Socio-Economic Structure of the Fishermen on Lake Beysehir

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Abstract

This study was carried out in order to investigate the socio-economic conditions of fishermen of Beysehir Lake and conduct the economic analysis of fishery in the lake.

This study was carried out in 2 fishing areas (Isparta- Şarkikaraağaç and Konya-Beyşehir) of Beyşehir Lake at 2 fishery cooperatives. The data of the study were obtained as a result of one-to-one interviews that were performed through a questionnaire consisting of closed and open-ended questions, which was applied to fisherman during the hunting season of 2011. In the questionnaire, questions aimed at the physical and technical properties of fishing boats and socio-economic structures of the fishermen were prepared. Consequently, in Beyşehir lake the lengths of fishing boats used in hunting varied between 6.50 - 8.50 meters. Fishing boats all of them were motorized. It was observed that hunting capital of fishermen in the Beyşehir lake consisted of boats (45%) and fishing gear (55%). The average age of fishermen in Beyşehir lake ranged between 21 – 59. Among them, 66.25% were graduated from primary school, 33.75% from secondary school. In Beyşehir lake 92.50% of fishermen are married and have 0-4 children.

Key words: Beyşehir Lake, Socio-economic condition, Fisheries cooperatives

Beyşehir Gölündeki Balıkçıların Sosyo-Ekonomik Yapısı

Özet

Bu çalışma, Beyşehir Gölü Balıkçılarının sosyo-ekonomik durumlarını ortaya koymak ve göldeki balıkçılığın ekonomik analizi amacı ile yapılmıştır. Çalışma Beyşehir Gölünde 2 avlak sahasında (Isparta- Şarkikaraağaç ve Konya - Beyşehir) 2 su ürünleri kooperatifinde gerçekleştirilmiştir. Çalışmadaki veriler 2011 yılı av döneminde balıkçılara uygulanan, kapalı ve açık uçlu sorulardan oluşan anket yoluyla birebir görüşmeler sonucu elde edilmiştir. Ankette balıkçı teknelerinin fiziksel, teknik özellikleri ve balıkçıların sosyo-ekonomik yapılarına yönelik sorular hazırlanmıştır.

Sonuç olarak, Beyşehir gölünde avcılıkta kullanılan tekne boyları 6.50-8.50 metre arasındadır. Beyşehir gölündeki teknelerin hepsi motorludur. Beyşehir Gölünde balıkçılık yapan balıkçıların avlama sermayesinin %45'ini tekne, %55'ini ise av araç-gereçlerinin sermayesinin oluşturduğu görülmüştür. Beyşehir gölünde balıkçıların yaşları 21-59 arasındadır. Balıkçıların %66.25'inin ilköğretim, %33.75'inin ortaöğretim mezunu olduğu görülmüştür. Beyşehir gölü balıkçıların %92.50'si evli olup, bunların 0-4 arasında çocuk sahibi oldukları görülmüştür.

Anahtar Kelimeler: Beyşehir Gölü, Sosyo-ekonomik durum, Su ürünleri kooperatifi

Introduction

It is reported that a great majority of fishermen in the world live in developing countries and earn their living by small-scale fishery. It is indicated that these fishermen have a low-level contribution to national and regional economies and the product supply has inconvenient conditions in terms of food safety (FAO, 2010).

More than 300.000 families earn their living by aquaculture and its subsidiary industry in Turkey.

While 65% of the population dealing with aquaculture consists of small-scale family businesses, approximately 3% of them belong to the rural population (Doğan, 1997).

The primary resource of production in the aquaculture sector, which has a dynamic structure, is hunting. The resources of the Turkish aquaculture production could be geographically defined as seas and inland waters. The production that is provided through both aquaculture and hunting in our seas and inland waters comprises the general production.

There is a number of fish species that live in inland waters and are hunted for economic purposes in the world. There are 63 species and 130 fish types of 23 families in inland waters of Turkey (Atay, 1995).

Being the greatest fresh water lake of Turkey, Beyşehir Lake is within the boundaries of the Provinces of Konya and Isparta (370 33'- 370 59' N—310 19'-310 44' E). The lake has a surface area of approximately 650 km², an altitude of 1116 meters above sea level, a height of 45 km and a maximum width of 25 km, and it is approximately foursquare. This lake, which has an oligotrophic characteristic in terms of fertility, has an average depth of 4- 6 meters (Geldiay and Balık, 1996).

