



A Profile of Modern Hunters in Burdur Province, Türkiye and Compared to European Data

Aksan Ş* and Yıldırım Y

Faculty of Forestry, Department of Wildlife Ecology and Management, Isparta University of Applied Sciences, Turkey

***Corresponding author:** Şengül Aksan, Faculty of Forestry, Department of Wildlife Ecology and Management, Isparta University of Applied Sciences, Isparta 32260, Turkey, Email: sengulaksan@isparta.edu.tr

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Abstract

This study aimed to investigate the socio-demographic characteristics of hunters in Burdur province in Türkiye based on the data of the Game Management Information System (AVBIS) being overseen by and under the control of the General Directorate of Nature Conservation and National Parks, the Ministry of Agriculture and Forestry of Türkiye. Hunter educational status, and their professional status were determined using the chi-squared test. In the light of the data obtained from a total of 3185 hunters, the group with the primary school level 36.4%, secondary school 10.9%, high school 15.6%, associate 3.1%, undergraduate 8.0%, master's degree 0.8%, doctoral degree graduates 0.1% and the unknown educational status were determined to be 25% ($P < 0.01$). Considering the professional status, it has been determined that the largest share among occupational groups consists of 33.8% of self-employed and 23% of public sector employees, followed by 17.5% of tradesmen and 15.4% of retirees. Occupational groups with the lowest rate 1.7% the private sector, 1.3% students, and 0.3% industrialists with ($P < 0.01$). A comparison of data regarding hunting grounds and the number of game animals hunted was made with Anova-Duncan. It was revealed that for gaming the hunters visited highest catch in the hunting grounds of Burdur province was 45.4% in Kemer ($P < 0.05$). The lowest catch was found in Pamucak with 9.76%. The most hunted animal species in the hunting grounds of Burdur Province were found as 96.45% *C. livia* ($P < 0.01$) and *S. rusticola* and *G. gallinago* species is quite low compared to other animal species. As is evident from this study, socio-demographic profiles of hunters in Burdur province, Türkiye, and in Europe appear to be similar. A significant difference was observed in terms of the number of female hunters. While the average of female hunters in some European countries reached 10,5% there is no female hunter registered in the AVBIS in Türkiye.

Keywords: Hunter; Game Animals; Wildlife; Hunting

Introduction

Human beings have been first hunted for survival and then for nutrition to exist. Today, hunting is accepted as a hobby, sport, and social activity, apart from the necessity of nutrition and safety. The main factor in starting hunting in Türkiye like as Europe is the family first and then the

environment. It is known that hunting is also used as a means of preparation for war in Turkish culture [1]. In Europe, hunting was transferred as a culture of the nobility.

Although the first land hunting law in our country was dated 1937, the current law is the "Land Hunting Law No. 4915", which was put into effect in 2003. This law aims to

protect wildlife with its natural habitats and to manage controlled hunting by transferring it to future generations within the framework of a certain order [1,2]. While preserving hunting resources, it is necessary to use them for various purposes (hunting, ecotourism, etc.). Hunting resources must both be passed on to future generations and be used to meet some needs of the masses. Sustainability of hunting resources means that resources are planned by considering the balance of conservation and their utilization as needed [3]. In developed countries, resource management, the number of hunters, the time allotted for hunting, the number of times a year hunted, the type and number of animals pursued, the number of people hunting, the money spent on hunting, and the demographic and socio-economic characteristics of hunters are determined periodically [4-6]. Using this information, governments calculate the contribution of hunting to the national economies and plan game management. Conserving and developing the natural resources while making hunting activity a sector that benefits the country's economy can be achieved with conscious hunting and proper management [2]. To hunt in Türkiye, a hunting license, and a hunting permit from the AVBIS are required in the areas where hunting is allowed.

This study aims to determine the profile of Turkish hunters in line with the information in the game management system and to compare it with the European hunter profile.

Material and Method

Material

The Game Management Information System of the Ministry of Agriculture and Forestry, Burdur province, affiliated with the VI. Regional Directorate, has been selected as the study area. Burdur is located within the borders of the Mediterranean Region, its climate is cold and rainy in winter and hot and dry in summer. The vegetation of the province generally consists of *Cedrus libani* in the south, *Pinus nigra* in the west and north, and in the south *Quercus coccifera* and *Pinus brutia*, shrubs and herbaceous species [7]. There is a total of 17 state (Ağlasun, Ağlasun Sarıova, Akçaköy, Aziziye, Bucak Çeltikçi, Cimbilli, Çavdır, Düdenköy, Dirmil, Kayadibi, Kemer, Kestel, Kozluca, Bucak Melli, Pamucak, Tefenni and Büğdüz) hunting grounds were in Burdur-Türkiye.

