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People's Perspectives about Seyfe Lake Wetland, Turkey

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Abstract

The aim of this study was to identify individual perspectives about the Seyfe Lake Wetland in Turkey. In the study, local's knowledge and perceptions were studied by means of a questionnaire. In addition, the demographic and socio-economic characteristics of the respondents and an economic profile of the sampled villages in the research area were also collected. Agriculture and animal husbandry production are the main occupational activity of the local people in this area. Local people know about the objectives (73.1%), important values (84.7%), and changes of the wetland (81.7%). The locals were knowledgeable about Seyfe Lake wetland ecosystems. In particular, they are aware of ecological changes such as the decline in lake water levels and lake sizes, the decreases in crop yields, decreases in species and populations of waterfowl, and destruction of the natural habitat. However, a low level of awareness was observed regarding the knowledge about the management plan of Seyfe Lake. Managers and planners should inform locals about the objectives of Seyfe Lake management planning. Informative activities such as technical trip, seminar and training to raise awareness should be conducted to protect the wetlands.

Keywords: Wetlands, Seyfe Lake, protection of flora

Türkiye'de Seyfe Gölü Sulak Alan Hakkında Yerel Halkın Bakış Açıları

Özet

Bu çalışmanın amacı, Türkiye'de Seyfe Gölü Sulak alan hakkında yerel halkın bakış açılarını tespit etmektir. Çalışmada, yerel halkın bilgi ve algıları bir anket aracılığıyla incelenmiştir. Buna ek olarak, katılımcıların demografik ve sosyo-ekonomik özellikleri ve araştırma alanındaki örneklenen köylerin ekonomik profili de toplanmıştır. Tarım ve hayvancılık üretimi, bu alandaki yerel halkın başlıca geçim kaynağıdır. Katılımcıların çoğu sulak alanın amaçlarını (%73.1), önemli değerlerini (%84.7) ve sulak alanda (%81.7) görülen değişimleri bilmektedir. Seyfe Gölü sulak alan ekosistemi hakkında bilgiye sahiptirler. Özellikle göl su seviyesi ve göl alanının azalması, ürün veriminin azalması, su kuşları populasyonunun ve türlerinin azalması ve doğal habitatın tahribatı gibi ekolojik değişimlerin farkında olduğunu belirttiler. Ancak, katılımcıların Seyfe gölü yönetim planı ile ilgili bilgilerinin çok düşük düzeyde oldukları gözlenmiştir. Yöneticiler ve planlamacılar Seyfe Gölü yönetim planlamasının hedefleri hakkında yerel halkı bilgilendirmelidir. Kamuoyunda sulak alanları koruma bilincini oluşturmak için teknik gezi, seminer ve eğitim gibi çalışmalar düzenlenmelidir.

Anahtar kelimeler: Sulak alanlar; Seyfe Gölü, floranın korunması

Introduction

Wetlands provide significant ecological, economic, and social benefits. For instance, they improve water quality, control floods, reduce pollution, and provide habitats for diverse communities of plants and animals and recreational opportunities and economic benefits for rural communities (Herath, 2004; Zhang et al., 2011). However, wetlands are significantly threatened by water extraction, the alteration of

natural flow patterns, deforestation, and land reclamation for civil construction, agriculture, and peat mining. These human impacts have resulted in the loss of more than half of the original wetlands in the world (International Union for Conservation of Nature and Natural Resources, 1987; Millennium Ecosystem Assessment, 2005). As is the case worldwide, the wetlands in Turkey have been dried for the purpose of acquiring agricultural fields. In addition, for the purpose of disease control, and to protect from flooding and overflowing, most of the wetlands in Turkey have been completely or partially drained (Tırıl, 2005; Turkish Bird Research Society, 2006).

Previously, wetlands have been drained for the capability to cultivate vast areas due to mechanized agriculture and the increase in the construction of dams and roads.

