GENDER ROLE IN THE CONSERVATION OF FAUNAL BIODIVERSITY IN AZAD JAMMU AND KASHMIR

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ABSTRACT

A study was conducted to understand the gender differences in control over the resources, factors causing loss of biodiversity and biodiversity conservation in Azad Jammu and Kashmir. In seven villages of district Muzaffarabad, 91 respondents (47 males, 44 females) were interviewed. In the study area, average family size was 9.8 and literacy rate 69% and 43% in males and females, respectively. Every household owns at least three number of livestock which mostly graze freely. Gender difference (in opinion) was noted about population trend of wild animals and birds, reasons for increase/decrease in their population and involvement of hunters. However, both male and female respondents considered shooting as dominant hunting method. Hunting and habitat loss were the major factors causing decline in their numbers while increase in numbers was due to ban on hunting. Most of the animals, especially carnivores and rodents, were believed to be harmful while most of the birds beneficial for people. Hence, the respondents suggested to conserve only that wildlife which they considered beneficial for themselves. Both males and females recommended to take steps for afforestation programs, protection by Government Departments, organizing protection committees, ban on hunting and raising awareness among people for the conservation of biodiversity.

Key words: Gender dimensions, faunal biodiversity, wildlife, hunting pressure, public awareness, conservation.

INTRODUCTION

Biodiversity refers to the variability among living organisms from all sources including *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems (CBD, 1992). Biodiversity of an area is demonstrated by the richness of species in that area. All species in an ecosystem display genetic variation among individuals and populations, which encourages natural selection and adaptability to change in the environment to ensure their survival. Genetic diversity in domestic species and their wild relatives provides genetic material to the researchers to develop improved varieties of animals and plants for human needs. In other words biodiversity ensures food security for human kind (GOP, 1999).

Nature has bestowed Pakistan with diverse ecological zones ranging from the mangrove forests along the Arabian Sea to vast plains, sandy deserts, forests, rangelands and spectacular mountain in the north where the western Himalayas, Hindu Kush and Karakoram ranges meet. These ecological zones provide a variety of ecosystems and habitats for a rich species diversity, which contribute to overall biological diversity of the country. During the last few decades, natural habitats in the country have experienced a rapid loss/degradation. Currently, more than half of Pakistan's remaining mangrove forests, more than two-thirds of remaining riverine forests, and more than nine-tenths of remaining coniferous forests have less than 50% canopy cover (GOP, 1992). This continuing loss of forest habitat will have serious implications on its associated fauna and flora.

Biodiversity provides a rich source of genetic material, environment for healthy living, helps to get clean water, pure air, pollination, soil formation and protection, crop pest control, and the provision of food, fuel, fibers and herbal drugs for human kind. These added benefits are neither widely recognized, nor properly valued in economic or even social terms. Losing biodiversity means losing the life support systems. The conservation of biodiversity is the key to sustainable development of sectors such as agriculture, forestry, fisheries, wildlife, industry, health, tourism, energy, commerce, irrigation and power. This will help to meet our current as well as needs of the future generations.

An important factor for the conservation of biodiversity in Pakistan including AJK is the involvement of local people and support by the relevant institutions. This relationship has even more importance in AJK where 88% population of the State is living in rural areas and depends on forest resources to meet their diversified needs. Their relationship with forests starts from cradle and remains to '*coffin*'. The total geographical area of AJK is 3.28 million acres of which the cultivable agricultural area is 0.427 million acres (13%) and 1.400 million acres (43%) is under forests and grazing lands. The area is full of thick forests, fast falling rivers and curly streams. The climate of the area varies from subtropical to temperate and topographically the terrain rises from gentle sloped foothills to the Himalayan peaks reaching the height of 6,300m above sea level. Such a variety of climate and topography provides verified habitat for a rich diversity of fauna and flora (GOAJK, 2001).

