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Differences between urban and rural population with respect to demand on forestry aspects, in a case study of the Turkish province of Balıkesir

Diferenças entre a população urbana e rural em matéria das suas exigências de silvicultura, estudo de caso da província turca de Balıkesir

Seçil Yurdakul Erol¹

ABSTRACT

Inhabitants of urban and rural areas are important participants in the process of developing and implementing forest policy. Thus, it is essential to determine their demands and attitudes towards forestry issues. In this context, the demands and evaluation of forest functions are investigated in a case study of the Turkish province of Balıkesir. The findings of the case study show that differences in terms of demands among inhabitants of rural and urban areas are related to forest fires fighting, crimes fighting, forestry-tourism integration, forestation and regeneration activities, and the enlargement of forest areas. The main differences among their assessments of forest functions are related to fire wood production, and the provision of flood and erosion control, nature protection, and recreational opportunities. The findings are important for conflict management and for local decision making. By using the findings of similar studies, the provincial organizations should harmonize their priorities with the expectations of relevant interest groups.

Key words: forestry, people demands, forest functions, cluster analysis, comparing means.

RESUMO

A política de silvicultura da população urbana e rural é uma participante fundamental no processo de formação e execução das florestas. Portanto, é importante determinar as exigências e as aproximações em matéria da silvicultura. A determinação das exigências da população urbana e rural no âmbito desse processo e a interpretação destinada aos assuntos das funções da floresta foram pesquisadas tendo como base a província turca de Balıkesir. As constatações resultantes do estudo na região demonstraram que as diferenças entre as exigências da população urbana e rural em matéria da silvicultura são a luta contra os incêndios florestais, a luta contra os delitos florestais, a integração de silvicultura-turismo, as atividades de

reflorestamento e rejuvenescimento da floresta e a ampliação dos campos florestais. Por outro lado, as diferenças fundamentais entre as constatações feitas em matéria das funções da floresta são a produção de lenha, a prevenção de erosão e inundação, a proteção natural, o projeto de recreação. Os resultados obtidos são importantes para a gestão de estudo e para a tomada de decisões no âmbito local. As instituições locais devem adaptar as suas prioridades e as exigências dos grupos interessados tirando proveito das constatações obtidas em estudos semelhantes.

Palavras-chave: silvicultura, exigências da população, funções da floresta, análise de agrupamento, comparação das médias aritméticas.

INTRODUCTION

The most successful natural resource management plans are community based: they involve those who work, live, and recreate on the land itself (DEBRUYCKERE, 2006). These kinds of projects are effective because traditional knowledge of available resources and existing social structures are used to develop more efficient strategies for managing resources (VIRA & JEFFERY, 2001). Because of this essential perception, participatory methods of developing policy are increasingly common in many areas, including environmental and forest policy (ELSASSER, 2007).

In various international environmental and forest policy agreements, is offered to citizens increased opportunities to participate in making decisions regarding environmental issues, natural resources, and forest

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management. Based on the effects of these international processes, public participation can be defined as one of the basic principles and integral elements of recent national forest programs (GLÜCK & HUMPHREYS, 2002; PÜLZL & RAMETSTEINER, 2002). In this regard, the equitable participation of stakeholders in decision making and in the resolution of conflicts among interest groups is becoming increasingly important.

In the process of environmental decision making, advocacy of the rights and interests of the general public is often much weaker than advocacy on behalf of other groups (JABBOUR & BALSILLIE, 2003). SALAM & NOGUCHI (2006) concluded that indigenous inhabitants of forests, who were of great importance to the success of forestry projects, had little influence on decision-making. RAO et al. (2003) also expressed the importance of investigation into local peoples' aptitude and perceptions in decision making process for natural resources management. Moreover, regular relation between rural people and forestry is seen as the key factor for maintaining systematic and sustainable management of forests (EKİZOĞLU & YILDIRIM, 2004). In addition, society is increasingly urbanized. Consequently, it is increasingly important to improve the understanding of inhabitants of urban areas with regard to forestry practices while simultaneously enhancing the understanding of foresters with regard to the urban public's expectations for forests (KONIJNENDIJK, 2000).

