

"Turf" and Forest Management in a Garhwal Hill Village

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Moench undertook field research in a village in Teri Garhwal, India in 1984. This selection describes a system of locally recognized and respected inter-village and intra-village customary rights to land and trees ("turf") that supersedes national statutory rights and results in a reasonable level of forest management.—The Editors.

This chapter outlines a customary system of land and tree tenure, herein called "turf", and the system of forest management in a Sub-Himalayan Indian village, examines the theoretical connections between turf and the management system, and examines the implications of turf and village management systems for forestry projects.

The customary system of land and tree tenure described here is termed turf because of the informal and geographically defined nature of the tenure system. For the purposes of this chapter, turf is defined as a system of resource tenure that is: 1) geographically based (e.g. territory that is claimed on the basis of proximity to points of use or with boundaries that follow natural divides) 2) associated with a distinct social unit such as the village, clan, or family and 3) not incorporated into or recognized by any official, statutory tenure system. In the case study which follows, turf and forest management are examined on inter-village and intra-village levels.

Because turf is by definition associated with a social unit such as the village, the group with use rights is clearly delineated and generally small. Given the intimate nature of life in a village-like social group, information concerning resource use tends to be available, exclusion of non-members is relatively straightforward, there may be a relatively high degree of assurance between members, and informal social mechanisms exist for the control of free riders. Information

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availability, exclusion, and assurance are also aided by the geographic nature of turf areas. Thus, turf includes elements often noted as fundamental to successful management of common resources (Ciriacy-Wantrup and Bishop, 1975; Gilles and Jamtgaard, 1981; Runge, 1981; Popkin, 1981; Oakerson, 1985).

THE VILLAGE STUDY

Mungluri is 12 kilometers north-east of Mussoorie in Tehri Garhwal, India. The predominant local culture is Hindu Pahari (Berreman, 1972). Typical of many villages in the area, Mungluri is a medium sized, Rajput (a relatively high cast) dominated, agricultural village with access to extensive oak forests, grassland and rain-fed agricultural lands but owning relatively little irrigated land (Table 1). Despite close linear proximity to the major center of Mussoorie, Mungluri is isolated by the area's steep topography, and village production activities are primarily directed at subsistence needs rather than external markets. These subsistence activities are based on locally available resources, of which fodder and fuel are key elements.

Forest and grassland resources are critical to maintenance of village agriculture. The only source of fertilizer readily available to most villagers is farmyard manure. This fertilizer is in turn dependent on a continuous supply of fodder derived from overgrazed grasslands and leaves lopped from the forest. Roughly one third of the fodder (excluding the three month monsoon season) given to stall-fed stock is oak (*Quercus incanina*) leaf cut from the forests. In addition, as in most Himalayan villages, wood is the primary fuel. In Mungluri, roughly half of the total wood fuel required comes from the small twigs remaining as a by-product of fodder collection. Thus, fodder, fertilizer, and fuel supplies are closely linked and the condition of forests is central to maintenance of village agriculture. Oak is the dominant species used to meet these needs and all references to "forests" in the rest of this paper refer to oak areas.

Forests in the Mungluri region are owned by the state and under control of the Forest Department. Officials of the Forest Department are few and their presence has little influence on day-to-day patterns of forest use. Each village has a clearly defined "turf" area in the forests over which it claims use right. This use right has no legal standing but is explicitly recognized by other villages and serves as an effective, if unofficial control on access to forest. Turf in Mungluri is ownership of resources that are officially in the public domain. In addition, within each village's forest families or small groups of families have hazily defined areas of regular use adjacent to out-

buildings. These areas are not explicitly recognized by other members of the village but do provide a basis for limited management.

Field information was collected during a nine month period in 1984 via a series of semi-formal group interviews and through discussion with key individuals within the village. Extensive confirmation (i.e. by at least two independent groups or three separate individuals) was required prior to inclusion of the information in the data set. See Moench (1985) for details of the methodology and in-depth information on the village.