Research studies targeting gender dimensions in biodiversity conservation in Pakistan is an area of neglect so far. Present study makes an effort to understand gender dimensions in biodiversity conservation in AJK. The main objectives of the study were to: understand the gender roles, responsibilities and control over biodiversity resources, identify the factors responsible for the loss/degradation of biodiversity and determine the gender gaps in knowledge and practices to ensure the conservation and sustainable use of biodiversity.

MATERIALS AND METHODS

Present study was designed and conducted in three stages as per details given below:

Stage-I: To fully understand the pros and cons of the issue under investigation, available relevant literature with specific reference to AJK was consulted and preliminary questionnaire was developed to investigate the gender role in biodiversity.

Stage-II: A multidisciplinary team of investigators including agricultural economist, sociologist/anthropologist and wildlife/biodiversity specialist was formulated. Females are often hesitant to respond to male enumerators, therefore, to ensure easy access to female respondents two lady scientists were included in the team. The preliminary questionnaire was discussed and the proposed improvements were incorporated in it.

Selection of the study Area: The two stage purposive stratified random sampling technique was used to select the study area and sample size. Being the largest district of AJK and having a large area under forest, district Muzaffarabad was selected as a target district. The main requirement of the study was to conduct interviews of the people having close interaction with the forest. For this purpose, seven villages (Kharin, Said Pur, Bheri, Ariala, Sarangali, Dchor Faquiran and Dchor Miran) in Neelum and Jhelum Valleys were selected in consultation with the officials of AJK Forest, Wildlife, Fisheries and Agriculture Departments.

Sample Size: Statisticians for conducting such research studies recommend a minimum sample size of 33 respondents. Keeping in view the scope of the study it was decided to go for a larger sample of 80-100 respondents. For better understanding of gender role in the conservation of biodiversity, both males as well as females were interviewed randomly in each village.

Data Collection: The draft questionnaire was tested on 10 respondents and changes were incorporated to improve the questionnaire. Formal survey was conducted with the help of key informants. Lady scientists interviewed females and male enumerators interviewed male respondents. Frequent group discussions were also encouraged to have collective vision of the people regarding the use and conservation of biodiversity. Being mountainous terrain, it took a lot of efforts and time to reach the communities located adjacent to the forest areas.

Stage-III: Statistical Package for Social Scientists (SPSS) was used for data editing, cleaning and analysis. Averages and percentages were used for tabulation and interpretation of data.

RESULTS AND DISCUSSION

Characteristics of Respondents
Around 88% population of AJK is living in rural areas and depends on natural forests for fuel wood, timber, livestock grazing and water requirements. Population is increasing at the rate of 2.7% per year. The study revealed that joint family system is dominant in study area where nearly two third (62 %) of the families were living jointly and the remaining (38 %) were living as nuclear families. The average family size (9.8) confirms the existing population pressure on the available natural resources. On an average every household has almost equal number of males and females in their family. The household dependency ratio is more that 100 % as the number of family members in the age of less than 16 years and above 60 years are slightly higher than the adults in productive age of 16-60 years.

Illiteracy was more in females (57%) as compared to males (31%). High illiteracy rate among women is considered one of the main reasons in restricting their productivity. Traditionally, decision-making authority rests with the males and the females have little voice in it. The situation was similar in target area where majority of the heads (89 %) of the households are males. Only 11% families have a female household head. Cultural values are so strong that in spite of being an Islamic Republic, rural people strongly believe in caste system, which has its own importance in a specific socio-economic and cultural condition.

Economic Activities

The land holding size is very small in the study area, lacking capacity to meet the subsistence level of a household. Therefore, most of the households are forced to rely on multiple sources of income. Off-farm employment was the major primary source of income of 22% respondents and nearly 21% were earning their livelihood by working as laborers (Table 1). A significant proportion (14%) of the sample families had established businesses at small scale. Only 12 % respondents practiced agriculture as their primary source of income. The remaining one third of the respondents are meeting their expenditure from multiple sources. It is evident that agriculture is not the primary source of income in the study area.