In the study that was conducted by Yeğen et al. (2006), it was determined that 11 species of 6 families live in Beyşehir Lake (*Cyprinus carpio* L.,1758), (*Sander lucioperca* L.,1758), (*Carassius gibelio* L.,1758), (*Tinca tinca* L.,1758), (*Chondrostoma regium* Heckel, 1843), (*Leuciscus lepidus* Heckel, 1843), (*Aphanius anatoliae anatoliae* Leidenfrost, 1912), (*Atherina boyeri* Risso, 1810), (*Gambusia affinis* Baird and Girard, 1853), (*Knipowitschia caucasica* Kawrajsky, 1899) and (*Pseudophoxinus anatolicus anatolicus* Hanko, 1924). Among these species, the *Carassius gibelio*, *Sander lucioperca*, *Tinca tinca* and *Atherina boyeri* were determined to be the fish that are infused into the lake afterwards.

Fishing is performed with 797 boats, which are registered to 2 cooperatives in 2 fisheries, on the lake. The main objective of this study was to reveal the economic contribution of the commercial fishing on Beyşehir lake to fishermen of the region and determine the socio – economic conditions of these fishermen.

Material and Methods

The study material primarily consisted of the data that were obtained from the fishermen hunting on the lake through a questionnaire. The questionnaire involved questions about the physical, technical properties of fishing boats and socio-

economic structures of fishermen. The questions regarding the main objective of the study evaluated the data aimed at the determination of socio-economic features of fishermen such as their age, marital status, educational level, household population, number of children, home and motor car ownership, social security conditions, fishing experiences, reasons for choosing the job and working conditions.

The study was conducted in 2 Aquculture cooperatives and 2 fisheries (Isparta- Şarkikaraağaç and Konya-Beyşehir) on Beyşehir Lake. The data of the study were obtained as a result of one-on-one interviews that were performed on the fishermen through a questionnaire consisting of closed and open-ended questions in hunting season of 2011. The questionnaire involved questions about the physical, technical properties of fishing boats and socio-economic structures of fishermen.

According to the records of SUBIS (Fisheries Information System) the number of fishing boats that perform active hunting on the lake is 797. While 797 of fishermen on Beyşehir Lake, which has 2 fisheries, 558 are in the province of Konya, 239 are in the province of Isparta.

The number of questionnaires to be conducted was calculated with the help of the formula $n = \frac{Nt^2 pq}{d^2(N-1)+t^2 pq}$ (0,05 Sampling error (d); 95% confidence limit (t)) (Sümbüloğlu and Sümbüloğlu, 2010) and determined to be 260.

Simple random sampling method was used in this questionnaire. While 182 fishermen from Konya were selected according to the proportional stratified sampling method, 78 fishermen from Isparta were selected according to the simple random sampling method for 2 fisheries

The questionnaire data were evaluated with the help of the SPSS 18.0 packaged software. The socio-economic data of the fishermen were evaluated with the Chi-Square χ^2 test.

Results and Discussion

The data that were obtained from the study were evaluated in three different stages such as the technical, physical properties of fishing gears being used for hunting on Beyşehir Lake, socio-economic structures of fishermen.

Technical and physical properties of fishing gears:

The boat length and age of fishing gears being used by the fishermen who conduct the activity of fishing in two fisheries on Beyşehir Lake have shown

in Table 1. The lengths of boats being used in fishing vary between 6.50 – 8.50 m. Statistical differences were found between the boat lengths in terms of fisheries (p≤0.05). Even though the boats in Konya generally had a length of 6.5 – 7.5 m., the boats in Isparta were determined to have a length of 7.6 – 8.5 m. It was determined that the boat ages varied between 3 and 31 years. A statistical difference was found between the boat ages, as well (p≤0.05).

Konya was observed that fishing boats in the age group of 11-15 were placed on top and had a middle-age fleet. Isparta was observed that fishing boats in the age group of 16-20 were placed on top and had a middle-age fleet. It was determined that the construction material of the fishing fleet was fiber wrapping in all boats.

All the boats being used for fishing on Beyşehir Lake consist of motor boats. Evaluating in terms of their motor powers, it is observed that it varies between 10-13Hp and motors with a power of 13.00 Hp are used with a rate of 96.25%. Considering the ownership status of fishing boats, it is observed that all the fishermen perform fishing on boats of their own.

Considering the fishing instruments and equipments of fishermen performing fishing on Beyşehir Lake, nets with and without trammel and crawfish boxes are by far the most important. All the fishermen have nets with and without trammel. The total length of nets being actively used by fishermen varies between 1000 m. and 14000 m and the average net amount is 5368 m. Approximately 8.75% of fishermen have crawfish boxes. The fishermen have 500-1000 crawfish boxes per capita and the average number of crawfish boxes is 729. No statistical difference was found between two fisheries (p>0.05) (Table 1).

