

FORESTRY AND RANGE MANAGEMENT IN CHITRAL DISTRICT

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Abstract

The paper reviews the present situation and constraints of forestry and Range Management in the district of Chitral, and offers suggestions for improvement. The composition, functions and exploitation situation of the forests alongwith remedial measures are described. The demands of local people on the forests, status of demarcation and settlement of rights, damage being done to the forests, are given. The objectives of management of these forests and the proposed means to achieve these objectives are suggested. The present situation and future recommendations for watershed management, soil conservation, medicinal plants, sericulture, wildlife and outdoor recreation are also described.

Study Area

Chitral District covers an area of 5731 square miles (17700 square kilometers) and is situated in the northern most tip of Pakistan. The tract forms part of Chitral (Kunar) River Watershed having numerous valleys draining towards the main water body. It lies between 35° to 37° N Latitude and 71° to 74° E. Longitude. On the north west of the district is Afghanistan, to south west are the districts of Dir and Swat, while Gilgit area lies in the east. Chitral river is flowing through the district. Its main tributaries are Yarkhoon, Laspur, Mulkhov, Torkhov and Lotkoh rivulets. This river enters into Afghanistan where it joins the Kabul River.

The district tract is generally rough, rugged and mountainous. The elevation varies from 1084 m at Arandu to 7579 m at Tirichmir. The orientation of the catchment area is from south-west to north-east. The valleys get narrower and narrower while draining towards Chitral river. They are zigzag, irregular and gradually becoming devoid of vegetation from south-west to the north-east and thus resulting in bare rock outcrops. The general slope is steep to precipitous and sheer cliffs are common. Most of the area above 4400 meters is glaciated (about 20% of the total district area). About 2% of the area is situated in the beds of valleys where habitation is possible.

The soils of the district have been classified into very shallow soils of mountains, stony soils of lower mountain slopes, stony and gravelly soils of old river terraces, stony/gravelly soils of alluvial fans and silty soils of plateaus. Very shallow soils of mountains and stony soils of plateaus. Very shallow soils of mountains and stony soils of lower mountain slopes are suitable for forestry or range management depending upon the climate. In areas getting more than 800 mm precipitation and having 1,500 to 3,500 m altitude, these are suitable for forestry. The other areas are suitable for use as rangeland. Without irrigation, stony and gravelly soils of old river terraces are suitable for only grazing, but with irrigation these are suitable for deciduous fruits. The stony/gravelly soils of alluvial fans and silty soils of plateaus are under irrigated farming.

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The climate ranges from dry subtropical through temperate to alpine depending upon elevation above mean sea level. The average monthly temperature ranges from 1.3°C in January to 36.7°C at Chitral and from 0.2°C in January to 36.0°C in July at Daroosh. The mean annual rainfall is 588 mm at Chitral and 658 mm at Daroosh. The relative humidity is generally low varying from 36% in June to 71% in January at Chitral and from 40% in June to 74% in January at Daroosh (at 0800 hours).

The Forest

Forest area is about 42,000 ha. It is composed of conifers (64%) such as deodar, fir, kail, chilghoza and juniper and broad leaved species (36%) like oak, walnut, maple, horse chestnut and bird cherry. Deodar is the most important species occupying 75% of the conifer forests. The brighter aspect is that due to difficulties in transportation of wood in the past much of the forest wealth still remains intact especially in remote and inaccessible areas but on the other hand the forests are full of dying, mature and over mature trees needing immediate salvage operations. 14160 m^3 (500000 cft) of wood can be safely taken out of the forest annually without causing any harm to the capital. The protective functions of the forest and their influence on prevention of floods, maintenance of water supply and soil conservation is as important as the productive functions of the forest.

The demands on the forest are: timber for housing and agricultural implements, wood for burning and shrubby leaves and grass for cattle, goats and sheep. Due to special climatic conditions of the area, there is excessive demand for fuel for which all kinds of trees including walnut and deodar are heavily lopped and cut. Grazing is almost free in all types of forests and is the main reason for the failure of natural regeneration and absence of ground cover in forest. Except a few groves near the habitations, oak trees are heavily lopped for fodder and fire wood, the forest in the process receding further back into the hills.

No demarcation of forests has been carried out and settlement of ownership rights is still to be undertaken. This needs looking into. Forests are heavily burdened with rights. It has resulted in lot of devastation without replacement. These rights need to be clearly defined and settled once for all with an eye on ameliorating/extinguishing these rights as far as possible.

The natural causes of damage to the Forest are snow, wind, lightening, hail storms, frost, flying squirrels, wild animals, birds, insects and fungi. Apart from these the forests are damaged by human agency in the form of fires, lopping, cutting, browsing, extraction of torch wood and extraction of deodar oil. Large number of trees are dead, dying or in the advanced stage of decay due to these causes.

