

**ROLE OF NATURAL VEGETATION IN LIVELIHOODS
OF RURAL COMMUNITIES:
A case study from Margalla Hills, Pakistan**

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ABSTRACT

Forests play a vital role in the livelihoods of the associated rural communities especially in hilly areas where agricultural land is hardly available due to difficult terrain besides poor business and employment opportunities. Current study explores the social impacts of forests on the local communities of Margalla Hills in terms of services and goods, thereby reducing their expenditures. Results showed that respondents mostly depended on forest vegetation in shape of medicinal plants, wood for making their farm implements i.e. wooden plough, spade, blade etc. and domestic goods of daily usage i.e. charpoy, stool, baskets, furniture etc. The use of cheap and easily available forest vegetation, based on indigenous knowledge, has reduced household expenses on one hand but has also put tremendous pressure on forest vegetation on the other hand. There is need to create awareness on sustainable forest resource management and also provide job opportunities and other alternate facilities which lessen their dependence on forest vegetation.

Key words: Forests, livelihoods, Rural Communities, Margalla Hills, Pakistan.

INTRODUCTION

Forests provide abodes with a variety of services such as firewood, trees, shrubs and grasses for grazing and browsing, medicinal herbs, fruits, wildlife, water springs and scenic beauty. Well being of the local communities is largely dependent on these goods and services obtained from natural resources (Fomete and Vermaat, 2001). Almost 63% of the total population of Pakistan resides in rural areas (World Bank 2014). Rural population across the country possesses a unique culture of old traditions and styles. Remoteness and inadequate communication networks have made these rural communities much dependent on their natural ecosystem from where they derive many of their daily needs. Forests play a vital role in the livelihood of these communities by providing food, water, shelter and other necessities for their sustenance. The rural folks, by virtue of indigenous knowledge passed through generations are equipped with special skills about the usage of local plants.

To ascertain the socio-economic and ecological values of forests and natural vegetation for the well being of the local communities, a study was undertaken in Margalla Hills during May, 2012. Margalla Hills are situated in the

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vicinity of Federal area and Khyber Pukhtoon Khawa (KPK) province of Pakistan and are categorized as the sub-tropical evergreen scrub forests. Due to a unique landscape with spectacular beauty, the Federal Government has declared the portion of these hills falling within Islamabad Capital Territory as National Park during 1980 under Islamabad Wildlife Ordinance (1979). Entire stretch of Margalla Hills is situated in three districts viz.; Islamabad, Haripur and Abbotabad. The terrain is rugged, elevation ranges from 465 to 1600 m comprising mainly of steep slopes and gullies (Shinwari and Khan, 2000). The monsoon rainfall occurs during July and August, with monthly average of 267 and 309 mm, respectively (Maqsood, 1991).

Human population in the Margalla Hills is randomly distributed, mostly located near water streams and springs. People freely graze their livestock, cut trees for fuel and timber, gather fodder for animals and divert water for cultivated fields. Livestock also compete with the native animals for food and space. Maqsood (1991) estimated 7,000 domestic ungulates in the National Park; 42%, 31% and 25% were goats, cattle and water buffaloes, respectively. Local communities are only partially supported by the cash economy; consequently they depend heavily for their sustenance on livestock, subsistent agriculture, fuel wood, fodder, medicinal herbs, wild fruits, vegetables and shelters etc.

There is strong evidence that people elsewhere in the world use different parts of the local plants for different purposes including mulching and fodder (leaves and twigs) and fuel wood, chewing sticks and ethno-medicines (stem and roots) etc. (Osei-Owusu, 1981; Okafor and Fernandez, 1987). Usage of different plants for various purposes requires indigenous knowledge and such knowledge is mainly inherited across generations. The current study attempted to ascertain the usage patterns of the natural forest resources by the local communities and thereby supporting their livelihoods.

MATERIALS AND METHODS

There are 20 villages situated in the Margalla Hills, reflecting its socio-economic importance. For current study, 10 villages were randomly selected comprising a total of 354 households. Four of these villages were located in Haripur, four in Islamabad and two in Abbottabad districts. Three hundred and fifty four knowledgeable and reliable elderly people, plant lovers and *Hakims* (ethno-doctors) from Margalla Hills were selected by Multi Stage Proportionate Random Sampling Technique and were interviewed to record the first hand knowledge about the economical/medicinal uses of native species of the area.

A well-designed questionnaire was used for collection of socio-economic profile and ethno-botanical information. A structured interview was scheduled for data collection purpose. Data on plant parts (leaves, twigs, fruits, pods) used and

their ethno-botanical values viz. fodder, medicines, fiber, food (vegetable, fruit), fuel wood, timber and gum were collected. Regarding medicinal uses, information about collection, processing, preparation of medicines, properties of medicine and diseases cured by them were also collected in addition to the plant species and the parts of the plants used. Data was visualized and discussed by using simple percentages wherever required.