Wetlands, the natural composition of which has either been disturbed or irreversibly destroyed in Turkey throughout the last century as the result of various inter-interferences, mainly draining and agricultural irrigation projects, are 1.3 million hectares (Özesmi and Özesmi, 2001). Today, the wetlands in Turkey are threatened mainly by draining for agricultural utilization, construction of dams, urban development on wetlands and/or surrounding areas, and chemical contamination (industrial and household wastes in particular).

Local perceptions about wetlands are very important. Their perceptions are determined by frames of economic, ecological and socio-cultural values, such as age, education, location, and affluence. They can significantly shape the attitudes of local people (Newmark et al., 1993; Fiallo and Jacobson, 1995; Mehta and Heinen, 2001; Jim et al., 2002; Bandara and Tisdell, 2003; Xu et al., 2006).

The previous researches in this area are related to primarily the flora and avifauna, and the lake geomorphology, in the published thesis studies by Altındağ (1990), Ahıska (1992), Eyüboğlu (1995), Yiğitbaşıoğlu (1995), Omar (1997), Çobanoğlu (2000). However, current research projects and studies on the knowledge, attitude, and perceptions of local people in the wetland are insufficient. Therefore, the study presents the local knowledge and perceptions about Seyfe lake wetlands.

The purpose of this study was to identify local perspectives about Seyfe Lake wetlands in Turkey. Local knowledge and perceptions were studied by means of a questionnaire. In addition, demographic and socio-economic characteristics of the respondents and economic profiles of the villages in the research area around the wetland were also collected.