Table 1. Properties of boats

	Fisheries Area		Chi-Square	p – value
	Isparta (Şarkikaraağaç) (%)	Konya (Beyşehir) (%)		
Properties of Boats				
Boat length			17.604	0.000
6,5 – 7,5	10.5	65.6		
7,6 – 8,5	89.5	34.4		
Boat age			24.821	0.000
Below 10	21.1	36.7		
11 – 15	15.8	43.3		
16 – 20	57.8	6.7		
Above 21	5.3	13.3		

Socio-economic features of fishermen:

It was determined that the fishermen performing fishing on Beyşehir Lake were aged between 21 – 59 and their average age was 43.5 ± 9.9. Examining the educational levels of fishermen, it was determined that all of them had primary education and none of them were illiterate. No statistical difference was found between two fisheries (p>0.05) (Table 2).

90% of fishermen conduct the activity of fishing on Beyşehir Lake as their main source of income. Regarding those who conduct fishing as the real income activity, 72.38% are involved only in fishing, 23.68% sustain both fishing and agricultural activities, 2.38% work as craftsmen, 1.38% ranch and 0.18% are retired.

Examining the professions of fishermen's wives, it was determined that they were all housewives.

Examining the educational status of fishermen's wives, Isparta was determined that 83.30% were graduated from primary school, 16.70% from secondary school and Konya was determined that 80.30% were graduated from primary school, 19.70% from secondary school (Table 2).

Isparta was determined that 100% of fishermen were married and Konya was determined that 92.50% of fishermen were married and 7.50% were single. It was also determined that fishermen's wives were aged between 22 and 59 and their age average was 42.2 ± 9.1. Regarding the married fishermen, the number of their children varied between 0 and 4. Considering the number of children in terms of two fisheries, a statistical difference was observed (p≤0.05). Considering the number of children regarding the married fishermen for each family, it was observed that each family had approximately 2 ± 1 children.

Table 2: Features of fishermen

	Fisheries Area		Chi-Square	p – value
	Isparta (Şarkikaraağaç) (%)	Konya (Beyşehir) (%)		
Features of Fishermen				
Age			0.161	0.688
< age 40	27.8	32.8		
> age 40	72.2	67.2		
Marital Status			2.020	0.155
Married	100	92.5		
Single	0.0	7.5		
Educational Status			0.082	0.775
Primary Education	83.3	80.3		
Secondary Education	16.7	19.7		
Educational Status of Fishermen's Wives			3.232	0.199
Primary Education	94.4	87.8		
Secondary Education	5.6	12.2		
Number of Household			0.156	0.693
>3	11.1	14.9		
<3	88.9	85.1		
Number of Children			11.437	0.000
1	11.1	14.9		
2	56.0	34.0		
>3	32.9	51.1		
Motor Car Ownership			1.172	0.678
Yes	31.6	36.8		
No	68.4	63.2		
Home Ownership			0.097	0.755
Yes	78.9	75.4		
No	21.1	24.6		
Social Security			3.718	0.156
Social Security Organization for Artisans and the Self-Employed	50.0	53.8		
Social Insurance Institution	43.8	23.1		
N/A	6.2	23.1		
Experience of Fishing			1.455	0.483
Below 15	21.1	33.9		
16 – 30	47.4	33.9		
>31	31.5	32.2		

Examining the home and motor car ownership, which is an important indicator of socio-economic features of fishermen, Isparta was observed that 78.95% had their own home, 31.60% had motor cars and those with motor cars used these vehicles both in their daily routines and fish transportation. Konya was observed that 75.40% had their own home, 36.80% had motor cars and those with motor cars used these vehicles both in their daily routines and fish transportation. Considering in terms of two fisheries, no statistical difference was found (p>0.05).

Examining the social security status, which is among the most important social status in the lives of workers under today's economic conditions, Isparta was observed that while 50.00% of fishermen had social security, 6.20% had no social security. Konya was observed that while 53.80% of fishermen had social security, 23.1% had no social security (Table 2). Even though 25.00% of fishermen with social security are retired, they continue fishing due to economic reasons.

When they were asked about why they chose fishing, it was revealed that those who chose fishing

as there was no other job had a very high rate. The reasons for the fishermen of Beyşehir Lake to choose fishing as a job were respectively as follows: 90.67% had no other business opportunity, 4.00% took it over from their fathers, 4.00% loved fishing and 1.33% thought that the income of fishing was better than that of other business opportunities.

This study conducted the economic analysis of socio-economic structures and fishing activities of fishermen who perform fishing on Beyşehir Lake. In similar studies that performed in other lakes, it is observed that the fishermen hunt the economic water products that are peculiar to the lake. This study was analysed by take into consideratin the fishermen who hunt the silver crucian carp, sander lucioperca and atherina, which are economically important, on Beyşehir Lake.