RESULTS AND DISCUSSION

The data revealed that 47.70% respondents were living as 6-10 members in a single household. This is the common range for any single household in rural setting of Pakistan. The family systems and structures are complex models and thus vary according to different communities and norms (Brown et al. 2007) It was found that overall literacy rate of the area is low in spite of the fact that the corresponding villages are situated between the two major cities i.e., Islamabad and Haripur. Lack of adequate livelihood opportunities, relatively difficult communication and restrained mobility, low attention by the political forces and consequent frustration has collectively put the area far behind the prosperity.

Income and expenditure of the households was also evaluated to see their possible impact on natural vegetation. Almost 27% of the respondents belonged to the highest monthly income category (Rs. 10,000-20,000) while another 27% belonged to the lowest monthly income category of Rs. <10,000. On the other hand, almost 38% and 28% of the respondents had monthly expenditures of Rs. <10,000 and Rs. 10,000-15,000, respectively. These figures clearly suggest some extra economic pressure on the low-income categories. The occupation profile of the respondents suggests that 36.2% of the respondents were subsistent growers, 24% had government jobs, 24% had private jobs, 18% had their own business, 8% were skilled labour, 5% were unskilled labour and 4% were self employed.

Agriculture remained the major livelihood of the local population. However, land holding data revealed that most of the respondents occupy less than one acre of land. Even more than 26% of the respondents were land less. This is probably due to hilly terrain where leveled land is hardly available. Most of the people own uncultivated land, which mostly supports forest. There were very few families (2%) who own >7 acres of uncultivated land. In rural settings, uncultivated land is also considered as a valuable asset being source of fuel wood, timber and grazing grounds for the livestock.

Medicinal Plants

Thirty nine percent of the respondents used medicine plants for human and livestock ailments. People preferred Amaltas (*Cassia fistula*), Arind (*Ricinus*

communis), Bohr (*Ficus bengalensis*), Bhaikar (*Justicia adhatoda*), Brahmni booti (*Centella asiatica*), Daruna (*Punica granatum*), Dhodhal (*Euphorbia heliscopia*) and Granda (*Carissa opaca*) for medical purposes (Table 1). A large proportion (61%) of respondents did not use them due to diffusion of new innovation in medical science and better access to the nearby cities (Fig 1). About 24% of the respondents told that they directly collect medicinal plants from the forests while only 3.7% reported that they purchase them from some local sources (Fig 2).

Ahmad and Hussain (2008) argued that medicinal plants have been embedded as a rich tradition in lives of local communities of Salt Range, Pakistan. Zaidi (1998) also suggested that medicinal plants are valuable forests resources and considered as potentially safe drugs. Similarly, Elujoba *et al.* (2005) also concluded that local communities in Africa utilize medicinal plants obtained from forest areas for preparing medicines for humans and livestock. The indigenous knowledge regarding different uses of medicinal plants is unfortunately fading away.

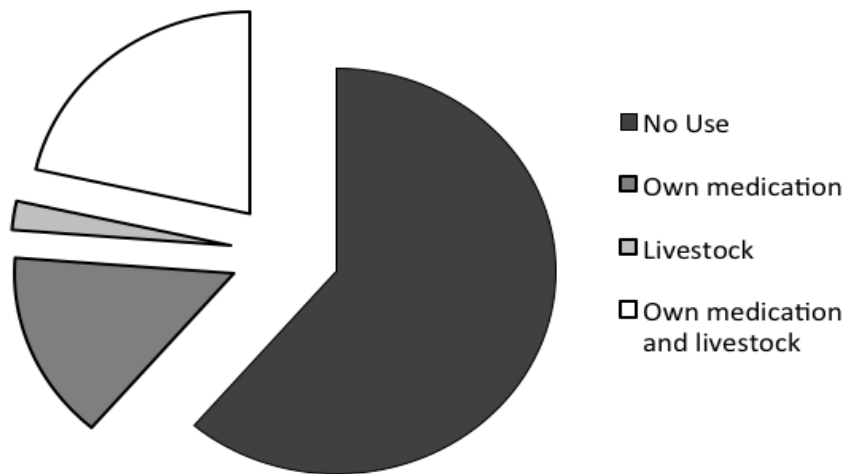


Fig.1. Purpose of the use of medicinal plants among local Communities of Margalla Hills