Table 1. Primary Source of Income of Household in the Study Area.

Sr. No	Source	Frequency	Percent
1.	Agriculture	11	12.2
2.	Business	13	14.4
3.	Employment	20	22.2
4.	Labour	19	21.1
5.	Carpenter	2	2.2
6.	Agriculture & Business	3	3.3
7.	Agriculture & Employment	5	5.6
8.	Agriculture & Labour	9	10
9.	Agriculture & Carpenter	1	1.1
10.	Business & Employment	2	2.2
11.	Employment & Labour	2	2.2
12.	Agriculture, Employment & Business	2	2.2
13.	Agriculture, Employment & Labour	2	2.2

Although livestock has tremendous value in rural economy yet it puts a lot of pressure on biodiversity. Information on number of livestock and their feeding practices would help to better understand its impact on biodiversity in the area (Table 2).

Table 2. Livestock Profile and Feeding Practices in the study area.

Average Animal units		Feeding Source		Lean Period	
Animal	Units	Source	Percent	Period	Percent
Buffaloes	2	Stall Feeding	36	Nov-Mar	40
Cows	0.83	Lopping	-	Dec-Mar	8
Young stock	0.46	Stall Feeding/Grazing	41	Dec-Apr	8
Sheep/Goats	0.13	Stall Feeding/Grazing/ Lopping	23	Nov-Apr	31
-	-	-	-	Jan-Mar	7
-	-	-	-	Dec-Feb	6

Every household on an average owns 2 buffaloes, 0.83 Cows, 0.46 young stock and 0.13 sheep/goats. Local and nomadic graziers exert heavy pressure on forests. Such grazing severely damages the young seedlings through grazing, browsing and trampling and hence, adversely affects biodiversity. The study showed that stall-feeding, free grazing and lopping are the main sources of livestock feeding. Winter season, especially from November to April, was lean period for fodder availability and that is the time when people use their grass stock, which is collected during summer.

Faunal Biodiversity

Trend in wildlife populations

Zoological names of common mammals and birds of study area is given in appendix 1. The study revealed an overall decreasing trend in the population of most wildlife species. However, population of a few animals and birds was reported on the increase. Majority of males (87%) and females (55%) reported increase in population of leopard (Table 3). The population of Jackal, monkey, fox and porcupine was also increasing as reported by both male and female respondents. The population of Goral, Markhar, Musk deer and Langoor has decreased with the time in the opinion of both male and female respondents.

Appendix 1. Zoological Names of common Mammals and Birds of Study Area

Local/Common Names	Zoological Names
Mammals	
Markhor	Capra Falconeri
Grey Goral	Nemorhaedus goral
Musk deer	Moschus chrysogastor
Common Leopard	Panthera pardus
Himalayn Black Bear	Ursus thibetanus
Hill Fox	Vulpes vulpes
Indian Jackal	Canis aureus
Indian Crested Porcupine	Hystrix indica
Rhesus Monkey	Macaca mulatta
Grey Langoor	Semnopithecus entellus
Birds	
Monal pheasant	Lophophorus impejanus
Koklas pheasant	Pucrasia macrolopha
Western Horned Tragopon	Tragopan melanocephalus
Kalij pheasant	Lophura leucomelana
Common Quail	Coturnix coturnix
Chukar	Alectoris chukar
Slaty-headed Parakeet	Psittacula himalayana
Jungle Crow	Corvus macrorhynchos
Blue rock Pigeon	Columba livia
Common tree Sparrow	Passer rutilans

Table 3. Trend in Wildlife Populations in the Study Area.

