



RESEARCH PAPER

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Socio-economic and biological conditions of Saif-ul-Malook National Park, Pakistan

Sher Shah¹, Khan Sher², Muzafar Shah^{3*}, Ahmad Hussain¹

¹Department of Forestry and Wildlife, University of Haripur, Pakistan

²Department of Botany, Shaheed Benazir Bhutto Univeristy, Sheringal, Dir Upper, Pakistan

³Department of Zoology, Hazara University, Mansehra, Pakistan

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Abstract

The present study reveals socio-economic and biological condition of Saif-ul-Malook National Park, District Mansehra, Pakistan. Study was conducted during May to October, 2011. Questionnaire was developed for data collection based on socioeconomic and biological conditions. In socio-economic conditions gender, age, marital status, educational level, monthly income of the local people was discussed while in the second section biological condition include the flora and fauna of the parks and adjacent area. A total of 37 people interviewed, all of them were male in which 2 were >18 which makes 5.405%, 18 were 18-30 (48.64%), 10 were 31-40 (27.02%), 2 were 41-50 (5.405%), 5 were above 50 years (13.51%). 31 were married (86.48%), 5 were unmarried (13.51%), out of these 6 were literate having metric qualification (16.26%), while other were illiterate 31 (83.78 %). 48.64% of the people occupation was rearing the cattle's, 45.95% depend on agriculture. Monthly income was categorized into three categories (5000-10,000; 10,000-20,000; 20,000-30,000). 48.64% people have monthly income in between 5000-10,000, 45.94% have monthly between 10,000-20,000 and only 5.405% have monthly income 20,000-30,000. In flora of family *Aliaceae*, *Utriceae*, *Astraceae*, *Rosaceae*, *Batsimaceae*, *Eqisitaceae*, *Poaceae*, *Saxifragaceae*, *Iridaceae*, *Pepleonaceae*, *Miomsaceae*, *Betulaceae* was present while in fauna snow leopard, Himalayan ibex, musk deer, brown bear and Marmot are present. Due to more than 1500 visitors visit to the National Park per day during these days which produced an alarming situation for the wilderness of National Park.

*Corresponding Author: Muzafar Shah ✉ muzafarphd@hotmail.com

Introduction

Protected area of land or sea especially dedicated to the protection and maintenance of biological diversity, natural, associated with cultural resources and managed through legal or other effective means” (IUCN). There are almost 230 Protected Areas (PAs) in Pakistan of different categories such as National Parks (NPs), Wildlife Sanctuaries (WSs) and Game Reserves (GRs), covering around 11% land (2,753,357 hectares) of the country (WWF Survey Pakistan, 2005). These PAs represent almost every ecological, terrestrial and aquatic ecosystem and are considerably important for their ecological and socio-economic services. National Parks are such areas that have been set for protection and preservation of its outstanding scenery, flora and fauna in a natural state. It is accessible to the public for recreation, education and research activities subject to some restrictions, as the management may impose. The construction of access roads, tourist facilities and other building in the national Park must not impair the Park objectives. Forestry activities must also be controlled in the same manner. Few acts were prohibited in national Park like Hunting, shooting, trapping, killing or capturing of any wild animal inside the park or within three miles radius of its boundaries, removing plants, polluting water flowing in and through the national Park ([www.wikipedia.com/national parks](http://www.wikipedia.com/national_parks)).

National Park is one of the most effective and globally recognized tools for conservation of the nature. National park is aimed at setting aside an area where natural fauna and flora are conserved in their original state and is accessible to the public for education, research and recreation purposes.

Khyber Pakhtunkhwa has a great variety of mountain ecosystems which harbors globally important endangered species of animals and plants. Pakistan being signatory to the environment related Multilateral Environmental Agreements (MEAs) has therefore international obligations to protect its biodiversity due to international obligations.