Participation of rural and urban people in decision making and implementation processes is also emphasized in recent policy tools of Turkish Forestry. In spite of contrary statements, the participation of rural inhabitants in the development of forestry policy has not been implemented sufficiently. This has caused problems with the planning, decision making, and implementation processes of forest resource management (ÖZTÜRK et al., 2003). The main issues about participation in Turkish forestry can be listed as; i) the public's knowledge about forestry issues is low; various groups of society have different expectations from the forests that may contradict with each other, ii) no incentive systems have been established to encourage participation in the decision-making and implementation process, iii) forest policies, plans, implementations are not known by the public, hence the decision-making process is not transparent iv) neither current legal arrangements nor the organizational structure of the forestry service currently support public participation (AKESSEN et al., 2003; ERDÖNMEZ, 2005; ATMIŞ et al., 2007). On the other hand conflicts among interest groups are also common problems in Turkish forestry resource management (BARLI et al., 2006).

Generally results from preference studies can be useful component in planning multiple-use forest management (GUNDERSEN & FRIVOLD, 2008). To light this approach, the primary aim of this paper is to characterize the demands of the inhabitants of rural and urbanized areas and to assess the differences between them. This research was conducted in the Balıkesir province of Turkey, which has multi-functional forest resources and urban and rural populations that are approximately balanced.

MATERIAL AND METHODS

The province of Balıkesir has an especially large potential regarding nature protection, nature-based tourism, outdoor recreation, and natural landscape. On the other hand, the Regional Forest Directorate of Balıkesir, which operates within the borders of the city of Balıkesir, is one of the most important provincial organizations that deal with the production of wood and non-wood forest products in Turkey. Because of its multi-functional forestry structure and its balanced population, Balıkesir Province is chosen as the sample case. On the other hand, demographic properties of the province make it a good sample in context of forestry and community relation. The population of the province of Balıkesir is 1,118,313 according to the 2007 census. The urban population is 649,423 and the rural population is 468,890 (TUIK, 2008). Of the total population, 10% lives in the forest and 19% in villages near the forest.

In the first stage, the districts of Balıkesir were allocated to different but homogeneous groups using k-means clustering. Each district was classified in terms of forest area (productive and unproductive forest area), non-wooded area, urban population, rural population (forest villages' population, population of the remaining villages), recreational area, and protected area. Information regarding the distribution of the production of wood and non-wood forest products was not available for districts. Therefore, these data were not used. The data that were used in the cluster analysis, like clusters and distances are shown in table 1. Following two iterations of k-means clustering, three clusters were identified. In light of these results, one representative district was chosen from each of the three groups. These districts were central District, Edremit and Dursunbey (Figure 1).

Then, questionnaires were used as the main method of collecting data. To evaluate demand, 23 statements were used. Eleven statements were used to evaluate forest function. Subjects responded to each statement using a five-point, interval scale in which a value of 5 corresponded to "very important" and a value of 1 corresponded to "unimportant". Members of

Table 1 - Data related Balıkesir's districts and cluster membership.

DISTRICTS OF BALIKESİR	Productive Forest Area (ha.) *	Unproductive Forest Area (ha.) *	Unwooded Area (ha.) *	Urban Population**	Forest Village Population**	Rural Population** (Except Forest Villages)	Recreational Area (ha.)***	Protected Area (ha.)***	CLUSTER	DISTANCE
Central Dist.	6441	6453	111250	215436	47767	23786	25	-	1	0
Ayvalık	21711	28075	10406	31986	3419	23333	29	17950	2	21800
Balya	5828	2531	45414	1916	16094	859	-	-	3	14586
Bandırma	29320	28740	51541	97419	6140	17194	-	23667	2	75335
Bigadiç	6294	3474	42640	14550	33379	2028	-	-	3	13873
Burhaniye	73840	52166	51732	31227	5490	6482	-	-	2	28777
Dursunbey	34363	5562	69194	14654	32757	0	-	28189	3	62988
Edremit	13379	4427	30875	39202	11317	33793	14	21721	2	37222
Erdek	776	1449	8194	18626	7276	6118	-	20481	2	24015
Gömeç	23944	24760	20075	4122	3261	3600	-	-	2	30159
Gönen	14030	11355	66496	36263	28382	7159	-	2700	3	30918
Havran	14142	25240	30515	10122	12216	4444	26	-	2	23976
İvrindi	19064	31349	35718	5772	23591	8528	45	-	3	20348
Kepsut	8830	9751	38987	5545	19463	3014	-	-	3	15936
Manyas	188	6446	40019	5455	10805	8888	-	64	2	29401
Marmara A.	9910	15202	5066	2215	1703	5528	-	-	2	37024
Savaştepe	39304	29928	17888	10288	9457	3610	-	-	2	25165
Sındırgı	13526	12553	74068	10492	28386	8906	-	-	3	28907
Susurluk	6441	6453	35021	22305	13804	6998	-	-	2	18300

(*) Documents of Regional Forest Directorate of Balıkesir-2007, (**)Turkish Statistics Institution-2008, (***)Documents of Balıkesir Provincial Environment and Forest Directorate -2007.

provincial assemblies and town councils represented the urban population. Village headmen represented the rural population (villagers). A total of 102 and 70 inhabitants of rural and urban areas were surveyed.