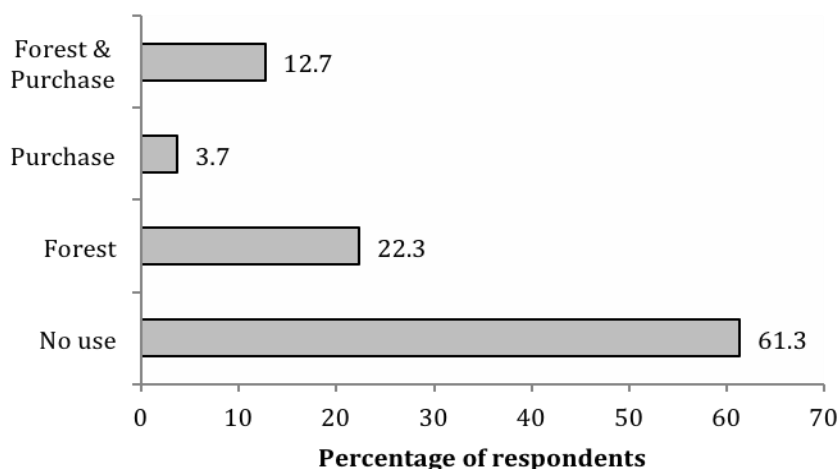


Fig.2. Usage and source of medicinal plants for local communities of Margalla Hills

Table 1. Purpose and uses of medicinal plants by local communities of Margalla Hills

Medicinal Plant	Purpose of Use (% of Households)			Major Uses
	Personal Use	Livestock	Both	
Brahmi Booti (<i>Centella asiatica</i>)	17.2	16.4	5.1	Wound healing, better circulation, memory enhancement, cancer, vitality, general tonic, respiratory ailments, detoxifying the body, treatment of skin disorders.
Dhodai (<i>Euphorbia helioscopia</i>)	16.7	18.6	3.4	Febrifuge and vermifuge
Lehli (<i>Convolvulus Arvensis</i>)	15.0	17.8	5.9	Purgative and for reducing fever
Phulai (<i>Acacia modesta</i>)	12.7	07.0	19.0	Antioxidants
Siris / Shareen (<i>Albizzia lebbek</i>)	15.8	15.0	7.9	Flu, cough and lung problems
Kameela (<i>Mallouts philippiensis</i>)	13.3	21.2	4.2	Anthelmintic and treatment of infectious wounds
Kanga (<i>Pistacia Chinesis</i>)	14.1	20.4	4.2	Asthma, phthisis, dysentery and chronic bronchitis
Daruna (<i>Punica granatum</i>)	11.0	21.7	5.9	Diarrhea, dysentery and intestinal parasites
Kao (<i>Olea ferruginea</i>)	10.7	19.8	8.2	Eyes and diarrhea
Amaltas (<i>Cassia fistula</i>)	20.1	12.7	5.9	Purgative and for treatment of headaches.
Bohr (<i>Ficus benghalensis</i>)	16.1	20.3	2.3	
Bhaikar (<i>Justicia adhatoda</i>)	12.7	20.0	5.9	Respiratory tract
Arind (<i>Ricinus communis</i>)	22.6	11.0	5.6	
Kuchmach (<i>Solanum nigrum</i>)	12.1	18.9	7.6	Asthma, dysentery and fever
Sunmloo (<i>Berberis lycemus</i>)	10.7	17.8	10.2	
Granda (<i>Carissa opaca</i>)	11.2	20.6	6.2	Asthma, cardiac disorders, and treating cough

Table 2. Use of natural vegetation for farm implements and domestic products

Type of Implement	Number of Respondents	% of Respondents
	Using	Using
Wooden handles (<i>Dastay</i>)	133	37.6
Wooden pegs (<i>Killay</i>)	148	41.8
Wooden rake (<i>Trangal & Sangal</i>)	119	33.6
Wooden rake (<i>Pohora</i>)	127	35.9
Wooden plough (<i>Hull</i>)	148	41.8
Yoke (<i>Punjali</i>)	113	31.9
Wooden plank (<i>Majh</i>)	65	18.4
Wooden spade (<i>Karai</i>)	65	18.4
Wooden blade (<i>Karah</i>)	101	28.5
Wood lopper (<i>Dhanga</i>)	78	22
Donkey cart (<i>Rhaira</i>)	31	8.8
Donkey carrying box (<i>Jandri</i>)	48	17.8

Use of Natural Vegetation for Farm Implements

Another aspect of this study was to examine the dependence of local communities on natural vegetation for the fulfillment of their needs of farm implements i.e. used traditionally for sowing, harvesting, and carriage purposes and for livestock. Results indicated that farmers are still adhered with many traditional cultivation implements prepared from the naturally grown woody plants. A variety of farm implements such as wooden plough, yoke, wooden plank etc. (Table 2) are used for tillage practices. Results show that 42% farmers were using wooden plough while 32% used the yoke to connect the pair of animals for ploughing.