Mountain ecosystems are very important for the economy of a country due to its protective value of important watershed areas. However protection of its watershed is prerequisite to play its due role. Though country's most mountain ecosystems are under severe threat of degradation due to unsustainable use of its resources, still it is hoped that PAs network will play a vital role in conserving the ecosystems. The world Conservation Strategy, the National Conservation Strategy and Sarhad Provincial Conservation Strategy have made it obligatory to protect our mountain and its support systems for conservation of biodiversity at any cost. Establishments of the National Parks in the area boost up the departmental efforts for in-situ conservation of the biodiversity. It also promotes ecotourism as the area is frequently visited by the tourists in June and July. Establishment of the national park contribute also to the socio economic uplifts of the local community by providing job opportunities and attracting the visitors for recreation to achieve the goals of conservation, the National Park will be distributed into various zones in order to achieve the goals of conservation. The park has been divided into three zones, Recreation Zone (service area), Buffer Zone (Grazing area) and Core Zone (for research work, education with the permission of Khyber Pakhtunkhwa Wild Life Department (Government of Khyber Pakhtunkhwa/National Parks, 2003). People must encourage towards the National Parks. Objectives of the present study to collect the information, which will solve as an initial step towards preparation of Management plan. To find the socio economic and biological condition of the park.

This zone is managed for biodiversity conservation and the human interference will be kept at minimum. The management objectives in this zone are to maintain the area in its Natural state. Area deserving special protection due to the associated flora and fauna is included in this Zone.

As the associated flora and fauna in this zone are sensitive to human use; so, access to this zone is partially allowed, and resource harvesting is not permitted. Tourists are allowed in this zone only along major tracks. However there will be no restriction on research activities in this zone, once the study proposal is approved by the Wildlife Department.

The area adjacent to the core zone will be managed as buffer to meet the genuine needs of the local communities only in communal or private land. However to strike a balance between the needs of the local communities and flora and fauna of the area standard principles grazing management will be adopted.

One of the most important objectives of NPs is to provide recreation to the general public. Since the NPs are visited by thousands of tourists in a short period each year, appropriate area will be managed as recreation zones to fulfil the needs of national and international tourists. This will not only ensure the conservation of the area but will also enhance the income of the local communities. Recreational and biodiversity conservation awareness would also be the focus of this zone, while having a little or no impact on the ecological qualities (Khyber Pakhtunkhwa Wildlife Department).

Materials and methodology

Study area

Saif-ul-Malook National Park located 34° 52.895'N and 073°41.770'E of Naran in Kaghan Valley of District Mansehra, Khyber Pakhtunkhwa, Pakistan. The park was declared as a National Park in 28 April 2003. Area of the SMNP is 12026 acres (4867 hec). The scenic Saif-ul-Malook Lake is in the National Park. Area of the lake is 906 kanal which is present inside the National Park and acquired land around the Park is 302 canals and 10 marlas (20x20) square feet. Elevation of the SMNP is 10500 feet from the sea level. Objective of present study to collect the data which will solve as an initial step towards

preparation of Management plan and to find the socio-economic and biological condition of the park (Fig. 1).

Data collection

Data was collected from the study site during May to October 2011. Questionnaire was developed for finding the socio economic and biological condition of the National Park.

Socio-economic and Biological survey

Socio-economic survey of the national park was carried out through interviewing the local people living in the national park. Different questions were asked from them about their living standard, education level, health facilities, their agriculture livestock, and dependency on the recourses and monthly income.

The data about biological conditions was collected by using second part of the questionnaire. The employees of the wildlife department working in the national park were interviewed. Questions were asked from them about the flora and fauna of the National Park. Data was collected about the current situation of the visitors in the park and the management process.

Collection of plant

Plants were collected from the national park and brought to the herbarium for preserving and arranged on herbarium sheets. Pictures were taken by using digital camera. Photos of the different sites of the National Park were taken which. Satellite images was also taken by using Google Earth software.

Materials

Different equipment were used for the current study like binoculars for observing fauna at remote areas. GPS for finding elevation, position, altitude. Measuring tape was used for finding density of selected plots. Camping equipment, which include food items, tents and other materials. Digital Camera

of 8-mega pixel for taking photos of plants and animals.

Results and discussions

Study was carried out from May to October 2011 in which 37 peoples were interviewed. The basic tool of data collection was Questionnaire. It was aimed to find the socioeconomic and biological condition of the local community in the National Park.

Socio-economic condition

Gender Classification of respondent

Overall 100 percent of respondents interviewed were males none of the respondent interviewed were female because they were not agreed to interview.