Animals	Increasing (Response) M %	F %	Decreasing (Response) M %	F %	Stable (Response) M %	F %	Average Increase M %	F %	Average Decrease M %	F %
Markhor	-	-	100(1)	100(2)	-	-	-	-	-	-
Goral	-	-	92(11)	100(1)	8(1)	-	-	-	68(7)	-
Musk deer	-	-	100(2)	100(1)	-	-	-	-	90(1)	-
Leopard	13(4)	55(22)	87(27)	45(18)	-	-	-	-	74(15)	-
Bear	8(3)	53(19)	92(33)	47(17)	-	-	-	-	68(23)	-
Fox	85(23)	50(4)	11(3)	-	4(1)	50(4)	40(15)	50(1)	43(3)	-
Jackal	95(36)	50(14)	5(2)	14(4)	-	36(10)	63(22)	50(1)	-	-
Porcupine	96(27)	91(10)	-	-	4(1)	9(1)	85(17)	50(1)	-	-
Monkey	66(23)	41(14)	20(7)	15(5)	14(5)	44(15)	51(14)	50(1)	50(3)	-
Langoor	40(2)	-	60(3)	-	-	-	25(1)	-	57(2)	-
Birds										
Monal	36(5)	-	64(9)	96(22)	-	4(1)	-	-	53(6)	-
Koklas	11(3)	-	89(24)	100(23)	-	-	-	-	68(15)	-
Tragopon	45(5)	-	55(6)	100(2)	-	-	-	-	52(6)	-
Kalij	16(5)	3(1)	84(26)	97(29)	-	-	-	-	62(19)	-
Quail	67(2)	-	33(1)	-	-	-	-	-	45(2)	-
Chukor	-	6(1)	100(9)	94(16)	-	-	-	-	61(8)	-
Parrot	75(3)	-	-	100(3)	-	-	20(3)	-	-	-
Crow	63(5)	100(1)	-	-	37(3)	-	22(5)	-	-	-
Pigeon	-	-	100(15)	100(22)	-	-	-	-	53(11)	-
Sparrow	-	-	100(1)	100(9)	-	-	-	-	20(1)	-

Both male and female respondents indicated decrease in the population of Monal pheasant, Koklas pheasant, Western Tragopon, Klaij pheasant, pigeon and sparrow as compared to their population ten years back. However, an increase was reported in the population of parrot and crow during the last decade. Regarding average increase/decrease in their population, females had less information than males. Eighty-five percent men reported increase in porcupine followed by 63% for Jackal. The average decrease was reported by 74%, 68%, 68% and 57%

males for Leopard, Bear, Goral and Langoor population, respectively. The average decrease in the population of Monal pheasant, Koklas pheasant, Western Tragopon, Klaij pheasant and Chukar was reported by 53%, 68%, 52%, 62% and 61%, respectively.

Factors Affecting Wildlife Populations

The survey revealed that main reasons for the increase in wildlife populations, particularly the Leopard and Bear was the ban on hunting by the Government. This was followed by no hunting by the people themselves due to change in their attitude. The animals such as Jackal, Monkey, Fox and Porcupine have increased through natural reproduction in the view of both the male and female respondents. According to females the reason for increase in the population of leopard and bear was ban on hunting while the males thought that combination of ban on hunting and no hunting by the people themselves was reasons for this trend (Table 4).

The reasons for increasing the bird population were no hunting followed by ban on hunting and natural reproduction for birds such as Monal pheasant, Koklas pheasant, Western horned Tragopon and Klaij pheasant. The increase in the population of parrot and crow was observed only due to natural reproduction. The female respondents had no idea about the reasons for increasing birds population.

Table 4. Causes for Increasing/Decreasing trend in wildlife population of the study area.