The data concerning the research subject (hunters' education, occupation, the hunting ground, and animal species they prefer to hunt) were selected and retrieved from the Game Management Information System. The Game Management Information System (AVBIS) is an official database, in which information about hunters is recorded and it operated by the General Directorate of Nature Conservation and National Parks of the Ministry of Agriculture and Forestry

of Türkiye. Hunters registered in this information system are obliged to enter data about their education, occupation, the preferable hunting grounds and game species they prefer to gun to the information system, respectively. Since the hunters can access the database from individual accounts with their own passwords and national ID numbers, database pictures could not be included in the article due to the principle of protection of personal data and confidentiality of official documents. The database can be accessed at the AVBIS for the hunters with national ID numbers. Only the system administrator can see the hunter's data provided to the system by entering own administrator's password. Since hunters left some fields in the system blank, we encountered data deficiencies in this fields. Although there was a separate title on the age of the hunter in the system, none of recorded information was found in it. Therefore, the age status of the hunters in Burdur province was not evaluated. Some parts of the system should be reviewed, and missing information must be entered into the system by the AVBIS administrator. Only in this way, hunter profile can be accurately determined.

Permission was obtained from the Ministry of Agriculture and Forestry, General Directorate of Nature Conservation and National Parks, by the decision under number 53741894-622.99-E.3090130, dated October 25, 2018, to access AVBIS data relating to Burdur Province. As a result of interviews with the system users and officials, it was determined that the AVBIS was established in 2013, but accumulated data was accurately and fairly processed in the system since 2015. This study evaluated the data for the 2015-2018 hunting periods. It was determined that 3185 hunters were registered in the system.

Method

The data obtained from the AVBIS system were evaluated using SPSS 22.0 software package (IBM 2013) program Chi-square independence test, which is one of the non-parametric analysis techniques, was applied to determine the age, education and occupational status of the hunters. Hunting ground and game species preferred by hunters were grouped with Anova-Duncan and their statistical significance levels were determined.

Results and Discussion

Educational Status of Hunters

Sub-titles under the title of educational status in AVBIS are unknown, primary education, secondary education, high school, associate degree, undergraduate, master and doctorate. Chi-square independence statistical method was applied to determine the distribution of hunters according to their educational status. The education level data, which

obtained from a total of 3185 enrollee hunters in the AVBIS, show that 36.4% primary school graduates made up the largest share. This is followed by high-school graduate with 15.6% and secondary school graduate with 10.9%. The lowest rate is composed of doctoral degree graduates with 0.1% ($P < 0.01$) (Table 1). The fact that the 25% unknown (there is no detail about why it is not known) title in the system has a significant percentage affects the statistical results and should be regulated in AVBIS system. Elimination of this deficiency in the system will enable to reach more precise results about hunter information.

Professional Status	Total Enrollee Hunter Number	%	P
Unknown	798	25.1	.000
Primary school leavers	1160	36.4	
Secondary school leavers	348	10.9	
High-school leavers	498	15.6	
Persons with associate's degree	99	3.1	
Persons with bachelor's degree	255	8.0	
Persons with master's degree	24	0.8	
Persons with Doctoral degree	3	0.1	
Total	3185	100	

Table 1: Educational status of the hunters.

Aegean regions hunters educational status was 40.94% primary school, 22.35% of the hunters stated that they were secondary school, 20% of them were high school graduates and 16% of them graduated from college [8]. According to Bora ME [9], decided that in his study 45% primary school, 17% of the hunters stated that they were secondary school, 26% of them were high school graduates and 12% of them graduated from college. According to the results obtained from the data of the study carried out in Bartın, 18% primary school, 17% of the hunters stated that they were secondary school, 34% of them were high school graduates and 25% of them graduated from college [10]. In Giresun hunters' educational status were 21% primary school, 48% of them were high school graduates and 29% of them graduated from college. As a result of similar studies [8-11], it was determined that educational status in the main of Turkish hunters were primary or higher education. In Europe largest portion of France, Germany, Spain, and Poland hunters comprises persons with secondary or higher education [12].