Respondent's age

The large proportions of respondents were over 31 years of age. About 27.02 % of respondents were in the age range of 31-40 years, 48.64 % respondents were from 18-30 years, 5.405 % were from 41-50 and 13.51% were those respondents whose age was more than 50 years (Fig. 2).

Marital status

Analysis about the Marital Status of the respondents shows that high proportion of the respondents 86.48 % were married while 13.51 % were unmarried (Fig. 3).

Educational status and level

The results from the educational status of the overall respondents' shows that 83.26 % respondents were illiterate and 16.26 % respondents were literate and out of literate respondent's majority of the respondents were under metric (Fig. 4).

Occupation

Results about the occupation show that the 48.64% of the peoples depend on livestock. And they earn their income by rearing their live stocks. In livestock they rear cows, goats and sheep's. At least a single

horse is also present in every home by which they earn 400 to 500 daily from the tourists visiting the National Park (Fig. 5).

Table 1. Flora of the Saif-ul-Malook National Park, Pakistan.

Botanical Name	Local Name
Achillea millefolium	Qarqara
Adiantum venustum	Ball
Anagallis arvensis	Sabun booti
Aritmetica santolinifolia	Chow
Barberis pachycantha	Sumbal
Betula utilis	Bay patra
Caltha alba	Yarkan booti
Chesneya nubigena	Thandian
Crassula alpestris	Thanda saag
Dryopteris sinofibrillosa	Kunji
Equisetum arvense	Beer ghandal
Fragaria nubicola	Gul mewa
Impatiens gigantean	Buntill
Iris hookeriana	Gora grass
Juniper communis	Juniper
Koeleria mocrantha	Ghass
Lotus corniculatus	Pili boti
Onopordum acanthium	Oont catara
Oxytropis mollis	Neeli booti
Phlomis rotate	Peshowlamay
Podophylum hexandrum	Ban kakri
Primula macrophylla	Mameera
Ranunculus herttellus	Chamba
Rosa webbiana	Paul wari
Rumex acetosa	Hola
Salvia longifolia	Kaljari
Sambucus wightiana	Sambal
Saxifraga jacquemontiana	Peli boti
Sibbaldia cumeata	Booti
Thymus linearis	Bunjameri
Thymus serpyllm	Jamain
Traxicum offisinalis	Hund
Trifolium repens	Saag

Tussilago farfara	Thandi booti
Utrica urens	Kiari
Verbescum Thapsus	khardag
Viola biflora	Banafsha

Monthly income

About 45.95% people have their own agriculture fields from which they earn cash 30,000 Rupees per season from May to September. These People have livestock also and fulfill their needs from these livestock. About 5.405% people have their own shops in National Park which give income of 20,000 per month (Fig. 6).

Table 2. Fauna of the Saif-ul-Malook National Park, Pakistan.

Zoological name	Local name
Uncia uncia	Snow leopard
Capra ibex	Himalayan ibex
Marmota flaviventris	Marmot
Musculus musiferous	Musk deer
Capra ibex siberica	Brown bear
Tetragallus himalayensis	Snow cock
Lerva lerva	Snow partridge
Gyps coprotheres	Himalayan griffen vulture
Lophoporus impejanus	Himalayan monal
Fulica atra	Common Coot
Anus acuta	Pintail
Anus crecca	Common teal
Anus platyrhynchos	Mallard

Biological condition

Biological conditions mean the Flora and Fauna. Flora means vegetation trees, herbs, shrubs etc. In Saif-ul-Malook National Park, different types of flora are present, some of which are used for grazing by animals, some have medicinal value and some are vegetables used by the local people (Table 1).

Faunal diversity

Marmot (*Marmota flaviventris*), Himalayan ibex (*Capra ibex*), Snow leopard (*Uncia uncia*), Musk deer (*Musculus musiferous*), Brown bear (*Capra ibex siberica*) are present. Mouse here is big in size and is attacked by the eagle. Eagle has two hundred types two or three are present here. Fox is also present in the National Park. In birds, Snowcock (*Tetragallus himalayensis*), Snow partridge (*Lerva lerva*), Tetari, Himalayan Tetari just like sparrow, Doves (*Columbalivia domestica*), Himalayan griffen vulture (*Gyps coprotheres*), Chakor (*Alectoris chukar*). Water flows are found in different parts with different ratio. The most common are Sparrow and Vultures. In fishes, Rainbow trout and Brown Trout are present (Table 2).