Species	Increasing Reasons						Hunting		Habitat Loss		Population		Hunting/ Habitat Loss		Army/ Population	
	Natural		Hunting Ban		No Hunting											
Animals	M %	F %	M %	F %	M %	F %	M %	F %	M %	F %	M %	F %	M %	F %	M %	F %
Markhor	-	-	-	-	-	-	-	-	100(1)	--	-	-	-	-	-	100(1)
Goral	-	-	-	-	-	-	86(6)	100(1)	-	-	-	-	14(1)	-	-	-
Musk deer	-	-	-	-	-	-	-	-	-	-	-	-	100(2)	-	-	-
Leopard	-	-	40(2)	100(19)	60(3)	-	-	13(2)	72(13)	31 (5)	6(1)	-	17(3)	50(8)	5(1)	6(1)
Bear	-	-	67(2)	100(19)	33(1)	-	-	-	73(19)	36(4)	4(1)	-	19(5)	64(7)	4(1)	-
Fox	83(15)	-	-	-	17(3)	-	-	-	100(1)	-	-	-	-	-	-	-
Jackal	79(19)	100(1)	-	-	21(9)	-	-	-	-	67(2)	-	-	-	-	-	33(1)
Porcupine	100(16)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monkey	74(14)	100(2)	-	-	26(5)	-	-	-	100(1)	67(2)	-	-	-	-	-	33(1)
Langoor	-	-	-	-	-	-	-	-	100(1)	-	-	-	-	-	-	-
Birds																
Monal	20(1)	-	40(2)	-	40(2)	-	56(5)	95(18)	11(1)	-	-	-	33(3)	5(1)	-	-
Koklas	33(1)	-	33(1)	-	34(1)	-	63(12)	95(19)	11(2)	-	-	-	26(5)	5(1)	-	-
Tragopon	25(1)	-	25(1)	-	50(2)	-	83(5)	-	-	-	-	-	17(1)	-	-	-
Kalij	20(1)	-	40(2)	-	40(2)	-	65(15)	62(16)	4(1)	-	-	-	31(7)	3810	-	-
Quail	-	-	-	-	-	-	50(1)	-	-	-	-	-	50(1)	-	-	-
Chukor	-	-	-	-	-	-	56(5)	100(14)	-	-	-	-	44(4)	-	-	-
Parrot	100(3)	-	-	-	-	-	--	-	-	100(3)	-	-	-	-	-	-
Crow	100(5)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pigeon	-	-	-	-	-	-	57(8)	57(8)	-	-	-	-	43(6)	43(6)	-	-
Sparrow	-	-	-	-	-	-	-	-	-	-	-	-	-	100(2)	-	-

From the survey it could be concluded that hunting and habitat loss were the main causes for decline in wildlife populations. The main reason of decline in leopard and bear population was habitat loss followed by hunting whereas the habitat loss is solely responsible for population decline of Monkey, Fox, Markhor and Langoor. The perception of males and females about the decrease in population was slightly different. Males thought that main cause of wildlife population decline was habitat loss but the females observed that habitat loss combined with hunting was the main cause for decrease in wildlife population. Major reasons for population decline in birds were hunting followed by hunting/habitat loss together. Almost all the respondents pointed out hunting and habitat loss as the main causes of decrease in the bird populations.

People's Attitude Towards Wildlife/Biodiversity

The Leopard, Bear, Jackal, Monkey, Fox and Porcupine were considered harmful for the people with females having comparatively stronger view than males (Table-6). Some animals such as porcupine, monkey, jackal and bear were considered harmful for people as well as crops. Both males and females respondents reported that Goral, Markhor, Monal pheasant, Koklas pheasant, Western horned Tragopon, Klaij pheasant, Chukar, pigeon and sparrow as beneficial for people.

The data in Table 5 shows that mostly the local people are involved in the hunting. Shooting was the main method of hunting as reported by both male and female respondents.

Majority of respondents showed negative response regarding the harmful animals including Leopard, Bear, Jackal, Monkey, Fox and Porcupine which they considered harmful while their attitude was positive about Goral, Markhor and Musk deer which they consider beneficial for them (Table 7). Their attitude towards the birds was also the same. It may be concluded that people generally showed positive and negative attitude regarding "Halal" and "Haram" animals/birds, respectively.