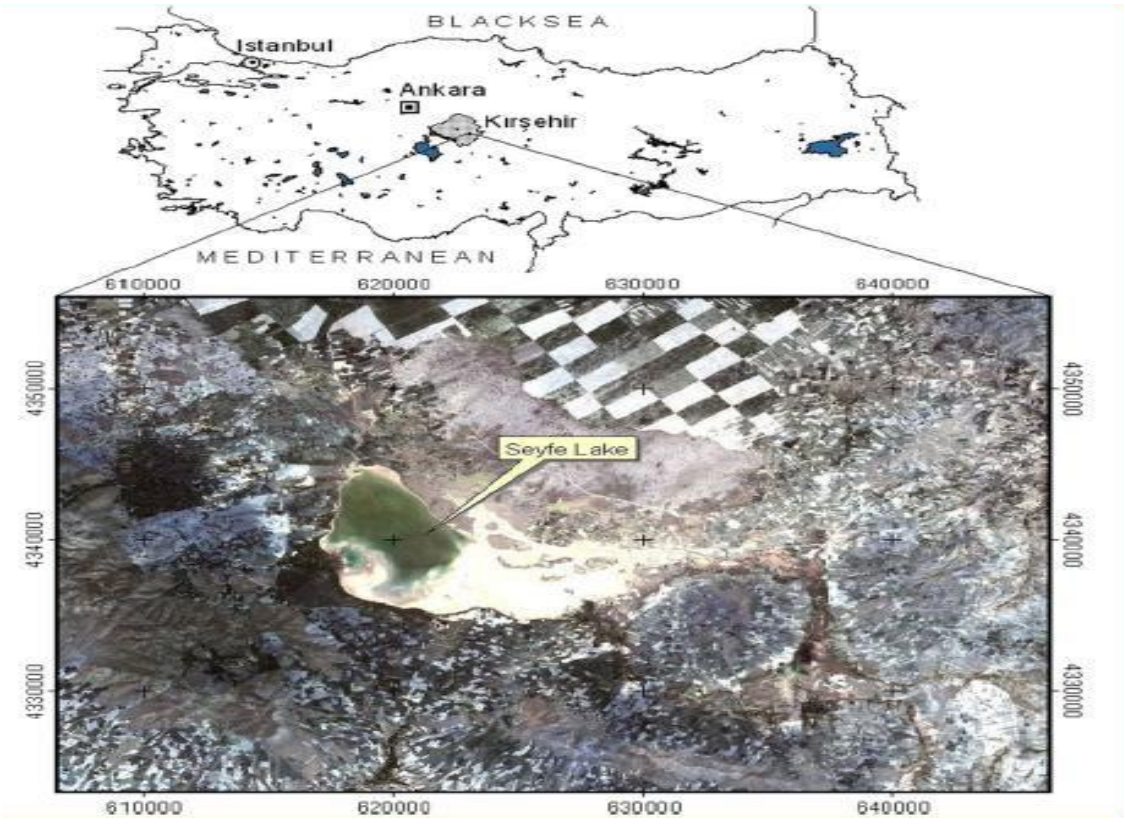

Figure 1. Location of the study area

Materials and Methods

Study area

Seyfe Lake and its surrounding area is one of thirteen Ramsar Areas in Turkey. Seyfe Lake is located within the Kırşehir province in Central Anatolia. The area lies between 39° 12'N and 34° 25'E. It occupies an area of 10700 ha. It is also one of the most important wetlands in Turkey and was declared a "Nature Reserve Area" in 1999 and classified among "first-class wetland areas" according to international criteria (Cirik, 1993). The most important reasons for proposing this area as a protection area are: (i) it is the natural habitat of the Great Bustard *(Otis tarda)* and the Ruddy Shelduck *(Tadorna ferruginea),* both of which are endangered bird species; (ii) it is the most crowded inhabited breeding ground of the flamingo *(Phoenicopterus ruber),* which is classified as a near threatened species; and (iii) it is a uniquely important endangered ecosystem in Europe. Only bird watching is permitted at the lake, but village farming and state-sponsored agriculture and pasturage occur nearby. The area has a rich archaeological heritage from the Bronze Age onwards (Anonymous, 2008.) In 1994, Seyfe Lake and its surrounding area were included in the Ramsar List that was established in response to Article 2.1 of the Convention on Wetlands held in Ramsar, Iran in 1971. Wetlands included in the list acquired a new status at the national level and have also been recognized by the international community as being of significant value not only for the country, but also for humanity as a whole (Ministry of Environment of the Republic of Turkey, 1997). This global protection status necessitated the involvement in the environmental management of the lake. The location of the study area is shown Figure 1.

Data collection and analysis

The research was carried out by means of a questionnaire. The study was conducted in nine of the villages around Lake Seyfe wetland, namely Yenidoğanlı, Eskidoğanlı, Seyfe, Gümüşkümbet, Yazıkınık, Budak, Dalakçı, Kızıldağ Yeniyapan, and Karaarkaç. Considering a previous study in which the sample size was determined by "Simple Random Sampling Probability" (Malhotra, 2004), the sampling method in the current study used equation (1) as:

$$n = \frac{Z^2 * (p.q)}{d^2}$$

In this:
n: Sample size
z: 1.64 (90% standard z-value corresponding to the confidence level)
p: Probability of occurrence
q: (1-p) Probability of nonoccurrence
d: Acceptable level of fault tolerance, accepted as ±5%.

Table 1. Distribution of the sampled villages

Name of village	Number of person
Eskidoğanlı	24
Yenidoğanlı	54
Seyfe	13
Gümüşkümbet	18
Yazıkınık	11
Budak	12
Dalakçı	25
Karaarkaç	14
Kızıldağ Yeniyapan	96
Total	268

In this study, a 90% confidence interval for the locals, with a margin of error of 10% of the sample size was calculated as 268 pieces. The questionnaires were distributed to a sample of the local population. A total of 268 respondents were randomly interviewed in the research area (Table 1). Questions were presented in face-to-face interviews with questionnaires. Questions included locals' knowledge, awareness, and perceptions about Seyfe Lake wetland. In addition, some demographic and socio-economic information of the respondents (gender, age, education, occupation, and economic activities) and household characteristics (household size, size of land ownership) and some economic characteristics (total livestock, main crops grown) were also collected. These characteristics effected for evaluation of People's Perspectives (Pavlikakis and Tsihrintzis, 2006). Questions were prepared as open- and close-ended (Trakolis, 2001; Pavlikakis and Tsihrintzis, 2006; Xu et al., 2006; Khan and Bhagwat, 2010).

The final format of the questionnaire was designed after a pre-survey in a non-random sample. The questionnaire was performed in the months of August, September, and October 2011. The data were analyzed using descriptive statistics and rational data generated by Statistical Package for Social Sciences (SPSS) version 15.0. The results are presented in Tables.

