT**	**CAM**	**PA**	**HRT**	**TRK**	**BN**	**MC**	**N**	**W**	**OT**
					S	Y	C	F	SD	A											
1					**x**	**x**	**x**	**x**	**x**	**x**	**x**	**x**				**x**			**x**	**x**	**x**
2					**x**	**x**	**x**	**x**	**x**	x	**x**	**x**	**x**			**x**			**x**		
3		**x**												**x**	**x**	**x**	**x**		**x**	**x**	
4	**x**	**x**		x						x						**x**			**x**	**x**	**x**
5		**x**										**x**		**x**		**x**		**x**	**x**		
6	**x**	**x**		x									**x**		**x**	**x**			**x**		
7											**x**	**x**									
8				x							**x**	**x**				**x**			**x**		
9	**x**			**x**								**x**	**x**								
10																					
11		**x**									**x**	**x**				**x**			**x**		**x**
12			**x**		**x**	**x**	**x**	**x**		x		**x**	**x**		**x**	**x**	**x**			**x**	
13	**x**	**x**	**x**	**x**								**x**	**x**		**x**	**x**	**x**	**x**	**x**		
14					**x**	**x**	**x**	**x**	**x**	x			**x**		**x**	**x**	**x**		**x**		
15		**x**			**x**										**x**				**x**		**x**
16	**x**			x									**x**	**x**	**x**	**x**					
17			**x**																		
18				x											**x**	**x**					
19				**x**								**x**			**x**	**x**					
20				x							x	x	x		x		x				x

*EF (Ecotourism focuses): 1. Meydan village, 2. Keldağ, 3. İskenderun-Arsuz wildlife improvement site, 4. Yaylıca, 5. Amanos mountains Musa mountain zone, 6. Batıayaz, 7. Mağaracık, 8. Kapısuyu village, 9. Hıdırbey village, 10. Çubukçu11. Titus tunnel and surrounding, 12. Tomb of St. Hızır and surrounding, 13. Vakıflı village, 14. Çevlik port and surrounding, 15. Milleyha wetland, 16. Çamlıyayla, 17. Aknehir, 18. Eriklikuyu, 19. Yoğunoluk, 20. Sutaşı

**EA (Ecotourism activities): P: Plateau tourism, B: Botanical tourism, CUT: Cultural tourism, AGT: Agricultural tourism, MAT: Marine tourism (S: Swimming, Y. Yatching, C: Canoe, F: Fishing, SD: Scuba-diving, A: Amateur hand-linefishing), CAT: Cave tourism, HİT: Historical tourism, CAM: Camper Tourism, PA: Paraliding, HRT: Horse trekking, TRK: Trekking, BN: Bike ride in nature, MC: Motorcross, N: Nature photography, W: Wildlife watching, OT: Ornithological tourism

Keldağ, İskenderun-Arsuz wildlife improvement site, Amanos mountains Musa mountain zone, Titus tunnel and its surrounding areas are very close to the beach at Samandağ coastal zone on the Mediterranean. Accessibility of these focuses is frequently interrupted due to flood tides during winter. Therefore, the ECOS method relative value is set as 2 in terms of accessibility (*Table 3*).

İskenderun-Arsuz wildlife improvement site is one of the 79 wildlife improvement sites in Turkey. Covering an area of 27.063 ha, this site was taken under protection in 2006 according to Law on Land Hunting of the Ministry of Forestry and Water Affairs of Turkey in order to protect Chevrotain (*Capra aegagrus*) and Roe-deer (*Capreolus capreolus*) species which have limited habitats in Turkey. 7000 ha of the improvement

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site intersects with the study area. This site is one of the 20 focuses identified and it is important for ecotourism activities such as Nature photography and Wildlife watching. Therefore, ECOS method relative value of the site is set as 4 (*Table 3*).

