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Attitude and Perceptions of Local Residents toward the Protected Area of Abijata-Shalla Lakes National Park (ASLNP), Ethiopia

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Abstract

Abijata-Shalla Lake National Park has immense natural resources including wetland, aquatic and terrestrial birds. Land settlements and human, livestock population increases is a major problem in the conservation area. Its biodiversity has undergone dramatic environmental changes. This study addresses the need to explore people attitudes toward protected areas in a way that allows them to describe the values they hold toward the areas. Field surveys, questionnaires and direct observation were used in data collection. A total of 360 households in the four selected villages were carried out from January 2011 to October 2013. Most (96%) respondents depended on land to generate income making the competition with wildlife more direct and intense. All members of the villages consider the Park as their communal pasture area. The conflicts are a consequence of the problem of resource utilization in conservation area. 85% of the respondents were unhappy on the existence of the Park. Educated and young people with access to information and awareness mostly supported the Park. All respondents from all villages without any significant variation agree wildlife of the area is depleted. Increasing anthropogenic pressure, due to continuously expanding human settlements and increasing demands for farming and grazing land, is the main reason why relatively large wildlife areas have been subjected to over-exploitation, degradation and destruction. Competition for land and resources has led to intense human-wildlife conflicts in the area.

Keywords: Attitude; Conservation; Park; Resources; Respondents; Villages

Introduction

Protected areas are interpreted differently by different groups. For conservationists, they are an effective measure for protecting biodiversity; and for the surrounding local communities, protected areas can signify restricted access to livelihood resources, forced relocation, or opportunities for income generation through tourism revenues [1]. Although protected areas conserve many of the world's habitats and species, human encroachment, especially in the tropics, is severely degrading and destroying many of these areas [2]. Human encroachment into wildlife areas, which has increased almost exponentially over the past few decades, has usually resulted in the elimination of the larger species, particularly the large mammals [3]. Destruction of wildlife habitats has remained the leading threat to biodiversity. This destruction, taking different forms, for example degradation, fragmentation or outright loss, is a function of the growing human activities prompted mainly by such factors as poverty, demographic factors, land tenure systems, inadequate conservation status, development policies and economic incentives [4]. Human-wildlife conflict is more intense in developing countries where livestock holdings and agriculture are important parts of the rural livelihoods and income [3]. In these regions, competition between local communities and wild animals, for the use of natural resources, is particularly intense and direct [5]. Today, more and more conservationists believe that conservation efforts not supported by the local people living in the surrounding lands are bound to fail. Thus, in addition to enforcements of conservation policy by law, a strategy that will stimulate public support for conservation and increase opportunities for the community to share the benefits must be developed [6]. Understanding human attitudes and the potential for wildlife conflicts in the context of protected area management is critically important in designing long-term conservation strategies [7]. ASLNP have immense natural resources including wetland, aquatic and terrestrial birds. A conspicuous feature of lakes in Abijata-Shalla Lakes National Park is the presence of enormous number of flamingos grazing on thick suspensions of phytoplankton. Destruction of habitat, especially in the past years has been the prime cause of reduction of the range and number of flamingos. Competition between local communities and wildlife has been reported in various conservation area of Ethiopia. The nature and magnitude of the problem varies from area to area depending on human population growth rate and scarcity of critical natural resources especially grazing and cultivable land. Human population growths, agricultural expansion, settlement and deforestation had profound cumulative impact in ASLNP. This study carried out to identify the attitude and causes of human-wildlife conflict in the area.