Table 2. Characteristics of the respondents

Category		Ratio (%)
Gender	Male	83.2
	Female	16.8
Education	Primary	31.7
	Secondary	51.1
	High school	13.1
	Vocational school	4.1
Age	25-34	4.5
	35-44	11.2
	45-54	31.0
	55-64	36.2
	> 65	17.2
Household size	1-3	16.0
	4-7	79.1
	> 8	4.9
Occupation	Mayor	4.1
	Farmer	39.2
	Housewives	16.8
	Teachers	13.8
	Retired	17.2
	Others (civil servant, unemployed)	9.3
The acreage of land owned	1-49 da	25.0
	50-99 da	43.7
	100-149	20.1
	150-199	6.3
	> 200	4.9
Major economic/ occupational activities	Agronomic activities	26.9
	Animal husbandry	16.8
	Agriculture-animal husbandry	50.7
	Others (Transportation jobs market operating)	5.6

Results and Discussion

Characteristics of the sample

The main demographic and social characteristics of the samples are presented in Table 2.As seen in the table, the sample was comprised of 83.2% male and 16.8% female respondents. Women's participation in the survey is very low. One possible reason for this may be the local cultural practices and personal beliefs. The ages of the respondents ranged from 25 to 75 years, with a mean age of 53.6 years. The majority of the sample was 55-64 years old (36.2%) and 45-54 years old (31%). In addition, 17.2% of the respondents were over 65 years. Household size varied from 1 to 9 members with a mean of 5.5 persons. Regarding the educational status of respondents, the majority (51.1%) had completed secondary school. Only a very small percentage (4.1%) had completed vocational school. With regard to occupation, the majority of respondents (39.2%) were farmer, followed by retired people (17.2%) and housewives (16.8%), others included civil servant and unemployed (9.3%). With regard to the acreage of land owned, the majority of respondents (43.7%) possessed 50-99 da, followed by 1-49 da ownership (25%), and 100-199 da ownership (20.1%).

The main economic activities in research area were agricultural and animal husbandry (50.7%) and agronomic activities (26.9%). Only 5.6% of the respondents were others included transportation jobs and market operating. As Pavlikakis and Tsihrintzis (2006) indicated, occupation is directly related to individual preferences. As seen here, agriculture and animal husbandry production are the main occupational/economic activity of local people in this area.

The main crops grown in the research area are given in Table 3. As indicated in Table 3, the main crops are wheat, barley, sugar beets, and sainfoin as animal fodder; in addition, lentils, chickpeas, beans, and sunflowers are also cultivated. The most important human activities cause stress on the wetland that come from agricultural activities. Especially, fertilizers used by Malya State Breeding at the north side of the lake, reach the lake by both surface water and underground water. Olhan et al., (2010) evaluated the effects of agricultural activities in the Seyfe Wetland. Their results indicated that most of the producers in the research region tended to use more fertilizer, considering that it would increase efficiency. Only 25.9% of the producers have their soil analyzed and use fertilizer, according to the analysis results. Kıymaz and Seçer (2010) investigated the environmental and socio-economic aspects of assessment of Seyfe Lake. Their results indicated that 17.91% of producers have their soil analyzed and use fertilizer according to the analysis results but the majority (70.15%) use fertilizer according to their experiences. Other types of pressure arise from the illegal use of wells, uncontrolled hunting. The number of livestock and pasture areas of the villages in the research area is shown in Table 4 (Anonim, 2012). As seen in Table 4, the total pasture area is 6706 decare. The total number of livestock and small ruminants are 3768 and 4410 respectively.