Initiatives taken for faunal biodiversity conservation

The respondents reported six different types of initiatives taken by the Government for the conservation of biodiversity (Table 8). The awareness about these initiatives varied between gender and within gender. Forty-seven percent of male respondents reported protection of forest and 38% reported plantation by the Government. Very few male respondents reported other initiative taken by Government. In case of females, 46% of respondents reported ban on hunting and 40% protection of forest as initiated by the Government. Other initiatives were hardly known by the female respondents. Awareness about biodiversity conservation initiatives needs to be disseminated to the local communities for seeking their involvement and support in the implementation of these initiatives.

It is evident from Table 9 that males considered the establishment of and females have taken initiative to organize Community Based Organizations (CBOs) an important initiative. Females considered the formation of Non Governmental Organizations (NGOs) followed by plant protection committees (17%) and plantation (17%) as necessary initiatives. A significant number of male respondents (21%) suggested controlling wastage of forest products. Majority of respondents agreed that local communities have taken no initiative for the conservation of biodiversity.

Table 5.   Involvement in Hunting and Use of Hunting Methods.

Fauna	Involvement in Hunting								Hunting Method			
	Local People		From Nearby Villages		Local/ Foreigners		Local/Nearby Villages		Netting		Shooting	
Animals	M %	F %	M %	F %	M %	F %	M %	F %	M %	F %	M %	F %
Markhor	-	-	-	-	-	-	-	-	-	-	-	-
Goral	40(2)	100(2)	-	-	-	-	60(3)	-	-	-	100(5)	100(2)
Musk Deer	50(1)	-	-	-	-	-	50(1)	-	-	-	-	-
Leopard	67(10)	92(8)	-	8(1)	-	-	33(1)	-	-	8(1)	100(3)	92(11)
Bear	40(2)	78(7)	-	-	-	11(1)	60(3)	11(1)	-	-	100(9)	100(5)
Fox	-	-	-	-	-	-	-	-	-	-	-	-
Jackal	-	-	-	-	-	-	-	-	-	-	-	-
Porcupine	-	-	-	-	-	-	-	-	-	-	-	-
Monkey	-	-	-	-	-	-	-	-	-	-	-	-
Langoor	-	-	-	-	-	-	-	-	-	-	-	-
Birds												
Monal	25(2)	100(10)	25(2)	-	-	-	50(4)	-	-	-	100(8)	100(10)
Koklas	50(7)	91(20)	7(1)	9(2)	-	-	43(6)	-	-	9(2)	100(14)	87(19)
Tragopon	17(1)	100(2)	-	-	-	-	83(5)	-	-	-	100(6)	100(2)
Kalij	76(16)	93(27)	-	7(2)	-	-	24(5)	-	-	-	100(21)	100(20)
Quail	-	-	-	-	-	-	100(2)	-	-	-	100(2)	-
Chukor	44(4)	100(15)	-	-	-	-	56(5)	-	-	-	100(9)	100(15)
Parrot	-	-	-	-	-	-	-	-	-	-	-	-
Crow	-	-	-	-	-	-	-	-	-	-	-	-
Pigeon	50(7)	100(19)	7(1)	-	-	-	43(6)	-	-	-	100(14)	100(19)
Sparrow	-	100(8)	-	-	-	-	-	-	-	-	-	100(8)

Table 6.   People's Belief about Faunal Diversity in the Study Area.