Material and Methods

The study area

Abijata-Shalla Lakes National Park was established in 1970 with the aim of conserving the biodiversity of the spectacular number of aquatic birds [8]. The site lies between 70 15'-7^0 45' N and 38^0 30'-38^0 45'E; at about 207 km south to Addis Ababa. ASLNP comprises two types of ecosystems namely the water and land together covering a total area of 887 km^2 of which 405 km^2 is land area while 482 km^2 is water body [9] (Figure 1). A total of 453 bird's species have been recorded in the Park and 6 are endemic to Ethiopia [10]. Flamingos are the most prominent and important consumer in the lakes. The climate of the area is semi-arid with two distinct rainy seasons, short rains in March to May and

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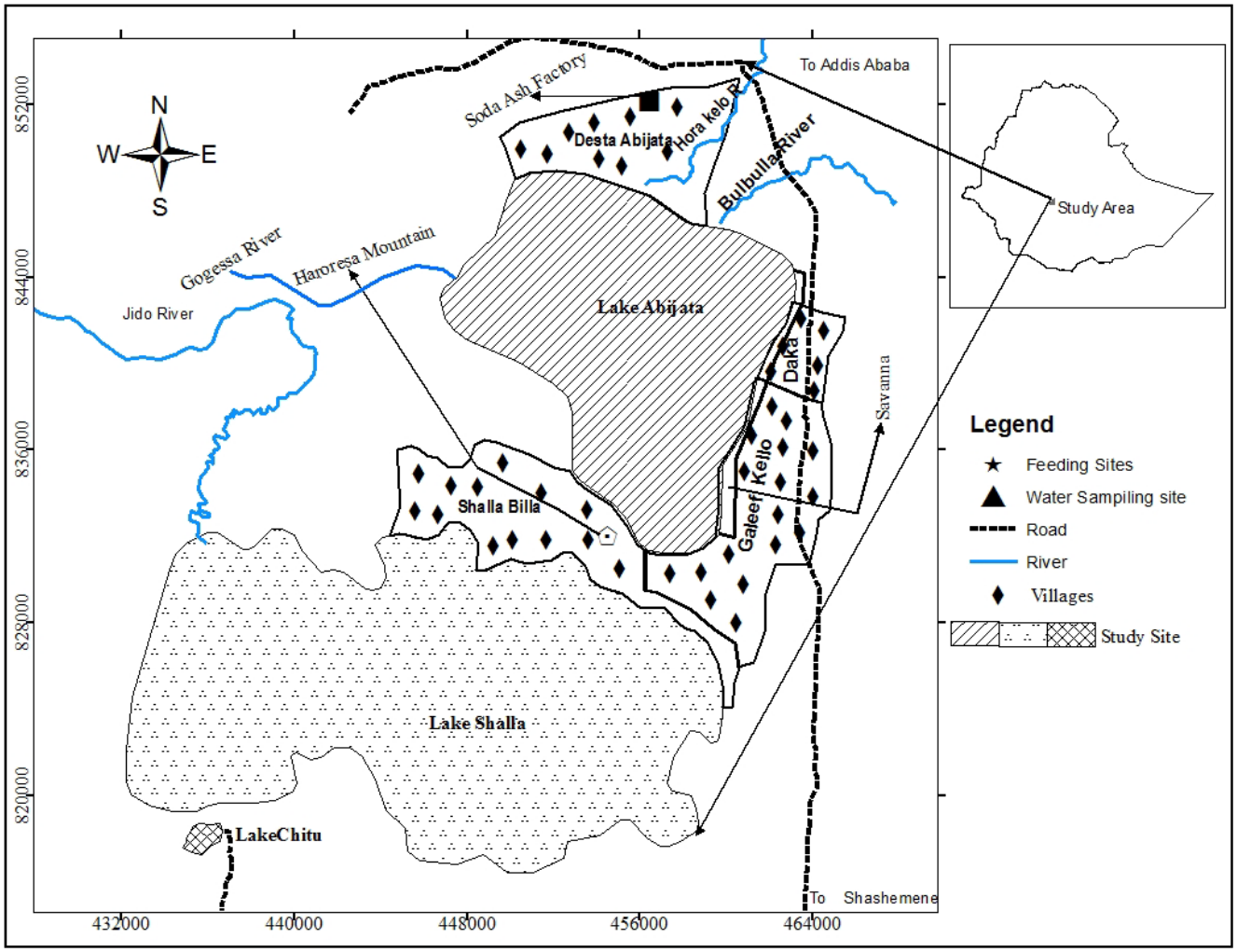

Figure 1: Map of the study area with study sites.

long rain during June to September [11]. The vegetation characteristic of the area is categorized as tropical savannah dominated with *Acacia* species and bushland [12].