Goals for forest management

The objectives of management should include perpetuation of the sources through systematic exploitation supported by intensive artificial regeneration operations and maintenance of the quality of human environment and its improvement with special emphasis on the development of the tract as a tourist resort. The forest should be worked on a sustained yield basis to meet the timber and fuel wood requirements of the people keeping in view the import-

ance of watersheds and soil conservation practices.

Suggested means to achieve above goals

The biggest hurdle in the systematic exploitation of forests in the past has been the inadequacy of means of transportation of timber. Since Chitral river winds its way through Afghanistan, the experiment to float timber through an alien territory has been bitter. The only short line of export is through Lowari top which remains snow bound November – March and no truck traffic is possible. The work on Lowari tunnel is at a stand still for the time being. Possibility of the installation of rope ways at different points may be explored not only to export wood but also for transportation of goods of daily use.

Regeneration is conspicuous by its absence due to uncontrolled grazing. It is imperative that suitable measures are taken to give a chance to the young seedlings to get established. Apparently it seems quite difficult to make the local people agree to the practice of controlled grazing. As a first step, attempts may be made to close blocks of 500–1000 ha. to grazing for a period of ten years by rotation. Strict supervision will be involved in this venture because years labour will be lost even if one flock of sheep and goats managed to find its way into the closed areas.

At present the total area under tree nurseries is not even one hectare. Establishment of nurseries on scientific lines to produce healthy and sturdy stock is a pre-requisite for all afforestation programme. Suitable pieces of land where irrigation facilities are available may be acquired for this purpose. In addition to the planting stock already being grown, it is imperative to grow Chilghoza pine, Quetta pine, *Ceratonia*, *Gleditschia*, *Robinia*, *Alnus* and *Mulberry* for planting out in the forest area. Emphasis may also be placed on growing good varieties of walnut, almond, prunus and other fruit trees. Nurseries of hybrid poplar should be raised on scientific line as this multipurpose fast growing trees has an assured future in the tract. Certified seed and cuttings may be obtained from the Pakistan Forest Institute.

Areas available for afforestation are the large blanks in the forests and the denuded belt lying between the foot of hills and the edge of the forests. The forest service will have to launch a powerful drive to bring home to the people the advantages of re-afforestation. Grazing will have to be controlled in such areas, closing 10–50 ha. at a time. Tubed stocks of deodar, chilghoza, oak etc. will be planted testing planting seasons viz. before snow fall and after snow melt. Fencing of all such areas will be a pre-requisite. If possible hand watering will be done from snow storage ponds dug out for the purpose. Besides these areas scree slopes, alluvial and colluvial fans, river banks and slopes along which irrigation channels run are available for tree planting. Here either in the form of blocks or rows, trees such as *Robinia*, *Phulai*, *Elaeagnus*, *Gleditschia*, *Ceratonia* and *Arizona Cypress* can be planted. Some ornamental species as *Quetta pine*, *channar*, *kachnar*, *amaltas*, *Arghwan*, *shrub Cassias* and *Lagerstroemia* etc. may be planted along roads in single rows or blocks depending on the site availability. The other possible sites for trees planting are the farm lands. Rows of poplar against wind direction will not only save the fruit trees and agricultural crops from cold winds but also become an erstwhile source of wood for packaging and crating of fruit for export.

Growing of walnut trees

The tree not only produces walnuts of good quality in abundance but is also a source of extremely valuable wood cherished all over the world for its exquisite grain and durability. The valley is exclusively suited to growing of the tree. However, the alarming fact is that only large sized, old and often rotten trees can be seen. It means that new trees are not being planted to take the place of old ones in due course of time. A special campaign may be started to distribute well grown good quality walnut saplings to the villagers for planting around their fields, in the village wastes and habitations.

At present the export of walnut timber out of the valley has been banned. In order to salvage some excellent walnut timber which would otherwise decay and rot, the ban should be relaxed fixing maximum quantity which can be exported out of Chitral in one year.

Watershed Management and Soil Conservation

Life of Warsak dam depends on proper management of the catchment of Chitral river and its tributaries. The important climatic, edaphic and biotic features of the area will have to be taken into consideration to chalk out a definite management plan to regulate the flow of water, loss of soil and deposition of sediment. Since shifting of population from the watersheds is not possible due to socio-economic and political reasons, the only remedy is proper management of the watersheds by intensifying reforestation measures in conjunction with engineering devices such as construction of check dams, spurs, and plugging of gullies.

Dabris choked torrents, fields littered with stones, pebbles and heaps of soil and big chunks of land literally going down the drain indicate the priority of soil conservation measures. The problem can be solved by posting trained staff which is well versed in scientific soil and water conservation practices. The same measures indicated for watershed management will have to be taken in the low lands including banning of cultivation on steep slopes, planting of live hedges on the borders of fields running along the river, gully plugging in agricultural fields and terracing of large farming units into smaller ones along the contour.