Fauna	Beneficial for People		Beneficial for Forest		Beneficial People/Forest		Harmful For People		Harmful for Crops		Beneficial for Forest/ Harmful for People		Harmful for People/ Crops	
	M %	F %	M %	F %	M %	F %	M %	F %	M %	F %	M %	F %	M %	F %
Animals														
Markhor	100(1)	100(1)	-	-	-	-	-	-	-	-	-	-	-	-
Goral	100(6)	100(2)	-	-	-	-	-	-	-	-	-	-	-	-
Musk Deer	50(1)	-	50(1)	-	-	-	-	-	-	-	-	-	-	-
Leopard	-	-	15(3)	-	-	-	65(13)	95(25)	-	-	10(2)	-	10(2)	5(2)
Bear	-	-	19(5)	-	-	-	54(14)	97(28)	4(1)	-	11(3)	-	12(3)	3(1)
Fox	-	-	4(1)	-	-	-	82(18)	100(3)	-	-	5(1)	-	4(1)	-
Jackal	--	-	7(2)	-	-	-	64(18)	90(17)	8(2)	-	7(2)	-	10(3)	-
Porcupine	-	-	-	-	-	-	48(10)	70(7)	14(3)	10(1)	-	-	38(8)	20(2)
Monkey	-	-	11(3)	-	-	-	56(15)	89(16)	11(3)	-	11(3)	-	11(3)	5(1)
Langoor	-	-	-	-	-	-	50(1)	-	-	-	-	-	50(1)	-
Birds														
Monal	77(10)	95(20)	-	5(1)	23(3)	-	-	-	-	-	-	-	-	-
Koklas	76(16)	96(21)	-	4(1)	24(5)	-	-	-	-	-	-	-	-	-
Tragopon	64(7)	100(2)	-	-	36(4)	-	-	-	-	-	-	-	-	-
Kalij	74(20)	93(28)	-	-	26(7)	7(2)	-	-	-	-	-	-	-	-
Quail	33(1)	-	-	-	67(2)	-	-	-	-	-	-	-	-	-
Chukor	56(5)	93(14)	-	-	44(4)	7(1)	-	-	-	-	-	-	-	-
Parrot	-	-	-	100(1)	-	-	67(2)	-	-	-	-	-	33(1)	-
Crow	-	-	-	-	-	-	43(3)	-	-	-	-	-	-	57(4)
Pigeon	60(9)	91(20)	-	-	40(6)	9(2)	-	-	-	-	-	-	-	-
Sparrow	100(1)	89(8)	-	-	-	11(1)	-	-	-	-	-	-	-	-

Table 7.   Attitude of People Towards Conservation of Wildlife in the Study Area.

Species	Conservation Attitude in Males				Conservation Attitude in Females			
	Yes	Conservation	No.	Conservation	Yes	Conservation	No.	Conservation
	%	%	%	%	%	%	%	%
Animals								
Markhor	100 (1)	100	-	-	100 (2)	100	-	-
Goral	100 (6)	100	-	-	100 (2)	100	-	-
Musk Deer	100 (2)	100	-	-	-	-	-	-
Leopard	5 (2)	-	95 (37)	77	3 (1)	-	97 (18)	76
Bear	4 (1)	-	95 (37)	81	-	-	100 (24)	78
Fox	-	-	100 (23)	92	-	-	100 (6)	60
Jackal	-	-	100 (27)	87	7 (2)	-	93 (25)	70
Porcupine	-	-	100 (21)	100	-	-	100 (10)	100
Monkey	-	-	100 (31)	84	-	-	100 (26)	67
Langoor	-	-	100 (3)	90	-	-	-	-
Birds							-	-
Monal	100 (22)	100	-	-	100 (13)	100	-	-
Koklas	100 (23)	100	-	-	100 (22)	100	-	-
Tragopon	100 (11)	100	-	-	100 (2)	100	-	-
Kalij	100 (30)	100	-	-	100 (27)	100	-	-
Quail	100 (3)	100	-	-	-	-	-	-
Chukor	100 (14)	100	-		100 (10)	100	-	-
Parrots	-	-	100	70	-	-	-	-
Crow	-	-	100	98	-	-	100	90
Pigeon	100 (20)	100	-	-	100 (16)	100	-	-
Sparrow	100 (2)	100	-	-	100 (8)	100	-	-

Table 8. Government Initiatives for the Conservation of Faunal and Floral Diversity.

S.No.	Initiatives	Frequency		Percentage	
		M	F	M	F
1	Integrated Land Management	3	2	7	5
2	Plantation	17	1	38	2
3	Protection of Forests	21	17	47	40
4	Ban on Hunting	1	20	2	46
5	Establishment of Plant protection committees	3	-	6	-
6	Ban on Cutting Trees	-	3	-	7

Table 9. Local Initiatives for the Conservation of Biodiversity.