Table 3. *Relative values for the focuses according to the specified criteria*

Ecotourism focuses	Criteria***									
	AC	**LEA**	**SD**	**PEE**	**VAF**	**ATİ**	**ATS**	**SİL**	**KEC**	**EVE**
1	3	4	4	3	4	2	3	4	3	2
2	2	3	4	3	4	1	1	2	2	2
3	2	2	4	4	4	1	1	2	2	3
4	3	3	3	4	1	2	2	3	2	1
5	2	3	3	4	4	1	1	3	2	2
6	3	3	3	4	4	1	2	4	3	1
7	3	3	3	4	3	3	2	4	3	1
8	3	4	4	3	4	2	2	2	3	2
9	4	4	3	3	4	2	1	4	4	2
10	4	2	3	2	3	2	1	3	4	3
11	2	2	3	3	4	1	2	2	4	3
12	4	3	2	1	2	1	3	3	4	2
13	3	4	3	2	4	2	3	4	4	3
14	4	3	2	3	3	2	3	3	2	3
15	3	2	2	4	3	1	1	2	2	2
16	3	3	2	2	4	2	2	2	3	3
17	3	3	2	2	3	2	2	4	3	3
18	4	4	2	2	4	1	1	4	4	3
19	4	4	2	2	4	2	1	4	3	3
20	4	3	4	2	3	2	1	2	2	3

***Criteria: AC: Accesibility, LEA: Level of responding to distinct ecotourism activities, SD: Source diversity of the focus, PEE: Protected ecosystem elements, VAF: Visual attractiveness of the focus, ATİ: Available tourism infrastructure, ATS: Available tourism superstructure, SİL: Social interaction level, KEC: Knowledge level of the eco-tourists on both the area and the source, and their attıtude and behavior concerning the core of the ecotourism activities, EVE: Effects of visitor use on the ecotourism source

In Batıayaz there is the buxus (*Buxus sempervirens*) gene forest. This forest has been announced as a Gene Preservation Forest in order to be used as a gene source for improvement studies today and in the future. The ECOS relative value is set as 4 for Batıayaz due to this situation and its incorporating many habitats in accordance with the protected ecosystem elements criterion listed in *Table 1*.

All the other focuses have been evaluated in accordance with the criteria listed in *Table 1* and the results obtained are given in *Table 3*.

The criteria were weighted in the second phase of the ECOS method. For this purpose, a questionnaire was conducted among a group of 30 experts directly involved in the subject matter and work at Mustafa Kemal University Faculty of Architecture Department of Landscaping Architecture (4 individuals), Hatay Metropolitan Municipality (10 individuals), Hatay Provincial Directorate of Culture and Tourism (5

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individuals), Hatay Directorate of Environment and Urbanization (6 individuals), Branch Offices of Forestry and Rural Affairs (5 individuals). All the scores obtained for each criterion through the questionnaire have been added and the weighted scores given in *Table 4* have been calculated.

Table 4. *Weighted scores for the focuses depending on the criteria*

Ecotourism focuses	Criteria***									
	AC	**LEA**	**SD**	**PEE**	**VAF**	**ATİ**	**ATS**	**SİL**	**KEC**	**EVE**
1	8.54	8.26	8.37	8.83	8.74	4.9	5.83	8.03	6.13	4.83
2	8.03	8.76	8.03	7.8	9.76	4.73	1.4	7.7	5.43	5.86
3	9.68	8.7	8.9	9.5	9.63	4.2	1.5	5.74	4.33	7.03
4	9.97	9.37	7.03	8.03	6.47	4.36	6.43	9.62	8.8	4
5	8.37	8.13	7.3	9.04	9.8	3.36	1.4	7.03	5.03	5.5
6	8.27	9.03	7	8.7	9.1	4.2	3.27	9.47	9	8.2
7	8.9	8.3	7.7	8.97	8.8	5.73	5.6	8.7	8.5	5.24
8	8.43	8.9	7.5	9.23	7.03	5.6	2.6	6.6	6.47	7.87
9	9.2	9.63	8.8	8.84	7.7	2.96	3.36	9.57	8.9	7.12
10	9.2	8.27	9.2	9.13	9.17	3.13	3.1	5.5	9	4.98
11	7.8	9.56	9.46	9.54	9.56	3	5.6	6.94	7.7	7.7
12	9.85	8.9	9.2	8.97	5	5.34	5.7	8.83	9.5	4.9
13	9.67	9.8	9.16	8.7	9.2	5.5	6.3	9.27	9.85	5.2
14	9.93	8.8	8.13	9.03	8.73	2.7	5.58	4.83	9.03	7.03
15	9.34	7	7	8.76	4.14	2.167	5.45	3.4	5	4.5
16	5.23	8.03	8.7	8.3	7.36	3.14	2.15	4.2	4.2	5.8
17	8.53	8.9	8.63	8.6	7.17	2.1	1.73	3.54	4.47	5.44
18	7.8	8.3	8.56	8.9	7.47	4.5	1.5	3.8	8.27	5.15
19	8.17	8.9	8.8	9.2	7.3	5.12	1.38	3.5	5.6	5.52
20	9.4	8.83	8.3	9.6	6.6	5.57	2.06	3.07	5.74	4.83