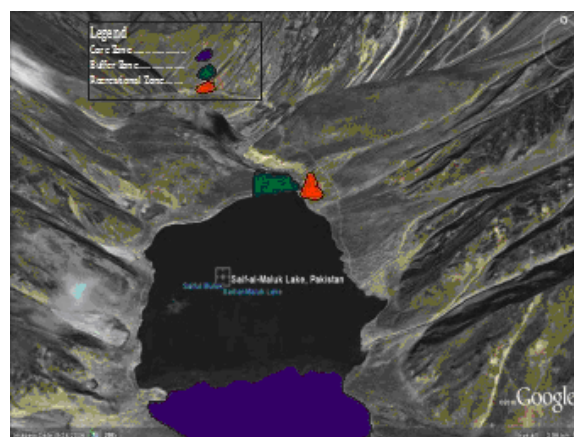


Fig. 1. Saif-ul-Malook National Park, Khyber Pakhtunkhwa, Pakistan.

Grazing

The Saif-ul-Malook National Park is the First National Park which is declared as a National Park on the private land. Due to heavy snowfall in winter the people went to the lower areas of Mansehra and Abbottabad and spent their winter there. At the end of winter and start of summer at April and May they come back to their homes present in the National Park. Average per home has one cattle 20 sheep's and goats and a horse also. They are not allowed to graze the cattle's in main three zones of National Park e.g, Core, Buffer and Recreation zones. But grazing is strictly prohibited in Core zone of the National Park which is reserved for improvement and research activities. There is no proper system for

grazing in the National Park but illicit grazing is done here. Grazing is allowed in the park away from these whole summer season from May to Oct-November. At the start of snowfall they migrated to the lower areas of Mansehra and Abbottabad and other areas of Pakistan. Due to grazing the number of plants is decreasing. Due to heavy grazing the most palatable species is grazed heavily and it does not grow well in and recover itself (Fig. 7).

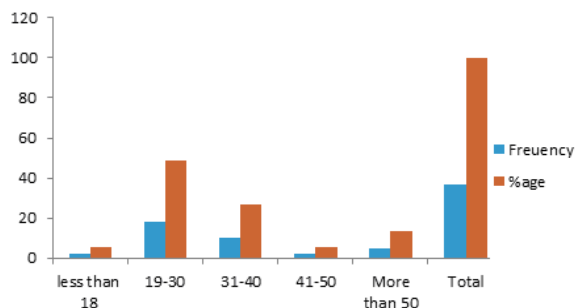


Fig. 2. Age of respondents.

Source questionnaire survey

Temperature

Temperature of the National Park is not very high due to high elevation. The temperature reaches to 25% maximum in July. But due to cool breeze it maintains the temperature low. The average temperature of Saif-ul-Malook National Park (Naran) is -3C in January and about 18C in June. In winter due to heavy snow fall the temperature falls down into minus. That's why people present in the National park migrate to the lower areas of Mansehra and Abbottabad. Due to heavy snow falls the lake become freeze in summer.

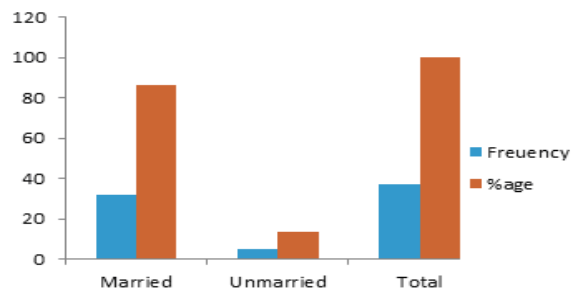


Fig. 3. Marital status of visitors.

Geology

Soil of Saif-ul-Malook National Park is acidic to slightly basic. Rocks are mostly metamorphic comprised of dolomites, volcanic green stone and

panjal formations. Generally slates, schist's and quartzite are found in mountainous cliffs. The area of the National Park is mountainous.