A questionnaire survey was carried out in four selected villages that resided either in the Park or on the periphery of the Park. These villages were Galeef Qello, Daka, Shalla Billa and Desta Abijata. Each village differed from one another in its geographical location and household size. These villages were selected randomly based on dependence of local people mainly on activities inside the Park and encroachment within Park areas. A total of 360 households from the selected villages were involved in the study. This comprises 15% of the total household of the villages. Simple random sampling technique was used for household selection from where respondents were recruited. Preliminary study survey involving 40 respondents was used to test the clarity and sequence of the questions, which is not included in the main sample group. This provided agreement on definitions and interpretation of questions. Any ambiguities and misinterpretations were clarified. Respondents were asked questions about household demographics, education, employment, land holdings, agricultural production and livestock ownership, utilization and importance of natural resource of the Park, attitude toward conservation, knowledge and awareness on the main purpose of conservation area, trend in wildlife population, their perceptions of Park priorities and desired benefits were explored.

To analyze the data Stata version 12 software was used. Each question was coded to run the software. Chi-Square test were performed to find out statistically significant difference among various variables

Result

Demographic characteristics of respondents were similar across the four villages. The age across the four villages ranged from 20 to 75. All respondents dwelled inside the Park and all households of the two selected Kebeles (Desta Abijata and Shalla Billa) resided inside the Park. The majority (96.11%) of respondents were farmers, although respondents included students, laborers, office workers and business men. Mean duration of respondents in the Park was 33±4 years (range 5 to 60 years).

Mixed farming was the main means of livelihood and most respondents (82.5%) had access to land in the Park. About (43.09%) of the respondents possessed less than a hectare of land. There was a significant difference (x^2= 73.59, df=9, P< 0.05) in the size of land

holding between the study sites (Table 1). Many of the respondents from Shalla Billa (58.62%) held more than two hectares of land. In contrast, many respondents in Desta Abijata (50%) had less than a hectare of land.

Respondents formerly they subsisted on herding. However, combination of many factors, population increment, scarcity of land, and rainfall deficit and low soil fertility in the area forced to change their means of livelihood to mixed framing. Illegal activities are mineral salt extraction, fuel wood selling and charcoal production. Out of the 360 respondents, 85% were unhappy on the existence of the Park whereas 12% had positive attitude and 2.4% were neutral. There was no significant difference on attitude towards the conservation area among village respondents (x^2 =1.76, df=6, p >0.05). Gender had no association with attitude (x^2 =0.64, df=2, p >0.05). However, support for the Park and associated policies were significantly associated with age of respondents (x^2 =19.07, df=2, p< 0.05) and education (x^2 =172.56, df=2, p< 0.05). Younger respondents (≤40 years) and literate ones expressed more positive attitudes (19.17 and 64.91%, respectively) towards the Park than older respondents (4.79%) and uneducated ones (2.64%) (Table 2).

These differences in the attitude towards the Park were significantly explained by two of the four independent variables: 1) age (P= 0.000) and education (P = 0.0001).

All respondents from all villages without any significant variation (x^2 =22.7, df=9, p >0.05) agree, wildlife of the area is depleted and many of the large mammals Oryx, buffalo, giraffe were locally extinct. Change

Land size (hectare)	% of respondents within village				Livelihood means %
	Galeef Qello	Daka	Shalla Bila	Desta Abijata	
<175.83	7.81	26.57	15.63	50	Mixed farming
1-1.5 13.61	22.22	26.67	40	11.11	Animal Husbandry
1.5-26.67	28	12	40	20	Crop production
>23.89	24.14	13.79	58.62	3.45	Others

Table 1: Land holding per household among study sites and distribution of livelihood means.