In the last phase of the ECOS method, the ecotourism opportunity spectrum values have been determined. The values are calculated by multiplying the relative values and weighted scores are of each focus. The determined ecotourism opportunity spectrum values have been given in *Table 5*.

As seen in *Table 5*, a multitude of ecotourism opportunity spectrum values that range from 1.37 to 39.73 are available for the study area. Achieving practicable results for assessments in such a broad range is only possible by categorizing the ecotourism opportunity spectrum values. In this case, calculating the weighted mean value of the ecotourism opportunity spectrum values can prove to be indicative in determination of the availability of the focuses.

The resulting weighted mean value of the figures given in *Table 5* is calculated to be around 20.20. This value means that the focuses with a spectrum value of 20.20 on average, or higher values, can be considered to have low improvement priority in terms of being used as an ecotourism site. It might be deduced that when the spectrum value wanes from the mean value, the possibility of that site being used as an ecotourism site

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shall decrease and the improvement priority shall increase. In this context, ecotourism opportunity spectrum values are categorized in 8 classes as indicated in *Table 6*.

Table 5. *Ecotourism opportunity spectrum value of the focuses*

Ecotourism focuses	Criteria***										
	AC	**LEA**	**SD**	**PEE**	**VAF**	**ATİ**	**ATS**	**SİL**	**KEC**	**EVE**	**Total EOSV**
1	25.6	33.06	33.47	26.5	34.96	9.8	17.5	32.13	18.39	9.67	241.08
2	16.07	26.3	32.13	23.4	39.04	4.73	1.4	15.4	10.86	11.73	181.06
3	19.33	17.4	35.6	38	38.52	4.2	1.5	11.46	8.66	21.1	195.77
4	29.9	28.1	21.1	32.13	6.47	8.73	12.86	28.9	17.6	4	189.79
5	16.73	24.4	21.9	36.14	39.2	3.37	1.4	21.1	10.06	11	185.3
6	24.8	27.1	21	34.8	36.4	4.2	6.53	37.87	27	8.2	227.9
7	26.7	24.9	23.1	35.86	26.4	17.2	11.2	34.8	25.5	5.24	230.9
8	25.3	35.6	30	27.7	28.12	11.2	5.2	13.2	19.41	15.73	211.46
9	36.8	38.54	26.4	26.5	30.8	5.93	3.38	38.27	35.6	14.27	256.49
10	36.8	16.53	27.6	18.27	27.51	6.26	3.1	16.5	36	14.9	203.47
11	15.6	19.13	28.4	28.6	38.24	3	11.2	13.87	30.8	23.1	211.94
12	39.3	26.7	18.4	8.96	10	5.33	17.1	26.5	38	9.8	200.09
13	29	39.2	27.5	17.4	36.8	11	18.9	37.06	39.4	15.6	**271.86**
14	**39.73**	26.4	16.27	27.1	26.19	5.4	16.7	14.5	18.06	21.1	211.45
15	28	14	14	35.06	12.42	2.17	5.47	6.8	10	9	136.92
16	15.7	24.1	17.4	16.6	29.44	6.26	4.35	8.4	12.6	17.4	152.25
17	25.6	26.7	17.27	17.2	21.51	4.2	3.48	14.13	13.41	16.3	159.8
18	31.2	33.2	17.14	17.8	29.88	4.5	1.5	15.2	33.08	15.4	198.9
19	32.67	35.6	17.6	18.4	29.2	10.27	**1.37**	14	16.8	16.6	192.51
20	37.6	26.5	33.2	19.2	19.8	11.14	2.06	6.13	11.48	14.5	181.61

Table 6. *Ecotourism opportunity spectrum value classes*

Class number	Value Classes	
1	0-5	High improvement priority
2	5.1-10	
3	10.1-15	
4	15.1-20	
5	20.1-25	Low improvement priority
6	25.1-30	
7	30.1-35	
8	35.1-40	

The following findings could be obtained when the data in *Tables 5* and *6* are analyzed:

- In terms of accessibility, Keldağ, İskenderun-Arsuz wildlife improvement site, Amanos mountains Musa mountain zone, Titus tunnel and surroundings, and Çamlıyayla are the 5 focuses with high improvement priority. The other 15 focuses

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have low improvement priority. The improvement priority of 5 focuses is high since their availability for being used as ecotourism sites is insufficient. The other 15 focuses are available as ecotourism sites.