Professional Status of Hunters

The titles in the occupational status in AVBIS they have been reduced to eight main groups as unknown, retired, tradesmen, public employee, students, industry worker, private sector, self-employed and their statistical evaluations have been made. Chi-square independence test was applied to determine the distribution of hunters according to occupational groups. It has been determined that the largest share among occupational groups consists of self-employed 33.8% and public employees 23%, followed by tradesmen 17.5% and retirees 15.4%. Occupational groups had the lowest share with 1.7% private sector, 1.3% students and 0.3% industrialists ($P < 0.01$) (Table 2).

Professional Status	Total Enrollee Hunter Number	%	P
Unknown	229	7.2	.000
Retired persons	489	15.4	
Tradesmen	558	17.5	
Public sector employees	732	23	
Students	40	1.3	
Industry workers	9	0.3	
Private sector employees	53	1.7	
Self-employed persons	1075	33.8	
Total	3185	100	

Table 2: Professional status of Hunters.

When the questionnaire survey data about the occupational groups of the hunters were evaluated, it was seen that 24% of the hunters were retired, unlike the data obtained from the system. Self-employed 22%, public employees 19% and tradesman 17% followed this occupational group. Occupational groups with the lowest rate were private sector with 9%, industry worker with 7% and students with 2%. The Unknown title in the system is at a high rate and is one of the issues that should be regulated. It has been reported that the Aegean region hunters are 24% retired, 22% tradesmen, and the ratio of industrialists and civil servants is below 1% [8]. Bora [9], was reported that the hunters were mostly self-employed 28%, secondly public employee and tradesmen 15% at least 1% merchants. Keleş [10], conducted questionnaire survey in the province of Bartın, and in the light of the data found that 24% of the hunters were students and 18% were public employee and workers. Tradesmen with 4% are the hunter group who are least interested in hunting. It was reported that 26% of

the hunters were workers, 17% were tradesmen, and the smallest 6% were students in Giresun province hunters [11]. It was determined that majority of hunters are self-employed, public employee, tradesmen, and retirees in Türkiye [8-12]. In Poland hunters' professional status were unemployed <0%, student 10%, active 68% and retired 22%. Hunters profile of France 26.1% farmers is the highest and 5.2% unemployed and employees is the lowest [13,14].

Hunting Ground Preferences of the Hunters

The Anova and Duncan test was applied to determine the hunting grounds and the hunted animal species preferred by the hunters and their statistical significance levels were determined.

It was observed that the highest catch in the hunting grounds of Burdur province was 45.4% in Kemer ($P < 0.05$) (Table 3). The lowest catch was found in Pamucak with 9.76% (Table 3).

Hunting Ground	Mean	Std. Deviation	Std. Error	P
Ağlasun	21.84abc	33.38	5.56	0.009
Ağlasun Sariova	27.72abc	34.52	6.3	
Akçaköy	38.98ab	48.83	7.81	
Aziziye	37.29ab	40.4	7.37	
Bucak Çeltikci	19.35bc	28.14	5.13	
Cimbilli	42.72ab	46.22	8.43	
Çavdır	39.61ab	48.03	7.69	
Düdenköy	37.10ab	45.31	8.56	
Dirmil	26.70abc	37.26	6.21	
Kayadibi	44.26a	49.38	8.34	
Kemer	45.40a	50.06	8.46	
Kestel	32.07abc	41.49	6.64	
Kozluca	30.82abc	41.66	6.67	
Tefenni	40.02ab	48.66	7.79	
Bügdüz	24.69abc	35.19	5.86	
Total	31.92	41.73	1.7	

Table 3: Hunting ground preferences of the hunters.

Note: Differences between means denoted by separate lower case are significant at level $P < 0.05$; $df_1 = 16$; $df_2 = 580$, the differences between the means denoted by the same lower case are insignificant. It was determined that 31.92 percent of the hunters registered in the system in 2015-2018 were active hunting and that the data before 2015 was missing, and calculations were made accordingly.