To evaluate the results of the survey, SPSS (Statistical Package for the Social Sciences) program was used. In the first stage of the evaluation, reliability analysis was conducted to assess the reliability of (a) the interval scale and (b) the estimates of correlation coefficients. The estimates of Cronbach's alpha (α) for the groups of questions were $\alpha=0.78$ and $\alpha=0.69$ respectively. Descriptive statistics that were determined for each variable were the mean and standard deviation. Differences between rural and urban populations were analyzed by Student's t-test.

RESULTS AND DISCUSSION

Based on descriptive statistics (Table 2), variation in the expectations of forest villagers was related to participation, demand determination and evaluation system, role of forestry sector in regional development, and employment opportunities in forestry sector. Forest fires fighting, forest maintenance, forestation and regeneration activities, forestry-tourism

integration, enlargement of forest areas, and forest crime fighting were important subjects for the urban inhabitants. In particular, the last part of the rating forest villagers consisted of forest crimes fighting, forestry-tourism integration, forestation and regeneration activities, forest fire fighting, and enlargement of forest areas, respectively. Moreover, the statement regarding the increase of wood production was important to forest villagers but not to inhabitants of urban areas.

The results of t-tests (Table 2) showed that the responses of inhabitants of urban and rural areas differed most [$t(169) = -12,84$] for the statement regarding forest crimes fighting. One additional remarkable result was related to the statement that dealt with "integrating tourism and forestry activities in the region" [$t(170) = -6,40$]. The statement about increase in the production of wood and non-wood forest products was very important to the inhabitants of rural areas but only moderately important to inhabitants of urban areas. Responses of inhabitants of urban and rural areas differed substantially with respect to statements regarding fighting forest fires, forestation and regeneration activities, enlargement forest area, forest maintenance, and biodiversity and nature conservation activities.

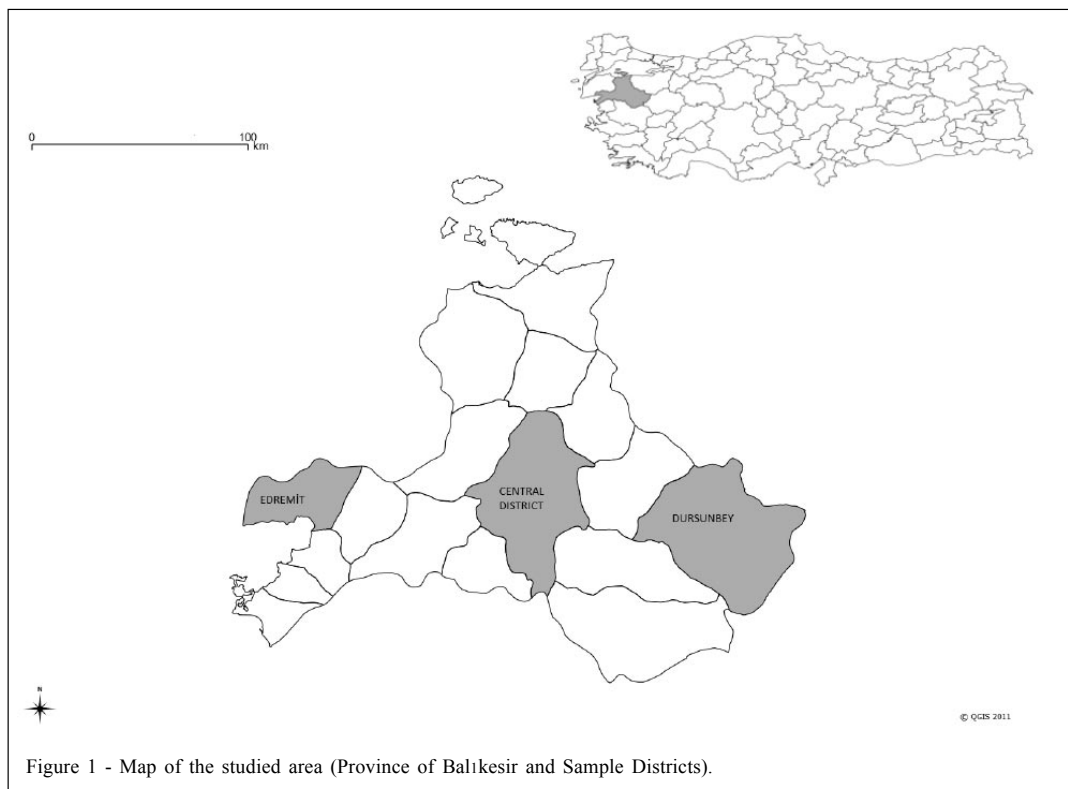


Figure 1 - Map of the studied area (Province of Balıkesir and Sample Districts).