Medicinal plants

The tract is quite rich in plants of high medicinal value. Substantial quantities of *Dioscorea deltoidea* (Kanis), *Podophyllum emodi* (Bankakri), *Thymus serpyllum* (Ban javain), *Rheum emodi* (Revand chini), *Paeonia emodi* (Mamekh) and *Artemisia maritima* (Afsantine) can be collected. Studies will have to be conducted to find out the best time and method of their harvesting on sustained yield basis and their requirements by the pharmaceutical industry. Feasibility of establishment of a pharmaceutical industry at Chitral may also be studied.

Sericulture

Rearing of silkworm extends over a period of only 60 days and can bring to villager an additional income of Rs. 1000 to Rs. 1600 if he rears 30 grams silk seed. He would need leaves from about 40 mulberry trees for this purpose. Although mulberry has traditionally

been grown in the valley for fruit, its leaves have not been put to much use except for feeding goats and sheep. Large sized saplings of mulberry should be distributed among the farmers in early spring for planting at all suitable places. There is ample scope for introduction of the Japanese and Korean varieties of mulberry at a later stage.

Wildlife

Inspite of indiscriminate shooting and ruthless hunting in the past, Chitral continues to be the home of rare animals and birds. While urial, markhor, musk deer, black bear, leopard cat, monkeys and koklas pheasant are found in lower Chitral, Himalayan ibex, snow leopard and snow cock can be seen in Upper Chitral. If managed properly, this resource can play an effective role in boosting up the local economy through tourism. To achieve this objective, it is imperative that public awareness is created through mass media. Involvement of local population in the management of wildlife and its habitat through motivation and persuasion and establishment of some more sanctuaries for the major species such as markhor, ibex and urial will go a long way in preserving this national heritage.

Out door recreation

God Almighty has blessed this land with snow covered peaks, rare wildlife, river full of clean water and fish, green valleys, immense quantities of a variety of fruit, camping sites and hiking opportunities. There is thus tremendous scope for extension and development of recreational facilities in the area, to attract the tourists from all over the world.

Range Management

Range Management is the biggest land use in Chitral district. Out of 17700 square kilometer total land area, rangelands comprise of 10620 square kilometers as compared with 265 square kilometers of cultivated land and 531 square kilometers of forest area. Inspite of such a vast natural resources of rangelands no organization of range management exists in the district. The number of livestock in Chitral district in 1976 was 71580 cattle, 97310 sheep and 169389 goats and 2469 others, which come to 144,328 animal units. The total amount of air dry forage required annually for this livestock is 368,758 metric tonnes against which 371,550 metric tonnes of air dry forage is available in Chitral.

The only important fodder crops in the district are shaftal (*Trifolium resuprinatum*) and lucerne (*Medicago sativa*). Maize, wheat, rice and pulses are grown primarily for seed but their stalk is also a good source of feed for the livestock. There is an extremely inefficient use of the aftermath of agricultural crops because of leaving very high stubbles and feeding the whole stalks. In addition to the aftermath of agricultural crops and fodder crops, fodder trees on the cultivated land like *Elaeagnus angustifolia* and *Robinia pseudocacia* and leaf fall in autumn from all the fruit trees are an important source of livestock feed.

Most of the animal feed, however, comes from the rangelands. Alpine pastures are excellent summer grazing grounds while the oaklands bear the livestock pressure during winter. Some range areas are protected from grazing during summer, cut in autumn and their forage

stored and fed to the livestock during winter. A very healthy practice of Hujjat is also in vogue in which a deteriorated range area is completely banned for any type of use for a number of years to improve vegetation vigour and ensure regeneration of good forage species.

Both cultivated fodder and range forage in the protected reserves is cut at a very late stage when lot of nutrients have already leached. The hay and aftermath of crops is stored in the open usually on trunks and branches of the trees. This is open to vagaries of the weather. During rain the nutrients are leached out and the feed starts rusting. Nutritious green forage is available in spring months only except for the oakland and alpine pastures.

A reconnaissance survey of the range source of Chitral district should be conducted to determine the combined carrying capacity of cropland, rangeland and forest land and to indicate the potential areas for development. The acreage under fodder crops should be increased and the leaves of deciduous trees fallen in autumn should be collected and saved for use during winter. Fodder trees should be planted along water courses, field boundaries and along the streams and rivers.

The efficiency of utilization of aftermath of agricultural crops can be increased by chopping the materials before feeding to the animals. The harvesting of grass should be done at boot stage and the cut grass should be stored under roof with open sides. The poorer areas in alpine pastures are proposed to be reseeded and fertilized.

Hujjat should be strengthened by identifying the areas practicing it and taking it to the other areas. The animal off-take should be increased through organizing livestock markets on cooperative basis. Range extension is proposed for educating councillors and local people in range management practices, demonstrating the results of good range management practices, helping in preparation of the grazing plan, and advising on feeding of animals.

Conclusions

The district of Chitral has high potential for development of forestry, range management, sericulture, wildlife, outdoor recreation and extraction of medicinal plants. The present organisational set up has to be strengthened and the staff trained properly to handle their respective jobs. The suggested operations can then be carried out by the trained staff.