- In terms of hosting different ecotourism activities, 4 focuses including İskenderun-Arsuz wildlife improvement site, Çubukçu, Titus tunnel and surroundings, and Milleyha wetland have high improvement priority. The other 16 focuses have low improvement priority. These 4 focuses mentioned are categorized among areas with low availability for hosting different ecotourism activities and high improvement priority due to their incorporating protected areas.

- When the focuses are analyzed in terms of resource variety, 7 focuses including Tomb of St. Hızır and surroundings, Çevlik port and surroundings, Milleyha wetland, Çamlıyayla, Aknehir, Eriklikuyu, and Yoğunoluk have high improvement priority. This stems from partial damage done to the flora and fauna of the focuses.

- The focus with the highest value (36.14) in terms of protected ecosystem elements is Amanos mountains Musa mountain zone. This is because the focus has a variety of habitat. The focuses with low values in terms of protected ecosystem elements are Çubukçu, Tomb of St. Hızır and surroundings, Vakıflı village, Çamlıyayla, Aknehir, Eriklikuyu, Yoğunoluk, and Sutaşı.

- The focuses with the highest value in terms of visual attractiveness are Amanos mountains Musa mountain zone (39.20), Keldağ (39.04), İskenderun-Arsuz wildlife improvement site (38.52), Titus tunnel and surroundings (38.24), Vakıflı village (36.8), and Batıayaz (36.4), respectively. These sites have visually rich landscape. The focus with the lowest score in terms of visual attractiveness is Yaylıca'dır (6.47).

- All focuses are inadequate with respect to available tourism infrastructure. Therefore, they should be improved with priority.

- All focuses have high improvement priority in terms of available tourism superstructure.

- In terms of social interaction level criterion, the focuses with the highest values are Hıdırbey village (38.27), Batıayaz (37.87), Vakıflı village (37.06), Mağaracık (34.8), Meydan village (32.13), respectively. At these focuses the interaction level is quite high both among local people and eco-tourists.

- The focuses with the highest value in terms of the knowledge level of eco-tourists about both the site and the resource, and their attitudes and behaviours in relation to the core of ecotourism activities, are Vakıflı village (39.4), Tomb of St. Hızır and surrounding (38.0), Çubukçu (36.0), Hıdırbey village (35.6), Eriklikuyu (33.08), Titus tunnel and surrounding (30.8), respectively.

- In terms of usage effect of visitors on the ecotourism resource, Çevlik port and surrounding (21.1), Titus tunnel and surrounding (23.1), İskenderun-Arsuz wildlife improvement site (21.1) have been affected positively from the visitors. Among the other 17 focuses, the most negatively affected one was Yaylıca (4.0).

- The highest ECOS value of Meydan village is visual attractiveness of the focus (34.96), and the lowest is effects of visitor use on the ecotourism source (9.67). The focus needs prior development in terms of available tourism infrastructure (9.8), available tourism superstructure (17.5), knowledge level of the eco-tourists on both the area and the source, and their attitude and behavior concerning the core of the ecotourism activities (18.39), effects of visitor use on the ecotourism source (9.67).

- Keldağ focus needs prior development in terms of accessibility (16.07), available tourism infrastructure (4.73), available tourism superstructure (1.4), social interaction

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level (15.4), knowledge level of the eco-tourists on both the area and the source, and their attitude and behavior concerning the core of the ecotourism activities (10.86), and effects of visitor use on the ecotourism source (11.73).

- İskenderun-Arsuz wildlife improvement site has high scores as an ecotourism focus in source diversity of the focus (35.6), protected ecosystem elements (38.0), visual attractiveness of the focus (38.52), effects of visitor use on the ecotourism source (21.1). But this focus should be developed priorly in other criteria. The lowest value of the focus is available tourism superstructure (1.5).