Attitude toward conservation area							
Demographic variables	**N**	**Positive %**	**Negative %**	**Neutral %**	**x^2**	**df**	**p-value**
Villages							
Galeef Qello	57	10.53	85.96	3.51			
Daka	70	12.86	84.29	2.85	1.76	6	0.938
Shalla Billa	110	14.55	83.63	1.82			
Desta Abijata	123	11.38	86.99	1.63			
Total/average	360	12.33	85.22	2.45			
Gender							
Male	216	11.11	86.57	2.32	0.64	2	0.724
Female	144	14.59	83.33	2.08			
Age							
Young	193	19.17	77.72	3.11	19.07	2	0.000
Old	167	4.79	94.02	1.19			
Education							
Uneducated	303	2.64	95.05	2.31	172.56	2	0.001
Educated	57	64.91	31.58	3.51			

Table 2: Attitude of respondents towards conservation area.

Villages	Population size (%)				Season of abundance (%)	
	Increase	Decrease	Fluctuates	No idea	Dry	Wet
Galeef	12.28	29.83	52.63	5.26	35.09	64.91
Qello	18.57	32.86	42.86	5.71	31.43	68.57
Daka	23.64	33.64	36.36	6.36	22.72	77.27
Shalla Billa	13.82	38.21	45.53	2.44	69.92	30.08
Desta Abijata	17.08	33.64	44.35	4.93	39.79	60.21
Average						

Table 3: Views of respondents on population trends of flamingo between 2009 and 2012 and their seasonal abundance.

Villages	Reason of encroachment (%)				Construction of new huts (%)	
	Reclaim old ancestral land	Farmland scarcity	Grazing land	Acquire new productive land	Support	Oppose
Galeef Qello	54.39	15.79	17.54	12.28	21.05	78.95
Daka	12.86	60	21.43	5.71	27.14	72.86
Shalla Billa	67.27	10	11.82	10.91	24.54	75.46
Desta Abijata	11.38	65.86	14.63	8.13	29.27	70.73
Average	36.48	37.91	16.35	9.26	25.5	74.5

Table 4: Causes of respondents to settle in the Park and their views on the construction of new huts in the Park.

in vegetation, land degradation, settlement and other human factors were reported to be the main the causes for loss. Most respondents (44.35%) noted that the number of flamingos has been fluctuating, 33.64% respondents stated a decrease and 17.08% reported as it increase during the last 3 years. Only few of the respondents (4.93%) were unsure on the population trend. The views of respondents did not differ significantly among the studied villages (x^2 =12.3, df=9, p >0.05) on the trends of flamingo number in the Park (Table 3).

Their views on seasonal abundance also showed a significant variation (x^2 =4.3, df=1, p >0.05). The wet season abundance exceeded the dry season.

Respondents ranked crop damage and livestock predation as the least serious threat to their livelihood. Rather, restriction of settlement, expansion of farming, livestock grazing and collecting firewood and thatched grass were considered as the main source of conflict with the Park management. Park staffs indicated that these problems were causes for wildlife depletion, soil erosion, and vegetation degradation and associated factors in the Park.

Respondents preferred to settle in the Park with varied reason. Most (37.91%) stated due to scarcity of land and few respondents (9.26%) to acquire new productive land (Table 4). The reason for encroaching the Park area showed a significant variation (x^2 = 34.12, df=9, p<0.05) among villages. Most respondents from the village of Galeef Qello and Shalla Billa believed the area is their old ancestral land. In contrast, respondents from village Daka and Desta Abijata gave the reason of scarcity of farming land. The Park is congested with homestead and currently many new huts are being constructed especially following the dried lake side of Abijata. Many (74%) opposed the construction of new huts in the park (Table 4). There was no significant difference between villagers (x^2 = 9.18, df=3, p<0.05) in opposing the construction of new huts inside the Park.

Livestock is the most commonly observed animals in the Park making it look like a ranch. The current estimated livestock grazing in

the Park was 181,168 during the dry season and 134,584 during the wet season. Of all the respondents, 13.61% were engaged in livestock keeping. Each household has an average livestock size of 48.6. Cattle, sheep and goats, poultry and donkeys and horses are the major domestic animals.