Table 3. The most widely grown agricultural crops and areas in the research area

Villages	The most widely grown agricultural crops and areas					
	Crops	Area (da)	Crops	Area (da)	Crops	Area (da)
Yenidoğanlı*	Wheat	62201	Barley	19378	Sainfoin	7713
Eskidoğanlı	Wheat	6043	Barley	1781	Sainfoin	309
Seyfe	Wheat	2560	Barley	1925	Sainfoin	1312
Gümüşkümbet	Wheat	2697	Barley	1756	Sainfoin	1110
Yazıkınık	Barley	4720	Wheat	3053	Sainfoin	7777
Budak	Barley	4388	Wheat	4266	Sainfoin	1177
Dalakçı	Wheat	5234	Barley	1456	Sainfoin	1315
Karaarkaç	Wheat	13868	Barley	7603	Sainfoin	93
Kızıldağ Yeniyapan	Barley	15526	Wheat	6696	Sugar beet	282

*including Malya State Breeding Land.

Knowledge and perceptions

The respondents were questioned about the objectives of the wetland, values of wetland, management plan, and wetland changes. The relevant questions and the corresponding results are given in Table 5.

Regarding the locals' knowledge of the objectives of the wetland, the majority (73.1%) responded positively, and when asked to define the objectives they knew, most people (51.87%) mentioned the conservation of natural habitats and landscape. Some respondents also referred to other objectives, such as the protection of flora and fauna species (26.87%), and development activities (rehabilitation of the wetland areas degraded ecological character and agricultural incentives) (21.27%). The results showed that most of the respondents were aware of the primary objective of the wetlands. The villages in research area are near the lake. Seyfe Lake is 100% state-owned and its surrounding area consists of state-owned, village legal entities, Malya State Breeding Farm, and individual properties. The majority of respondents indicated awareness of the significance of the Seyfe Lake wetland.

With regard to whether they had knowledge of the values of the wetland, the majority (84.7%) responded positively, and when asked to define the most important values they knew, most people (35.4%) mentioned the main source of water being for agriculture irrigation, and livestock grazing and watering (14.6%), conservation values (11.9%), domestic use (10.8%), and drinking water (10.1%). Some respondents also referred to other values, such as cultural and history (6.0%), and hunting and gathering (4.5%). Seyfe Lake provides important economic, ecological, social, and cultural-historic benefits to the local people. Scientific research, educational, and bird watching activities also take place. Seyfe Lake and its surrounding area also gained global significance because of due to inclusion in the international Ramsar List. Therefore, Seyfe Lake Wetland is essential for the sustainability of agriculture and livestock and the conservation of ecological diversity and waterfowl population in this region.

Table 4. The number of livestock and pasture areas of the villages in the research area

Villages	Pasture area (da)	Livestock	Small ruminants*
Yenidoğanlı	542	848	610
Eskidoğanlı	262	750	1100
Seyfe	324	224	45
Gümüşkümbet	319	257	275
Yazıkınık	393	253	206
Budak	452	149	0
Dalakçı	1890	565	0
Karaarkaç	1764	60	860
Kızıldağ Yeniyapan	760	662	1314
Total	6706	3768	4410

* Sheep and goats.

Knowledge and awareness

The respondents provided a negative answer (76.5%) about objectives of management planning of the Seyfe Lake. The awareness of the purposes of the management plan of Seyfe Lake for 2010-2015 was observed to be at a very low level. The results showed that most of the respondents were unaware of the objectives of the management plan. One possible reason for this may be the lack public participation and ineffective communication mechanisms in the initial stages of management planning.

Table 5. Knowledge of the respondents about Seyfe Lake wetland

1. Do you know the objectives of the Seyfe Lake wetland?	Respondents	
	N[a]	%
Yes	196	73.1
No	72	26.9
Total	268	100.00
1.1.If yes: Mention the objectives that you know	N[a]	%
Protection of natural habitats and landscape	139	51.87
Protection of flora and fauna	72	26.87
Development activities (rehabilitation of the wetland areas degraded ecological character and agricultural incentives)	57	21.27
Total	268	100.0
2. Do you know the important values of the Seyfe Lake?	N[a]	%
Yes	227	84.7
No	41	15.3
Total	268	100.0
2.1. If yes: Mention the most important values that you know	N[a]	%
Water for agriculture irrigation	95	35.4
Livestock grazing and watering	39	14.6
Domestic use	29	10.8
Drinking water	27	10.1
Hunting and gathering	12	4.5
Endemic plant species	7	2.6
Fauna	6	2.2
Scientific value	5	1.9
Cultural and historical values	16	6.0
Conservation values of Seyfe lake wetland (Important Bird Area, Nature Area, Ramsar Area etc.)	32	11.9
Total	268	100.0
3. Do you know the objectives of management plan of the Seyfe Lake?	N[a]	%
Yes	63	23.5
No	205	76.5
Total	268	100.0

N[a] = number of respondents.