- Yaylıca got the highest ECOS value in protected ecosystem elements (32.13) and the lowest in effects of visitor use on the ecotourism source (4.0).

- Amanos mountains Musa mountain zone has the highest ECOS value in visual attractiveness of the focus (39.2) and the lowest ECOS value in available tourism superstructure (1.4). Its use as en ecotourism focus is low in terms of accessibility, available tourism infrastructure, available tourism superstructure, knowledge level of the eco-tourists on both the area and the source, and their attitude and behavior concerning the core of the ecotourism activities, effects of visitor use on the ecotourism.

- Batıayaz has the lowest ECOS value in terms of available tourism infrastructure (4.2), available tourism superstructure (6.53), effects of visitor use on the ecotourism source (8.2) criteria. The social interaction level (37.87) value of the focus is the highest among other criteria.

- Mağaracık has the lowest values in terms of available tourism infrastructure (17.2), available tourism superstructure (11.2), effects of visitor use on the ecotourism source (5.24). On the other hand, it has the highest value in protected ecosystem elements with 35.86.

- Kapısuyu village is inadequate as an ecotourism focus in terms of available tourism infrastructure (11.2), available tourism superstructure (5.2), social interaction level (13.2), knowledge level of the eco-tourists on both the area and the source (19.41), and their attitude and behavior concerning the core of the ecotourism activities, and effects of visitor use on the ecotourism source (15.73).

- Hıdırbey village is inadequate as an ecotourism focus in terms of available tourism infrastructure (5.93), available tourism superstructure (3.38), and effects of visitor use on the ecotourism source (14.27). This focus got the highest value in level of responding to distinct ecotourism activities (38.54).

- Çubukçu has the highest values in accessibility (36.8), source diversity of the focus (27.6), and visual attractiveness of the focus (27.51). In terms of other 7 criteria, the focus is inadequate as an ecotourism focus.

- While Titus tunnel and surroundings is available for ecotourism in terms of source diversity of the focus (28.4), protected ecosystem elements (28.6), visual attractiveness of the focus (38.24), knowledge level of the eco-tourists on both the area and the source, and their attitude and behavior concerning the core of the ecotourism activities (30.8), and effects of visitor use on the ecotourism source (23.1), it should be developed in other 5 criteria.

- Tomb of St. Hızır and surroundings is available for ecotourism in terms of accessibility (39.3), level of responding to distinct ecotourism activities (26.7), social interaction level (26.5), knowledge level of the eco-tourists on both the area and the source, and their attitude and behavior concerning the core of the ecotourism activities (38.0).

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- Vakıflı village is inadequate as an ecotourism focus in terms of protected ecosystem elements (17.4), available tourism infrastructure (11), available tourism superstructure (18.9), and effects of visitor use on the ecotourism source (15.6). However, this focus got the highest ECOS value calculated for optimum ecotourism route.

- Çevlik port and surroundings got the highest value compared to other focuses in accessibility (39.73). In addition, it is available as an ecotourism focus in terms of level of responding to distinct ecotourism activities (26.4), protected ecosystem elements (27.1), visual attractiveness of the focus (26.19), and effects of visitor use on the ecotourism source (21.1).

- Milleyha wetland is among low priority focuses only in accessibility (28.0) and protected ecosystem elements (35.06). The other 8 criteria should be developed in priority.

- Çamlıyayla is among the low priority group only in terms of level of responding to distinct ecotourism activities (24.1) and visual attractiveness of the focus (29.44). The other 8 criteria should be developed in priority.

- Aknehir is among the focuses with low priority in terms of accessibility (25.6), level of responding to distinct ecotourism activities (26.7), and visual attractiveness of the focus (21.51).

- Eriklikuyu needs development in terms of source diversity of the focus (17.14), protected ecosystem elements (17.8), available tourism infrastructure (4.5), available tourism superstructure (1.5), social interaction level (15.2), and effects of visitor use on the ecotourism source (15.4).

- Yoğunoluk has the lowest value compared to other focuses in terms of available tourism superstructure (1.37). The focus has low priority in accessibility (32.67), level of responding to distinct ecotourism activities (35.6), and visual attractiveness of the focus (29.2).

- Sutaşı has low priority in accessibility (37.6), level of responding to distinct ecotourism activities (26.5), and available tourism infrastructure (33.2).