The main vegetation type in the Park consists of *Acacia* spp. and shrubs either deciduous, or with small, ever green leaves. The woodland cover within the Park is alarmingly depleted through extraction for fuel wood, construction wood and charcoal production. Increasing demand for land by the growing population is the other key factor contributing for deforestation. The natural *Acacia* woodland is mainly found in the fenced headquarter of the Park and close to Lake Shalla and Chitu. The remaining woodland components are found mixed with farm plots and homestead with sparsely distributed *Acacia* trees.

Currently the two dominant salt-tolerant grasses were observed dominating following the dried lake of Abijata (*Sporobolus spicatus* and *Digitaria abyssinica*). *Sporobolus is* herbaceous perennial grass much sought by the local people for use in thatching and handicrafts besides heavily grazed by livestock without any restriction. Generally the major components of habitat destruction and disturbance in the study area were settlement, overstocking rate of livestock, collection for grass for thatching, tree cutting for fuel, sale and construction of huts. Tree cutting was mainly associated with new settlement, resulting in the deterioration of the remaining vegetation cover of the area.

Discussion

The local people were agro-pastoralists and pastoralists and their household economy depended mainly on agricultural and livestock production. Most the respondents depended on land to generate income making the competition with wildlife more direct and intense. Majority of respondents had a landholding less than 1 ha and only 11.46% have land size greater than 2 ha and produce maize (*Zea mays*) and haricot bean (*Phaseolus vulgaris*) as a staple crop. Separate plot was not allocated for livestock grazing. All members of the Peasant Associations consider the Park as their communal pasture area. The main cause of interference by the local community in the Park is due to population growth. The further increase in human populations will undoubtedly lead to the expansion of agriculture into areas currently unused. Successful conservation has been linked to the need to protect natural areas from traditional uses by local people [13]. According to the respondents, productivity of the land for the majority of farmers is less than sufficient and has no guarantee source of income to supplement their livelihood. Besides, such lower income groups, do not get incentive from the Park are more likely to resist rules and regulations, and continue to encroach the wildlife habitat. Unless farmers' concerns are resolved, efforts to ensure wildlife conservation likely will fail [14].

The majority (85%) of respondents opposed the existence of the Park. The respondents thought that a Park would threaten their economy by reducing access to expand farming and to have pasture land, settlement, fuel wood collection and extraction of minor forest products. Further, there had been many complaints by local people about the continuing problems related to their restriction of their resource use activity within the area. The pressure and conflict from conservation authorities, grazing fines, and benefits are for government. As part of ecosystem services, respondents reported several benefits they get from the lake namely: cool weather, income because of tourism, water (for irrigation and domestic animals from rivers) and good pasture, minerals "Boji", raw materials (construction wood, charcoal wood, fuel wood, agricultural tool and household furniture making wood, thatching grass and animal fodder (from grazing land) and medicinal resources. Although little attention has been given to the non-economic benefits of protected areas that residents may value in developing countries, studies indicate that residents value areas for non-economic reasons, such as ecosystem services, conservation of wildlife, and benefits for future generations.