S.No.	Initiatives	Frequency		Percentage	
		M	F	M	F
1	Community Based Organizations (CBO)	18	2	42	33
2	No wastage of Forests	9	-	21	-
3	Protection Committees	4	-	9	-
4	Co-operation with Govt. Departments	3	-	7	-
5	Establishment of plant protection committees	1	1	2	17
6	Creation of awareness among themselves	6	-	14	-
7	NGOs	-	2	-	33
8	Plantation	2	1	5	17

Table 10.   Suggestions for Biodiversity Conservation in AJK.

Sr.No.	Suggestion	Frequency		Percentage	
		M	F	M	F
1	Ban on hunting	6	3	7	20
2	Seasonal Quota	1	-	1	-
3	Protection by Government Departments	17	4	21	27
4	Plant nursery raising	2	-	3	-
5	Govt. should provide alternate construction material and gas	1	1	1	7
6	Plantation or afforestation	19	2	24	13
7	Control of corruption	4	-	5	-
8	Employees perform duties with responsibility	2	1	2	7
9	Creation of awareness among the people	6	2	7	13
10	Provision of wood on less price	1	-	1	-
11	Forest land acquired by people might be brought back	1	-	1	-
12	More appointments in the Forest Department	3	-	4	-
13	Ban on cutting trees	2	-	3	-
14	No deforestation	3	-	4	-
15	Involve local people in forest protection	2	2	3	13
16	Protection committees	7	-	9	-
17	Honorarium for protection committee members	3	-	4	-

Measures Suggested for Biodiversity Conservation

Male respondents strongly recommended the actions including tree plantation/afforestation, protection of forests by the Forest Department, putting ban on hunting and creating awareness among the public about the importance of biodiversity components and their conservation. They also showed great support for locally established plant protection committees (Table 10). Female respondents suggested the need for the protection of forests by Forest Department, ban on hunting, tree plantation, creating awareness about conservation of biodiversity and involvement of local people in forest protection. Both the male and female respondents showed serious concern about the

protection of forest, tree plantation campaigns and creating awareness among the public about the issues and initiatives on biodiversity conservation.

Conclusions

➢ More gender-based research is required to understand the diversified nature of biodiversity conservation. This will also help in documenting and understanding the indigenous knowledge and local system for the conservation and sustainable use of. natural resources.

Provision of alternatives to the fuelwood could release the increasing pressure on natural forests. Social

➢ forestry/agroforestry should be promoted for fulfilling the fuelwood needs of custodian communities and the forage requirements for their livestock. This will also save the wildlife habitat.

➢ Local communities are immediate users of biodiversity resources and can play an important role in its conservation. There is a need to organize them and make them custodians of biodiversity by inculcating the sense of ownership that could help to check further loss of biodiversity.

Considering the low literacy rates especially in the women, informal education could play an important role to create awareness and educate them. NGOs operating in the area could play an important role and extend valuable help to public institutions in this regard.

➢ More efforts are required to conceive the concept of family planning. It is vital to establish the parameters of right size of population in consultation with the local religious leaders, which would help in promoting sustainable use of biodiversity resources.

➢ Access to new information on biodiversity is not necessarily the most effective means of achieving 'education'. Fostering appreciation for traditional knowledge on biodiversity, its local uses and management can be equally effective. Helping communities to document their knowledge raises community awareness of the importance and values of biodiversity in our daily life.

➢ Biodiversity conservation has been accorded insufficient emphasis within those sectors that use biological resources. The private sector should be made aware of the importance and value of conservation and sustainable use of biodiversity so that it could play its role in ensuring the equitable sharing of benefits from the use of biodiversity.

➢ The management/conservation agencies/departments have to play their strong role in protecting and promoting sustainable use of biodiversity resources. They should reach out the local communities and seek support in this regard through education/awareness campaigns and conservation activities.

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