Local people, especially those living in and around protected areas, have important and long-standing relationships with these areas. Their needs, aspirations, and attitudes should be considered in the management of the protected area. Otherwise, the long-term survival of protected areas will be jeopardized (McNeely, 1990; Xu et al., 2006). To improve protected area management, perceptions and attitudes of the participants need to be studied, which, as Sewell (1973) indicated, will offer much promise, aid in the identification of the problems, and recognize potential solutions for developing an appropriate strategy. Furthermore, the outcome of decision-making is affected considerably by the perceptions and attitudes of participants in the process (White, 1966).

Perceptions of changes to the wetland from past to present

The respondents provided a positive answer (81.7%) about the changes to the wetland from past to present. When asked about wetland changes, most people (21.6%) mentioned the decline in lake water levels, production crop yields (16.8%), and lake size (15.7%). Other important changes were shortage of water resources (13.4%), decline in the species and populations of waterfowl (11.9%), and destruction of the natural habitat (9.3%) (Table 6). In the date of 1996 and 1998, 215 bird species were established around the Seyfe Lake. But in 2009, 81 bird species were identified in this area. However, recently experienced water-related problems and the basin water regime that occurs in due to changes in avian species and species dependent on the

number of individuals in the very large declines have occurred (Anonim, 2010). In this area, a project of ÇATAK (Environmental Protection of Agricultural Land) was funded by the Ministry of Agriculture. The aim of this project is to reduce the pressure of water and the environment, and protect the soil, and sustainability in agriculture. Under this project, income-generating activities (sainfoin, apple, and safflower) for farmers were supported by the Ministry of Agriculture.

Table 6. Perceptions of the respondents about Seyfe Lake wetland

Do you know of changes to the wetlands from past to present?	N[a]	%
Yes	219	81.7
No	49	18.3
Total	268	100.0
If yes: Mention the changes in wetland that you know	N[a]	%
Decline in lake size	42	15.7
Lake water level changes	58	21.6
Decrease in production crop yield	45	16.8
Decline in species and population of the waterfowl	32	11.9
Shortage of water resources	36	13.4
Destruction of the natural habitat	25	9.3
Reduction in the pasture areas available for grazing	11	4.1
Degradation of water quality due to fertilizers and pesticides	9	3.4
Increase in wild erosion	10	3.7

N[a] = Number of respondents.

In spite of the agreements and assurances, this natural area, which is mainly the natural habitat of migratory birds and waterfowl, has been dried out due to various reasons. Now, there is a remarkable decrease in the number of migratory birds and waterfowl around the lake. This is observed due to the changes in the structure of the lake after drying. It is estimated that unless immediate actions are taken, the wetland will likely disappear.

The study identified perceptions and awareness of locals regarding the Seyfe Wetland. Local people know about the objectives (73.1%), values (84.7%), and changes of the wetland (81.7%). The locals were knowledgeable about wetland ecosystems. In particular, they are aware of ecological changes such as the decline in lake water levels and lake sizes, the decreases in production crop yields, decreases in species and populations of waterfowl, and destruction of the natural habitat. However, a low level of awareness was observed regarding knowledge of the management plan of Seyfe Lake.

The major problems are lack of managerial institutional capacity and effective management in this area. Local people should be given broader and more useful information about the objectives of wetlands management. The locals' livelihood, culture, and spiritual attachment to wetlands should be respected and integrated in decision making (Terer et al., 2004). Therefore, some alternative sources of livelihoods must be created to ensure socio economic benefits and environmental conservation. We hope that the results of this study will contribute to the development of management plan of Seyfe Lake.

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