Respondents living in the inner zone were almost entirely dependent on using resources from the Park. They had strong negative attitudes towards conservation efforts of the Park authority. In Nanda Devi Biosphere Reserve (India), 75% of respondents expressed negative attitude towards the reserve [15]. Similar negative attitude prevailed in park-people relations in Kosi Tappu Wildlife Reserve in Nepal [7]. In both studies groups, the attitudes were attributed to crop and livestock damage by wildlife, and restrictions imposed by the reserve authorities in collecting forest products. The attitude of people towards a protected area is influenced by the benefits which they acquire from it, land holdings, lower frequency of visits by Park officials and increasing distance from the Park and by the negative consequences of its conservation status [16]. According to Sindiga [17], wildlife-human conflicts are a problem of resource utilization in conservation areas. Recent studies show that the majority of the local people around protected areas have negative feelings about state policies and conservation program. Only few respondents supported the existence of the Park. Positive attitude apparently derived from the Park area is important for their livelihood and supported a vast number of their livestock. Newmark [18] found that among the reasons, a majority of respondents opposed abolishhment of five protected areas in Tanzania were that the areas protect wildlife, protect natural heritage and the watersheds, for future generations. Educated and young people with access to information and awareness mostly supported the Park. Infield [19] reported residents around a local conservation area in Natal, South Africa, appreciated the potential the area had as an education and leisure facility, and a few respondents expressed excitement at the opportunity they had to see wildlife when they had traveled by bus through the area. Education is an important factor in understanding the role of protected areas and conservation in general. The educated respondents strongly supported protected areas. However, most respondents had no formal education or are illiterate. Conservation may be quite difficult in the future in areas like ASLNP with poor education. The findings showed that most of the local people are antagonistic to wildlife conservation as a result of low level of education and high family size. Support for conservation was positively correlated with the level of education attainment of the respondents. Educating the public about the potential benefits associated with a protected area can be an important tool in avoiding and resolving protected area conflicts, especially over the long term, and can be critical in gaining support for the establishment of a protected area. In situations where protected areas have been established without prior public education, consultation, or dialogue with local communities regarding the reasons for and benefits of the area, the predictable outcome is conflict, especially when there is a negative impact on local communities associated with the protected area. The value people place on wild animals will often depend heavily on their knowledge and so education is a major tool in conservation [20,21]. Literate respondents exhibited relatively more favorable conservation attitudes, confirming the importance of education and awareness. Heinen [7] observed a similar situation in a study of people's attitude towards wildlife in Kosi Tappu Wildlife Reserve in Nepal. The study revealed that those respondents with higher household literacy rates had positive attitude about wildlife in the reserve. People who were young more greatly appreciated the existence of the Park. These may be

due to adoption of life styles and practices that are incompatible with the traditional conservation systems of wildlife by younger generations. They have awareness and education about the usefulness of protected area from different sources.

All respondents believed that wildlife populations had decreased in the area. Historically this Park is known for its possession of diversified bird and mammal species. Respondents reported that once abundant species including Oryx, Swayne's Hartebeest, Buffalo, Waterbuck, Giraffe, and Lion in the area are now exterminated. Currently seen species like Grant gazelle, Colobus monkey, Warthog, Greater kudu, and Common jackal and the observed far less hundred's in number and located to specific areas of the Park (headquarter and Fike mountain area).

The Park staffs indicated that the Park habitats have already been greatly changed. The activities that altered these habitats were the increased number of human settlements and the increased conversion of wildlife habitats into agricultural farms. Such subsequent increase in human activity resulted in increased threats to wildlife safety, food and shelter scarcity, which led to a decline in their number and local extinction. Majority (44%) of the respondent stated as the number of flamingos fluctuated in the area. Their abundance in the area was seasonal and commonly follows the rainfall pattern of the area.

The main reason for the conflict was the demand of the local people to use the Park resource. Large area of the Park already has been invaded with their home stead and their farmland. They would like to settle on the remaining area of the Park for economic and social reasons. Management and development of the Park has declined to a point where the management of the Park has very little control over the conservation practices inside the Park. Most people who have settled in the area came from far area of the Park and use these areas mostly for transhuman grazing. In Africa loss of wildlife habitats is a widespread phenomenon. The loss is estimated at 60% [18]. Human population pressure is cited as the main contributor to this loss mainly through settlements, deforestation prompted by increased demand for arable land, and fuel wood. Although protected areas conserve many of the world's habitats and species, human encroachment, especially in the tropics, is severely degrading and destroying many of these areas [22]. ASLNP has no exception to this fact.

The entire land area of the Park (except the water and Headquarter area) is inhabited by the people. According to the Park staff and Woreda officers, most of these people have permanent settlements elsewhere, and in addition they practice seasonal migration with their cattle far away from more than 30 km in search of grazing land to the Park. Most people who have settled in the area came from far area of the Park and use these areas mostly for transhumance grazing. Most (74%) of respondents oppose the ongoing construction of new huts in the Park due to fear of competition on the existing resource of the Park.