Based on the descriptive statistics, statements regarding water production, climate regulation and community health protection functions assigned a great importance by each group (Table 3). On the other hand the biggest difference between the assessments of rural and urban populations was related to the function of nature protection [$t(170)=-6,03$]. In addition, the function related to firewood was important for rural inhabitants but only moderately important to urban inhabitants [$t(170)=2,68$]. Flood and erosion control function of the forests were more important for the urban population than for the rural population [$t(170)=-3,82$].

Statements regarding opportunities for recreation were more important for urban inhabitants than for rural inhabitants [$t(169)=-2,23$]. The statement regarding “service to science and education” functions of forests also was considered more important to urban than rural people [$t(170)=-2,91$].

There are also some other researches that express the different priorities of urban and rural people. RACEVSKIS & LUPI’s (2006) research results support

the idea that rural community members are very concerned about the continued provision of both market and nonmarket forest outputs. While urban community members have milder concerns for sustaining multiple forest outputs but expressed strong concerns for maintaining recreational opportunities. ZACHRISSON (2008) found that people living in more rural areas had a slightly different view from urban dwellers about management of protected areas. The mail survey results of CLEMENT & CHENG (2011) showed that the importance of economic values is greater on more rural forests than on the more urban one. Also they found that people living in more rural municipalities have a more favorable attitude towards human use and interaction with national forests than respondents, who tend to be more urban. ERDÖNMEZ & ÖZDEN’s (2009) research results showed that the rural development project that focuses on meeting the needs of rural population and creating job opportunities influences the migration of people from villages to the cities. On the other hand the most average citizen’s interests are focused on conserving forests conserving and on using those places to recreation (KROTT, 2005).

Table 2 - Descriptive statistics and t-test results on demands of rural and urban inhabitants.

STATEMENT	Participant type	-----Descriptive Statistics-----			-----t-test Results-----		
		N	\bar{X}	$\sigma (s)$	t	df	p
Increase participation implements in forestry activities	Rural	102	4,65	0,77	2,288	170	0,02
	Urban	70	4,33	1,04			
Development of public education opportunities related to forestry	Rural	102	3,83	1,45	-2,840	170	0,05
	Urban	70	4,40	0,98			
Improve public demand's determination and evaluation system	Rural	97	4,56	0,85	2,265	165	0,02
	Urban	70	4,24	0,92			
Increase the public's knowledge of forestry activities	Rural	102	4,11	1,08	-0,456	147	0,64
	Urban	70	4,19	1,10			
Enlarge forest areas	Rural	97	3,54	1,75	-3,867	165	0,0
	Urban	70	4,43	0,95			
Improve forest fire fighting	Rural	101	3,54	1,47	-5,289	168	0,0
	Urban	69	4,58	0,83			
Increase wood production	Rural	99	3,89	1,42	6,015	167	0,0
	Urban	70	2,64	1,18			
Increase production of non-wood forest products	Rural	100	4,13	1,39	3,365	168	0,0
	Urban	70	3,34	1,37			
Improve forest cadastre and solve ownership problems	Rural	102	3,79	1,68	-1,085	170	0,27
	Urban	70	4,06	1,36			
Increase enforcement of forestry-related crime	Rural	102	1,86	1,47	-12,842	169	0,0
	Urban	69	4,43	0,93			
Improve forest maintenance activities	Rural	100	3,96	1,16	-3,247	168	0,0
	Urban	70	4,49	0,83			
Accelerate forestation and regeneration activities	Rural	100	3,44	1,72	-4,648	168	0,0
	Urban	70	4,49	0,89			
Develop in-forest transportation and construction	Rural	102	3,99	1,46	-0,123	168	0,90
	Urban	70	4,01	1,11			
Enable further employment opportunities in forestry activities	Rural	102	4,39	1,15	2,517	163	0,01
	Urban	70	3,99	0,95			
Meet the expectations of forest villagers regarding forest products	Rural	102	4,03	1,59	-0,670	164	0,50
	Urban	70	4,16	0,89			
Improve relations between agriculture-breeding and forestry sectors in the region	Rural	100	3,89	1,24	-2,708	168	0,01
	Urban	70	4,36	0,86			
Integrate tourism and forestry activities in the region	Rural	102	3,18	1,53	-6,404	170	0,0
	Urban	70	4,46	0,79			
Develop the current activates related to water and soil conservation	Rural	102	3,98	1,36	-2,102	170	0,03
	Urban	70	4,37	0,90			
Improve bio-diversity and nature conservation activities	Rural	102	3,83	1,21	-3,035	166	0,00
	Urban	70	4,34	0,97			
Increase the scientific and professional education activities in the region	Rural	102	4,27	1,06	0,713	170	0,47
	Urban	70	4,16	1,05			
Encourage cooperation between the forestry sector and other related sectors	Rural	102	4,17	1,14	-0,031	168	0,97
	Urban	70	4,17	0,88			
Increase recreational opportunities in forests	Rural	102	3,62	1,56	-0,877	170	0,38
	Urban	70	3,81	1,25			
Improve the role of forestry in regional development	Rural	102	4,50	1,16	1,152	166	0,25
	Urban	70	4,31	0,94			