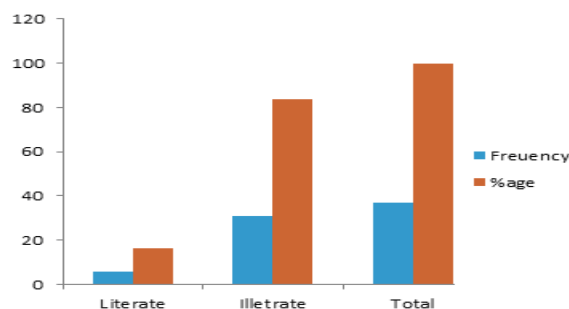


Fig. 4. Educational status of respondents.

Soil

Soil forms major relation with environment. It influences fertility and productivity of the area. Saif-ul-Malook National Park has a soil which belongs to sub recent and later periods. It shows weak profile and is characterized by partially decomposed material which is homogenous in nature. Soil of the park are basically acidic on which grow potatoes and other vegetables.

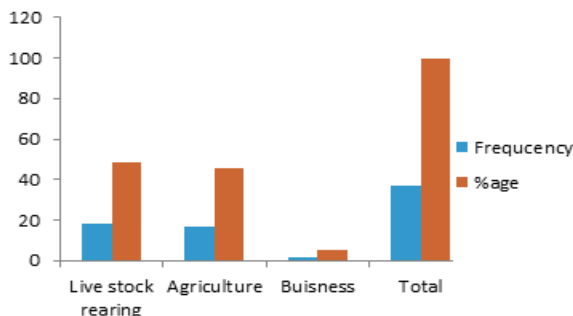


Fig. 5. Occupation of respondents.

Climate

Saif-ul-Malook National Park has dry temperate climate with heavy snowfall in winter and occasional rainfall in summer. The rainfall is very rare and occurs 150 mm/year. The snowfalls heavily and about 10 to 15 feet of the snowfall occur at the lake present in the park and up to up 20 to 25 feet on the mountain tops.

Pastures

Pastures of the area are in good condition; the local communities graze their livestock during the months

of June to October. Occasionally nomads from Kohistan, Kashmir, Northern Areas and from down country visit the area during the summer months.

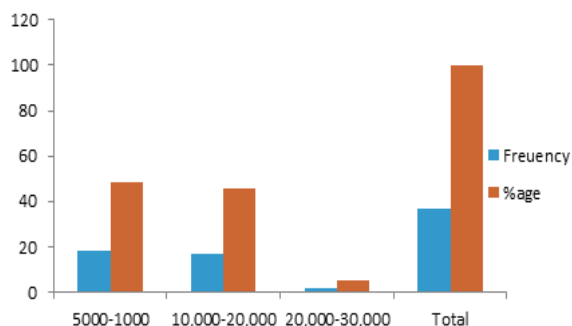


Fig. 6. Monthly income of the respondents.

Survey about The Biological Condition of the National Park was conducted from the employees of the Wild life Department. About 10 employees were interviewed. From the interview conducted from them it was found that there present various types of flora and fauna. According to them there are Junipers (*Juniper communis*), Hola vegetables (*Rumix actosa*), Sanchal, Pantrees which is medicinal plant. Ratang joht, Bat paiwa, chora, goray gass, Chotyal, Kori jari medicine. Pantry, willow fir *Abies pindrow*,



Fig. 7. Grazing in the Saif-ul-Malook National Park, Pakistan.

Juniper squamata excelsa

Although grazing decreases the flora of the National Park, but restriction/ban by the Khyber Pakhtunkhwa Wildlife Department has encouraged its growth and productivity.

Different types of plants are present in the National Park like Vegetables plants, medicinal plants etc. The Medicinal plants of the National Park are used by the pharmaceutical industries for medicines.

Carrying capacity of the National Park for visitors

During survey from the employees of Wildlife Department it was found that visitors visiting the National Park are more than the carrying capacity. About 2000 visitor's visiting the national park per day. About 200,000 visitors visit the Saif-ul-Malook National Park per season (Wildlife Department, Mansehra). The numbers of visitors are increasing year after year. This extra ordinary visitors to the National Park cause water pollution, soil pollution and air pollution by vehicles (Jeeps) etc. The soil is eroded and taints are made which decreasing the natural beauty of the National Park.