Hunters were asked about the hunting ground they preferred most for hunting activities by means of a questionnaire. Hunter answers were 22% Bucak Çeltikçi, 20% Kayadibi, 17% Pamucak, 14% Çavdır and 12% Ağlasun Sariova. The lowest rate with 2% was found in Bucak Melli and Pamucak hunting grounds. When compared with the data taken from the system, it was seen that the results were parallel to each other. In Türkiye [8-12] as well as in Europe [12], hunting is an important part of socio-economic activities, particularly in rural areas. Among the most important factors affecting hunters' choice of hunting ground is the easily accessible distance of the hunting ground and the abundance of the preferred game species in this hunting ground. At the same time, the fact that the hunting ground is close to the settlements of the hunters is also economically important and increases the preferability of the hunting ground [10].

Preference for Game Species among Hunters

When the hunter preference for game species were examined, it was determined that Burdur Province were found as 96.45% *C. livia*, *A. chukar* 78.17% and *L. europaeus* 59.56% ($P < 0.01$) the species with the highest share of preference comprising (Table 4). It has been revealed that the hunting percentage of *S. rusticola*, *F. atra* and *G. gallinago* species is quite low compared to other animal species (Table 4).

Game Animal	Mean	Std. Deviation	Std. Error	P
<i>Coturnix coturnix</i> L.	.60e	.90	.12	0.00
<i>Streptopelia turtur</i> L.	.29 e	.38	.05	
<i>Turdus merula</i> L.	60.04c	35.41	4.95	
<i>Columba livia</i> G.	96.45a	18.99	2.65	
<i>Scolopax rusticola</i> L.	.15e	.15	.02	
<i>Columba palumbus</i> L.	.36e	.36	.05	
<i>Fulica atra</i> L.	.0 e	.03	.00	
<i>Mareca strepera</i> L.	.32e	.25	.04	
<i>Lepus europaeus</i> L.	59.56c	32.6	4.56	
<i>Sus scrofa</i> L.	24.38d	40.73	5.7	
<i>Gallinago gallinago</i> L.	.0e	.00	.00	
<i>Alectoris chukar</i> L.	78.17b	28.82	4.03	
<i>Turdus philomelos</i> B.	53.5c	34.8	4.88	
Total	31.92	41.73	1.70	

Table 4: Preference for game species among hunters.

Differences between means denoted by the separate lowercase are significant at level $P < 0.01$; $df_1 = 12$; $df_2 = 584$, the differences between the means denoted by the same lowercase are insignificant.

The hunters were asked the 5 animal species they hunted the most, and it was seen that almost all the hunters answered *C. liva* 95%, *A. chukar* 54% and *L. europaeus* 40% similar to the data obtained from the system. It was observed that hunters gave a small percentage of *S. scrofa* 9% and *T. philomelos* 7% responses. *F. atra*, *S. turtur*, *G. gallinago* and *C. palumbus* was not marked at all. In the study carried out in the Aegean Region, Ay, et al. [8], reported that the most preferred hunting animals by hunters were *C. coturnix* 77%, *A. chukar* 67% and *L. europaeus* 49%. Ay, et al. [8], reported that *S. turtur*, *S. rusticola* and *M. strepera* preference rates were found to be very close to each other but *C. livia* and *A. anser* it was quite low compared to other species. While Burdur Province and Aegean Region hunters prefer to hunt *A. chukar* and *L. europaeus* at a similar rate, it is seen that the hunting preferences of *C. livia*, *S. turtur* and *M. strepera* are completely different. Similarly, it was observed that hunters hunted *L. europaeus* at high rates in Tekirdağ and Burdur. It is seen that the hunters of Burdur Province do not prefer to hunt *S. turtur*, but the hunters of Tekirdağ Province prefer to hunt *S. turtur* 90%.

Although the hunting animal preferences of hunters vary regionally, mostly the game animals found in that region are preferred in the first place. Religious belief, traditions, customs and cultural transfers have a tremendous effect on the choice of game animals. In and around Urfa city in Türkiye, *C. livia* are not hunted because they are considered sacred. Similarly, *B. tragocamelus* in India is believed to have descended from a sacred ancestor and is not hunted. Muslim countries the *S. scrofa* meat is not eaten, wild boar hunt only because of trophy and the damage of the animal to the crops.

It has been reported that the most preferred hunting animals by the Aegean region hunters are *C. coturnix* 72.62% and *A. chukar* 67.29%, while the rate of *A. graeca* and *A. anser* hunters is quite low compared to other species [8]. It was determined that Thrace hunters mostly preferred to hunt geese, ducks, quails, rabbits, at least 2% partridges [12]. In the study conducted for the province of Bartın, it was reported that birds were preferred with a rate of 38% more than mammalians [10]. It was observed that Giresun hunters preferred mammals in the first place with 58%, and birds in the second place with a rate of 31% [11]. It has been seen that, hunters in Türkiye mostly prefer to hunt quail from birds and rabbits from mammals. In France, Spain, Finland, UK and Portugal the most important species are the quail 33.6 % and partridge 32.8% [14].