Optimum ecotourism route

The total ecotourism opportunity spectrum values of the focuses have been calculated in order to determine the ecotourism route of the study area (*Table 5*). The highest spectrum value for the ecotourism route is 400. When total spectrum values of the focuses in *Table 5* are analyzed, the highest value among the focuses that comprise the ecotourism route belongs to Vakıflı village (271.86), and the lowest value belongs to Milleyha wetland (136.92).

The other focuses have been categorized in terms of spectrum values that make up the ecotourism route and in this respect

- the focuses with the highest values for identifying the ecotourism route are Vakıflı village (271.86) and Hıdırbey (256.49), respectively;

- the focuses with the medium values for identifying the ecotourism route are Meydan village (241.08), Mağaracık (230.9), Batıayaz village (227.9), Titus tunnel and surroundings (211.94), Kapısuyu village (211.46), Çevlik port and surroundings (211.45), Çubukçu (203.47) and Tomb of St. Hızır and surroundings (200.09), respectively;

- the focuses with the lowest values for identifying the ecotourism route are Eriklikuyu (198.9), İskenderun-Arsuz wildlife improvement site (195.77), Yoğunoluk

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(192.51), Yaylıca (189.79), Amanos mountains Musa mountain zone (185.3), Sutaşı (181.61), Keldağ (181.06), Aknehir (159.8), and Çamlıyayla (152.25), respectively.

Conclusion

In the light of the obtained findings, the results that can contribute to identifying the optimum ecotourism route among the studied focuses are as follows:

- The Samandağ coastal zone and its surroundings, selected as the study area, involves many ecotourism areas rich in natural, cultural, religious, and historical heritage. Considering these areas/focuses, which are evaluated individually, collectively in such a way as to form an ecotourism route demonstrates the significance of the study.
- The Samandağ coastal zone and the surrounding ecotourism sites close by have been accepted as ecotourism focuses within the scope of this study and 20 focuses have been identified. The "ecotourism opportunity spectrum" method has been applied in order to analyze these focuses in such a way to determine an optimum ecotourism route.
- By determining the optimum ecotourism route, the purpose was to evaluate the availability of the options that would comprise the route. The highest spectrum value calculated by applying the method was 400. The aim was forming an ecotourism route with focuses at this value.
- However, when the spectrum values of the focuses were analyzed, it was seen that they could not reach the 400 target. While the highest spectrum value belonged to Vakıflı village with 271.86, the lowest spectrum value was 136.92 for Milleyha wetland.
- The spectrum values between 271.86 and 136.92 have been divided into three categories according to their weighted scores. In this categorization the focuses with the highest value were considered to be the most suitable ones for the route. The other two categories involve medium and low value focuses.
- The suitable medium and low value focuses have been analyzed at the results section in terms of criteria determined with the Ecotourism opportunity spectrum method. The analysis is both important for determining the availability of focuses for the ecotourism route according to criteria and the improvement priority of focuses for being used as ecotourism sites. The spectrum value of focuses improved in terms of their lower criteria will rise and thus they will reach the optimum level for ecotourism route.
- The ECOS method used in the study is advantageous in evaluating the availability of the focuses compared to other methods. The results obtained through this method can serve as a basis for studies like ecotourism management plan or site use plan.

REFERENCES

[1] Ashok, S., Tewari, H. R., Behera, M. D., Majumdar, A. (2017): Development of ecotourism sustainability assessment framework employing Delphi, C&I and participatory methods: A case study of KBR, West Sikkim, India. – Tourism Management Perspectives 21: 24-41.

[2] Barzekar, G., Aziz, A., Mariapan, M., Ismail, M. H. (2011): Delphi technique for generating criteria and indicators in monitoring ecotourism sustainability in Northern forests of Iran: Case study on Dohezar and Sehezar Watersheds. – Folia Forestalia Polonica, Series A 53(2): 130-141.

http://www.aloki.hu ● ISSN 1589 1623 (Print) ● ISSN 1785 0037 (Online)
DOI: http://dx.doi.org/10.15666/aeer/1603_27012715