Table 3. Use of natural vegetation for various household items

Type of Implement	Number of Respondents	% of Respondents
	Using	Using
Wooden pen (<i>Kalam</i>)	188	53.1
Sticks (<i>Soti</i>)	272	76.8
Charpoy (<i>Charpoy</i>)	271	76.6
Wooden weaven stool (<i>Peerhee</i>)	255	72.0
Basket (<i>Tokra</i>)	226	41.8
Broom (<i>Jharoo</i>)	264	74.6
Wooden ladder (<i>Parsaang</i>)	81	22.9
Wooden mesher (<i>Ghotna</i>)	92	26.0
Wooden churner (<i>Madhani</i>)	93	26.3
Wooden churner's Stand (<i>Neehni</i>)	69	19.5
Wooden roof drain (<i>Pernala</i>)	102	28.8
Table & chair (<i>Maiz Kursi</i>)	174	49.2

Natural vegetation is also used for different domestic purposes as it decreases consumer expenditure due to low market value. The usefulness of wooden and non-timber products and their economic importance has also been acknowledged from other parts of the world e.g. Mexico, Ethiopia, Central and South Africa (Andrade and Jenkins 2003; Andel 2006). A large portion (82.2%) of local population was using domestic products made up of natural vegetation. These products are made by local villagers with the help of indigenous knowledge transferred from their ancestors (Table 3).

The villagers frequently use different domestic products made by natural vegetation. These products provide huge compensation because of value added cost for villagers. Some products are in readily useable form such as wooden pen, sticks, wooden mesh, broom etc., other products are amended to bring them in useable form e.g. Charpoy, tables and chairs. . Sheikh (1987) reported that minor non-timber forest products (NTFPs) are spread throughout the country and play a considerable role in the lives of people of Pakistan, although a complete statistical account of NTFPs is not possible. These domestic products compensate the users by decreasing the household expenditure. Use of domestic products also indicates cultural practices of local community because the art to change raw material in useable form is mostly an indigenous matter.

CONCLUSION

The income of the respondents was low in comparison to their expenditure. The expenditure on the other hand was observed to be reduced to some extent due to heavy dependence on forests for their subsistence; preventing them to spend money on many daily use items. As the dependence of local communities was very high on forest reserves, there seems tremendous pressure on forest ecosystems. To check this pressure, there is a need to create awareness among local communities for sustainable resource management and provide job opportunities and other alternate facilities which lessen their dependence on forest vegetation.

REFERENCES

- Ahmad, S. S. and S. Z. Husain, 2008. Ethno-medicinal survey of plants from salt Range (Kallar Kahar) of Pakistan. *Pakistan Journ. Bot.* 40(3): 1005-1011.
- Andrade, P. and B. M. Jenkins, 2003. Identification of patterns of farm equipment utilization in two agricultural regions of central and northern Mexico. *Agricultural Engineering International: the CIGR Journal of Scientific Research and Development. Invited Overview Paper. Vol. V.*

Andel, T. V., 2006. Non-timber forest products the value of wild plants. Agromisa Publication and CTA, the Netherlands.

Brown, B., Taylor, A, Izadi, S., Sellen, A. and J. Kaye, 2007. Locating Family Values: A Field Trial of the Whereabouts Clock. In Proc. of UbiComp'07, 354-371.

Elujoba, A. A., Odeleye, O. M. and C. M. Ogunyemi, 2005. Traditional Medical Development for medical and dental primary Health care Delivery System in Africa. Afr. J. Trad, CAM 2(1): 46-61.

Fomete, T., and J. Vermaat, 2001. Community forestry and poverty alleviation in Cameroon. Rural development forestry network. Network Paper No. 25h.

Maqsood, A., 1991. Mammals of Margallah Hills National Parks: An Annotated List of Mammals, 8

Osei-Owusu, A. 1981 Survey of wild food plants in Ghanaian villages. Project paper, institute of renewable natural resources, University of Science and Technology, Kumasi, Ghana

Okafor, J. C. and E. C. M. Fernandez, 1987. Compound farms of southeastern Nigeria: a predominant agro-forestry home garden system with crops and small livestock. Agroforestry Systems, 5(2): 153–68.

Sheikh, M. I., 1987. Forest based rural enterprises, Pakistan. FAO Regional Office for Asia and the Pacific Maliwan, Mansion phra Atit Road Bangkok, Thailand.

Shinwari M. I and M. A. Khan, 2000. Vegetation comparison of scared, reserved and unreserved sites of Rumli village at Margalla Hills National Park, Islamabad. Pakistan Journal of Biological Sciences. 3(10): 1681-1683.

Zaidi, S. H., 1998. Existing indigenous medicinal plant resources of Pakistan and their prospects for utilization. Proceedings of the meeting held at the Plant Genetic Resources, Institute, Pakistan Agricultural Research Council, Islamabad. (Eds.): R. Anwar, N. Haq and S. Masood, Pp: 55-64.