Finally, to mention the number of female hunters registered in the game management system in terms of both Türkiye and Europe. Hunting in the world is a basically masculine activity, recent years, it has been observed that women's interest in hunting has increased in some European countries. European countries examples are found in Poland 3%, Finland and Austria, where approximately 10% of hunters are women [12,14,15]. The percentage of female hunters is in other European countries France 1.7%, Portugal 1%, Spain 1%, Finland 4.1%, and UK 10.5% [14]. In Türkiye no woman hunter was found in neither other academic studies and nor in our study data, conducted in Türkiye. There are no female hunters registered in the AVBIS system either.

Conclusion

According to the data presented in this study, Türkiye and European hunter socio-demographic profile appears to be very similar. Average of Turkish and European hunters is middle-aged man. In terms of education, there are many primary school graduates in Türkiye and secondary school in Europe. Similarly, the average of Turkish and European hunters are self-employed, public employee and retirees. In both Türkiye and European, most of the hunters prefer hunting grounds close to where they live. As for the game animal preference, it has been seen that Finnish hunter hunt mammals more than birds. Other European countries hunters prefer quail and partridge like Turkish hunters. The most important difference between Turkish and European hunters was observed in the gender gap of the hunters. In academic studies performed in European countries, viz. Poland, Finland, and Austria, it was demonstrated that 3% of hunters in the former country and ca. 10% in the latter both ones are women [12,14]. In other European countries, the percentage of women hunters varies significantly from 1% in Portugal and Spain, 1.7% in France, 4.1% in Finland, and 10.5% in the UK [14,16]. No data on Turkish women hunters were found either in academic studies performed in Europe or in the studies conducted in Türkiye. There were no female hunters registered in the AVBIS system too. Like the hunters in Europe, the main reason why hunters in Türkiye are also interested in hunting is family traditions.

In the past, hunters in Türkiye had a negative impact on wildlife, such as hunting and consumption. Recent progress has been observed in terms of protection, development, and utilization of wildlife. This positive development has been by the agency of the trainings given by nature conservation and national parks, and the informative activities carried out in hunter associations. In Europe positive impact of hunters and hunter community include the promotion of local economy, welfare, culture, heritage, tourism, and voluntary work in activities related to both habitat and wildlife management.

To hunt in Türkiye, it is necessary to register in the game management system. Unfortunately, poachers carry out their hunting activities without being registered in the system. Due to the lack of data on poachers, the balance of protection and use is interrupted. Penal procedures are insufficient in terms of stopping poachers. It is important to carry out information activities to prevent poaching. Looking at the data from both Europe and Türkiye, it is seen that the age of the hunter will gradually get older. Although the new generation's perspective on hunting is mostly positive, it is for hobby purposes. It is thought that hunting will lead to more protection and development in the coming years, as in Europe, in terms of the new generation being knowledgeable in terms of wildlife and being set a good example for older hunters in hunter associations.

Determining a country's hunter profile and preferences will guide both wildlife ecology and management and how economic arrangements will be made. If the needs and preferences are known, the balance of protection and benefit will be established, and both ecological and economic gain will be achieved. To protect our biological diversity and natural resources we must collect accurate information. Thus, we can contribute to the ecology and economy by making wise use of them to plan habitat, wildlife, and hunting ground management. To protect our biological diversity and natural resources we must collect accurate information. For Türkiye if the AVBIS system will be audited and information gaps and deficiencies will be filled, we can reach the right results about game species, hunting ground characteristic, profile of hunters, hunting ground preferences of the hunters and hunters' expenses for hunting. Thus, we can contribute to the ecology and economy by making wise use of these data to plan habitat, wildlife, and hunting ground management. In this means, management can be substantiated and sustainable. When all data is correctly entered into the AVBIS system, if there is a gap in the system data after the hunting season, this can be easily determined. Necessary precautionary measures can be taken by determining which hunting area and which game animals were hunted for the against poaching that caused a gap in the system.

Conflicts of Interest

The authors declare no conflict of interest. The study was produced from a master's thesis and there are no founding or sponsor.

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