In this study that was performed on Beyşehir Lake, while the lengths of fishing boats varied between 6.50 m. and 8.50 m., the motor powers varied between 10 Hp and 13.00 Hp. Soylu and Uzmanoğlu (2003) reported that while the boat lengths varied between 4.00-6.00 m., the motor powers varied between 10.00-15.00 Hp on Durusu Lake. In another study, it was reported that while the lengths of fishing boats on Manyas Lake varied between 4.00-8.50 m., the motor powers varied between 10.00-11.00 Hp (Avan, 2007). In this study that was performed on İznik Lake, Doğan (2009) reported that while the lengths of boats being used in atherina hunting varied between 6.00 m. and 9.00 m., the motor powers varied between 10.00 Hp and 32.00 Hp.

Comparing this study with the results of similar studies that were performed on other lakes, it is observed that fishing, which is performed on this lake, is economically based on hunting the silver crucian carp, sander lucioperca and atherina.

In his study, Yücel (2006) analysed the socio-economic conditions of fishermen in the Region of Middle Black Sea and some suggestions were presented to the fishermen. The findings that were obtained from the aforementioned studies show a parallelism with the data such as the age distribution, qualification rates and educational levels of the fishermen of Beyşehir Lake (Yücel 2006).

It was determined that the fishermen of Beyşehir Lake were aged between 22-59 and their age average was 43.5±9.9. Other studies reported the ages of fishermen between 22-77 (Soylu and Uzmanoğlu, 2003), 20-74 (Soylu et al., 2004), 26-59 (Ergüden et al., 2007) and 26-72 (Avan, 2007), 27-64 (Doğan 2009).

Regarding the fishermen of Beyşehir Lake, 92.54% were determined to be married and 7.46% single. In their studies, Ünal (2003) determined that 86.67% were married and 13.33% were single; Uzmanoğlu and Soylu (2006) determined that 92.86% were married and 7.14% were single; Doğan (2009) determined that 93.33% were married and 6.67% were single. Similar data were obtained from this study.

Examining the educational levels of the fishermen of Konya; it was determined that 80.30% were graduated from primary school, 19.70% from secondary school. Examining the educational status of fishermen's wives; Isparta was determined that 83.30% were graduated from primary school, 16.70% from secondary school. In other studies being performed on other lakes, it was determined that 77.22% were graduated from primary school and 22.73% from secondary school (Soylu and Uzmanoğlu, 2003), 2.41% were literate, 61.44% were graduated from primary school, 19.28% from secondary school, 16.87% from high school (Soylu et al., 2004), 96.97% were graduated from primary school, 3.03% were literate (Ergüden et al., 2007), 90.67% were graduated from primary school, 7.62% from secondary school and 1.69% from high school (Avan, 2007). Comparing with other studies, it is observed that educational status of fishermen's wives on Beyşehir Lake is not very different from that of fishermen's wives on other lakes. There is similar results with Doğan (2009) who reported that 63.33% were graduated from primary school, 20.00% from secondary school, 10.00% from high school and 6.67% from university.

Examining the home and motor car ownership of fishermen on Konya; it was determined that 75.40% had their own home and 36.80% motor cars. Examining the home and motor car ownership of fishermen on Isparta; it was determined that 78.90% had their own home and 31.60% motor cars. In their studies, Ünal (2003) reported that 73.3% of fishermen had their own home and Doğan (2009) determined that 83.33-16.67% had their own homes and 66.67-33.33% motor cars.

Examining the social security status of fishermen on Konya; it was determined that while 53.80% had social security, 23.1% had no social security. Examining the social security status of fishermen on Isparta; it was determined that while 50.00% had social security, 6.2% had no social security. In a study that was conducted by Çeliker et al., (2006) on sea fishing in the Region of Black Sea, it

was reported that while 72.08% of the fishermen of Black Sea had social security, 27.92% had no security. In his study, Doğan (2009) revealed that while 73.33% had social security, 26.67% had no social security. It was observed that the results of these studies showed a parallelism with our study.

In this study that was performed on Beyşehir Lake, it was revealed that the fishermen had sufficient education, experience and hunting power in a similar way with that of fishermen on other lakes. On the other hand, the reason for their low income was associated with the less of the amount of hunt per fisherman. It is thought that the fishermen will have greater income levels when the carp population of the lake is supported and the prices of the silver crucian carp of atherina are involved in different marketing channels or evaluation areas.

Based on the examinations and observations that were made during the study, it was determined that cooperatives were very active in renting the lake and commercializing the product, and helped their members in terms of document tracking and fish purchase. Cooperatives will contribute to the solution of many problems of fishermen when they are supported in terms of input procurement, protection of the lake and training.

It is required to conduct the legal regulations in order to enable the fishermen to have social security. Furthermore, when the fishermen are given agricultural supports in convenient maturities and interests, this will bring an economic prosperity to the fishermen. The studies that aimed recognizing the problems of workers in this sector and determining their expectations will guide the solution of their problems.

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