Conclusion

The development of effective actions to tackle such causes of conflict is clearly challenging in the context of ASLNP or similar regions in Ethiopia. Serious attempts to address these problems can contribute substantially to conflict prevention and management if they are recognized as such by the communities involved, even if they fall short of what is required due to lack of capacity. Generally, more emphasis should be placed on the effectiveness of conserving valuable wildlife ecosystems and awareness of potential human impact on Park areas. More work has been focused on conservation management strategies involving human perceptions. Governments and conservation agencies need to devise innovative ways and means to protect natural resources. They need to seek ways to meet the needs of humans at local levels so that attitudes towards conservation might change for the good.

References

1. Nepal SK, Weber KE (1995) Prospects for coexistence: wildlife and local people. Ambio 24: 238-245.
2. Wells M, Barandon KE (1992) Planning for people and parks-design dilemmas. World Dev 20: 557-570.
3. Hackel JD (1999) Community conservation and the future of Africa's wildlife. Conserv Biol 13: 726-734.
4. Kideghesho JR, Roskaft E, Kaltenborn BP (2007) Factors influencing conservation attitudes of local people in Western Serengeti, Tanzania. Biodiv Conserv 16: 2213-2230.
5. Messmer TA (2000) The emergence of human-wildlife conflict management: turning challenges into opportunities. Inter Biodet Biodeg 49: 97-102.
6. UNEP (United Nations Environmental Programme) (1990) People, parks and wildlife. Guidelines for public participation in wildlife conservation-case studies in Kenya. UNEP, Nairobi.
7. Heinen JT (1993) Park-people relations in Kossi Tappu Wildlife Reserve, Nepalia socio economic analysis. Environ Conserv 20: 25-34.
8. Hillman JC (1993) Ethiopia: Compendium of Wildlife Conservation Information. NYZS. The Wildlife Conservation Society International, New York and Ethiopian Wildlife onservation Organization, Addis Ababa.
9. Senbeta F, Tefera F (2001) Environment crisis in the Abijiata-Shalla Lakes national park. Walia 22: 1-13.
10. Tefera F, Almaw R (2002) Convervation and Management issues of Abijiata-Shalla Lakes National Park. Oromia Natural Resource and Environment Protection Authority. (Unpublished), Addis Ababa.
11. Legesse D, Gasse F, Radakovitch O, Vallet-Coulomb C, Bonnefille R, et al. (2002) Environmental changes in a tropical lake (Lake Abijata, Ethiopia) during recent centuries. Palaeoecology 187: 233-258.
12. Mengesha G, Mamo Y, Bekele A (2011) A comparison of terrestrial bird community structure in the undisturbed and disturbed areas of the Abijata Shalla lakes national park, Ethiopia. Interna J Biodiv Conserv 3: 389-404.
13. Zube EH, Busch ML (1990) Park-people relationships: an international review. Landscape and Urban Planning **19**: 117-131.
14. Conover Mr (2002) Resolving Human-wildlife Conflicts. The Science of Wildlife Damage Management. NY: CRC Press, Lewis Publishers.
15. Maikhuri RK, Nautiyal S, Rao KS, Saxena KG (2001) Conservation policy-people conflicts: a case study from Nanda Devi Biosphere Reserve (a World Heritage Site), India. Forest Policy and Economics 2: 355-365.
16. Studsrod JE, Wegge P (1995) Park-people relationships: the case of damage caused by park animals around the Royal Bardia National Park, Nepal. Environ Conserv 22: 133-142.
17. Sindiga I (1995) Wildlife-based tourism in Kenya: Land use conflicts and government compensation policies over protected areas. J Tour Stud 6: 45-55.
18. Newmark WD, Hough JL (2000) Conserving wildlife in Africa: Integrated Conservation and Development Projects and Beyond. J Biol Sci 50: 585-592.
19. Infield M (1988) Attitudes of a rural community towards conservation and a local conservation area in Natal, South Africa. Biol Conserv 45: 21-46.
20. Sutherland WJ (2000) The Conservation Handbook Research Management and Policy. University Press, Cambridge.
21. Mishra C, Allen P, McCarthy T, Madhusadan M, Bayarjargal A, et al. (2003) The role of incentive programs in conserving the snow leopard. Conserv Biol 17: 1512-1520.
22. Brandon KE, Wells M (1992) Planning for people and parks, design dilemmas. World Dev. 20: 557-570.