N: total sample size, \bar{X} :arithmetic mean, $\sigma (s)$: standard deviation, t: observed t value, df: degree of freedom, p: significance level

Table 3 - Forest function evaluation of rural and urban inhabitants.

Function	Participant Type	Descriptive Statistics			t-test Results		
		N	\bar{X}	$\sigma (s)$	t	df	p
Timber production	Rural	102	3,68	1,27	-1,19	170	0,23
	Urban	70	3,89	0,86			
Fire-wood production	Rural	102	3,81	1,22	2,68	170	0,0
	Urban	70	3,36	0,86			
Production of non-wood forest products	Rural	102	3,76	1,41	0,78	170	0,43
	Urban	70	3,61	0,90			
Water production and water quality protection	Rural	102	4,23	1,05	-0,89	170	0,37
	Urban	70	4,76	0,76			
Flood and erosion control	Rural	102	3,93	1,12	-3,82	170	0,0
	Urban	70	4,53	0,79			
Climate regulation	Rural	102	4,47	0,93	-0,56	170	0,57
	Urban	70	4,54	0,63			
Community health protection	Rural	102	4,52	0,71	-1,35	170	0,17
	Urban	70	4,66	0,56			
Nature protection –biodiversity, wilderness, gene resources	Rural	102	3,72	1,1	-6,03	170	0,0
	Urban	70	4,60	0,62			
Availability of recreational opportunities	Rural	102	3,39	1,59	-2,23	169	0,02
	Urban	69	3,87	0,92			
Contributions to rural development	Rural	102	3,85	1,03	-0,86	170	0,39
	Urban	70	3,99	0,92			
Science and education services	Rural	102	3,55	1,11	-2,91	170	0,0
	Urban	70	4,04	0,90			

N: total sample size, \bar{X} : arithmetic mean, $\sigma (s)$: standard deviation, t: observed t value, df: degree of freedom, P: significance level.

In conclusion, determining the expectations and priorities of the public could become a more important part of the decision making process for Turkey. Currently, mechanisms to solicit the active participation of the public are underdeveloped. Certainly, other interest groups, such as forest products enterprises, non-governmental organizations, and other related public institutions, should participate in the process of forestry administration. However, the general public has a special position among all stakeholders because of the size of the community and because of the relationship of the general public with the forests.

In reality, forests are useful to society in many ways, any one of which may not be completely taken into consideration by any single stakeholder. Some of the more complex issues may require a specific knowledge, which should not be linked to any kind of social interest (KOUPLEVATSKAYA-YUNUSOVA & BUTTOUD, 2006). Thus, the goal should be to structure a decision such that the knowledge of the technical experts can inform the citizen participants, while the knowledge of the citizen participants can inform the technical professionals (STEELMAN, 2001). Thus, various sections of society can play complementary roles in forest management (BUCHY & HOVERMAN, 2000).

The findings of this case showed that probable conflicts are related to fighting forest fires and crime, forestry-tourism integration, forestation and regeneration activities, and the enlargement of forest areas. The evaluation of forest functions probably differ between both populations. To light these findings, it is clear that information sharing regarding forest activities and the priorities of forestry organization and public relations activities is important.

CONCLUSION

Expectations clearly differed between inhabitants of urban and rural areas. Thus, the expectations of interest groups and conflicts could be determined separately for each of the forestry units. The collected data then should be included in local decision making processes.

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