Effect of local peoples on the diversity of the National Park

Local people depend on the livestock. They graze their livestock in the National Park. Due to this grazing the flora is decreasing day by day. The livestock graze here for the whole season from May to October. The diversity of the park is also destroying by the construction of shops, markets and hotels. Due to mountainous topography the mountains are eroded for this purposes which affect the natural beauty and decreases the bio diversity of the park.

Present condition of the National Park

The present condition of the National Park is very good as compare to past years. In past there was no banned on the grazing, hunting and shooting of the wildlife animals and fishing of the trout in the Saif-ul-Malook lake.

By declaring this area as a national park by the Khyber Pakhtunkhwa Wildlife Department hunting and shooting is banned. Different types of sign boards are allocated for the tourist information. Visitors are advised to keep the National Park clean

and enjoy the nature without damaging the natural wilderness of the Park. Punishments in the form of cash or other also help to keep the National Park in ideal condition.

Future management of the National Park

For best management of the park there need to allow limited visitors to visit the park, because the visitors flow is more than the carrying capacity of the park. Service should be limited e.g. boating etc. Visitor's facilities like sunrise, shelter and latrines should be made. The tracks around the lake and from parking area to the lake should be cemented. Parking area should be specified where they have to park their vehicles. The park area should also be cemented so that to minimize the air pollution. Parking for horses should also be specified and only registered horses is allowed to facilitate the visitors. There is no health facility available in the national park. First aid facility and dispensary is necessary to provide basic health facilities to the people living in the national park and also for the visitors.

Erosion should be controlled and banned on making illegal hotels, markets and taints. National park area should be enhanced. Core area should be protected for research activities.

Responsibilities of the visitors

Arrangements are needed to make aware the visitors for their responsibility to keep the park clean and don't involve him in any kind of damage to wilderness of the park. They should be directed not to make a noisy situation in the park that will disturb the others tourists. Don't use any kind of marriage bombs. Similarly the use of arms, mining or other explosives should not be used there. This can be made by portraits, banners, posters, painting.

Conclusion

The data was collected from the 37 peoples. All male were interviewed which were different in ages. The local people mainly depend on tourists and their live stocks. The tourists visited the national park and

invest money in the national park in the form of horse riding and boating etc. Livestock is present each in every home in the form of sheep's, goats and cattle's. They graze their livestock and earn money from their selling. This park has great potential of ecotourism. Wild life department has provided a lot of facility in the national park for ecotourism.

Saif-ul-Malook National Park is one of the beautiful site located in Alpine and Subalpine zone of Mansehra (Naran). Educational facilities are not available to the local people, only 16% of the whole population is literate. Monthly income is also alarming. The local people depend on visitors, crops. Health and other communication facilities are also not available. The flora and fauna are destroying day by day due to grazing and human interventions. Special care is needed to protect the uppermost areas of this National Park especially.

It is also estimated that due to human interference some animals / birds migrated to other parts and so they decreased their population.

Recommendations

The lake Saif-ul-Malook present in the National Park, particularly remained attractive sites for tourists. Most of the lake and wetlands destinations are very different in terms of morphology, climate, culture, traditions, etc. Saif-ul-Malook Lake in Kaghan valley is one of the beautiful lakes among these lakes and a famous tourist destination. The lake has a great role in strengthening the economy of not only the local market on regional level but also contribute to the national economy in terms of tourist's expenditure.

Recommendation for tourism promotion of the road, provision of the basic facilities like health, hotels, parks for children and restaurants should be established for enhancement of tourist's attraction. Pollution should be discouraged by means of educating the tourists through various types of sign boards located around the lake on various spots,

Flora and fauna play a key role in the beauty of area, so government and non-government organizations should come forward and play their role to preserve local flora and fauna. Awareness of law and legislation should be promoted both in visitors and local people and publicity of the National Park through pamphlets, brochures, magazines, newspapers and television should be done by the government to enhance the ecotourism in the valley. Health facilities for tourist and local community in the area should be provided and proper training of porters and guides should be organized regularly in order to attract the visitors.

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