[3] Bender, M. Y. (2008): Development of criteria and indicators for evaluating forest-based ecotourism destinations: A Delphi study. – M. S. Thesis, West Virginia University.
[4] Blamey, R. K. (2001): Principles of Ecotourism. – In: Weaver, D. (ed.) Encyclopedia of Ecotourism, pp. 5-22. CAB International, Wallingford, UK.
[5] Boyd, S. W., Butler, R. W. (1996): Managing ecotourism: an opportunity spectrum approach. – Tourism Management 17(8): 557-566.
[6] Bunruamkaew, K., Murayam, Y. (2011): Site suitability evaluation for ecotourism using gis & ahp: a case study of Surat Thani Province, Thailand. – Procedia Social and Behavioral Sciences 21: 269-278.
[7] Butler, R. W., Waldbrook, I. A. (2003): A new planning tool: the tourism opportunity spectrum. – Journal of Tourism Studies 14(1): 25-36.
[8] Dhami, I., Deng, J., Strager, M., Conley, J. (2017): Suitability-sensitivity analysis of nature-based tourism using geographic information systems and analytic hierarchy process. – Journal of Ecotourism 16(1): 41-68.
[9] Fennell, D. A. (2001): A content analysis of ecotourism definitions. – Current Issues in Tourism 4(5): 403-421.
[10] Fennell, D., Weaver, D. (2005): The ecotourism concept and tourism-conservation symbiosis. – Journal of Sustainable Tourism 13(4): 373-390.
[11] Giles-Corti, B., Broomhall, M. H., Knuiman, M., Collins, C., Douglas, K., Ng, K., Lange, A., Donovan, R. J. (2005): Increasing walking: How important is distance to, attractiveness and size of public open space? – American Journal of Preventive Medicine 28: 169-176. DOI: http://dx.doi.org/10.1016/j.amepre.2004.10.018.
[12] Gold, S. M. (1980): Recreation Planning and Design. – McGraw-Hill, New York.
[13] Goodwin, H. (1996): In pursuit of ecotourism. – Biodiversity & Conservation 5(3): 277-291.
[14] Hvenegaard, G. T. (1994): Ecotourism: a status report and conceptual framework. – Journal of Tourism Studies 5(2): 24-35.
[15] IUCN (2006): International Union for Conservation of Nature and Natural Resources. Summary Statistics for Globally Threatened Species. – IUCN, Gland.
[16] Long, J., Vogelaar, A., Hale, B. W. (2013): Toward Sustainable Educational Travel. – Journal of Sustainable Tourism 22(3): 421-439.
[17] Nino, K., Mamo, Y., Mengesha, G., Kibret, K. S. (2017): GIS based ecotourism potential assessment in Munessa Shashemene Concession Forest and its surrounding area, Ethiopia. – Applied Geography 82: 48-58.
[18] Shieh, C. J., Hsueh, S. L., Chang, I. Y. (2014): Correlation research on ecotourism involvement, tourist experience, and behavior intention. – Journal of Environmental Protection and Ecology 15(3A): 1264-1272.
[19] Şenkaya Fettahoğlu, B., Demirel, Ö., Özkır, D. (2012): Assessment of Ayder (Çamlıhemşin Rize/Turkey) thermal and high plateau tourism area in terms of thermal protection and tourism development. – İnönü University Journal of Art and Design 2(5): 151-164.
[20] Stepanova, K. (2008): Ecotourism in Ukraine: challenges and opportunities (Odessa region case study). – Journal of Environmental Protection and Ecology 9(3): 675-681.
[21] TIES (2005): The International Ecotourism Society. Description and Ecotourism principles. – http://www.ecotourism.org.
[22] Tsaur, S. H., Lin, Y. C., Lin, J. H. (2006): Evaluating ecotourism sustainability from the integrated perspective of the resource, community and tourism. – Tourism Management 27(4): 640-653.
[23] Turoğlu, H., Özdemir, H. (2005): Determination of Ecotourism Potential in Bartın City. – Eastern Geographical Review 10(13): 97-116.
[24] UNWTO (2002): The British Ecotourism Market. – World Tourism Organisation, Madrid. http://pub.unwto.org/WebRoot/Store/Shops/Infoshop/Products/1223/122 3-1.pdf.
[25] Yılmaz, O., Mansuroglu, S., Yılmaz, R. (2013): SWOT Analysis of Ecotourism as a Tool for Sustainable Development: A Case Research in North-west Black Sea Coastal Zone of Turkey. – Journal of Environmental Protection and Ecology 14(2): 786.

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