Table 1
Basic Village Characteristics

Population	254	Agricultural Lands*	78.4 ha
Rajput	206	Irrigated	7.5 ha
Scheduled Caste	48	Rainfed	70.9 ha
Livestock Total	351	Privated Grasslands	4.8 ha
Buffalo	89	Village Grasslands**	30.0 ha
Cattle	148	Forest Surrounding	
Goats & Sheep	106	Village***	485.0 ha
Bullocks	56	Portion of Forest	
Mules/Horses	9	Lopped for fodder***	98.0 ha

* All land areas are in hectares; data from local Patwari (land officer) records.

** Estimated from field measurements as the area of village common grassland.

*** Forest within the immediate watershed above Mungluri.

OAK FOREST MANAGEMENT

Forest management in Mungluri is not an active system involving organized cooperative action by the villagers but is defined by use (Roe & Fortmann, 1982). In this way it is quite different, for example, from the traditional village management systems in Nepal described by Messerschmidt (1985). These involve organized community action on the part of the villagers with the explicit goal of protecting or improving local forest resources. In Mungluri the lack of organized community action around forests does not, however, reduce the impor-

tance of the *de facto* forest management that occurs. This *de facto* management is central to both the production of leaf fodder and the maintenance of forest condition.

The starting point with regard to forest management is the distinction between lopped areas and the full canopy forest. Lopped areas are essentially production forests directed at the supply of fodder and to a lesser extent fuel. Unlopped oaks do not supply fodder. Regular lopping is a prerequisite for the production of fodder. There are at least two reasons for this. First, villagers indicate that stock prefer fresh tender leaves from trees which have been regularly lopped because older leaves from previously uncut oaks are hard and dry. Second, larger branches tend to have a lower leaf-to-wood ratio than smaller ones. If the primary objective is fodder, collection of smaller branches from regularly lopped trees is, within limits, more desirable. As a result, the unlopped portions of the forest can not be considered as part of the primary leaf fodder production area. This implies that total production of the forest is irrelevant to fodder and fuel supply. Since demand is focused on a limited area, degradation can occur in conditions where aggregate forest production far exceeds demand (Moench and Bandyopadhyay, 1986).

Analysis of the branches collected for fodder can also provide an estimate of lopping frequency. The villagers' stated goal in fodder collection is to find a tree with branches that are easy to collect and have a large amount of leaf. They avoid cutting very small branches because these are difficult to collect and because cutting all the branches can kill the tree. The range in basal diameter of branches collected by villagers is narrow. In a random sample of 40 headloads, branches between 0.8 cm and 1.5 cm in diameter comprised 72 percent of those collected. Less than 1% of branches were smaller than 0.6 cm and less than 4 percent were greater than 2.1 cm. This size range corresponds to an age range for the branches. Ages for a large sample of branches of varying diameters were estimated via nodal point and ring counts. The weighted mean age for the branch size range collected by villagers is nearly five years. This is equivalent to a lopping frequency for the oaks of 2-3 years because branches younger than 2-3 years are in size classes smaller than those which appear in headloads.

Villagers' stated goals and the branch analysis indicate that lopped portions of the forest are managed for fodder production. This management is directed at the production of easily collected branches which can supply a large amount of leaf fodder relative to wood while maintaining the forest for sustainable fodder production. By avoiding cutting all of the branches, particularly small ones, from any tree and by selecting trees with "a good crop" of branches on them, killing the

tree by overlopping is avoided. The result of management to meet these goals is a *de facto* lopping rotation in oaks of 2-3 years and an average branch harvest age of roughly five years.

In addition to the lopping system an explicit element of management is the reservation of oaks in the vicinity of *chans* (out-buildings near or in the forest where stock are kept) for cutting during periods of high labor demand. These *chans* belong to individual families in the village. The leaf fodder available on oaks near the *chans* is not collected except during periods, such as the harvest, when little time is available for the collection of fodder from other areas. At these times, *chan* owners use the fodder which has been saved for their stock.

Other elements of use which occur in the lopped forest and can be regarded as part of the management system include grazing and the entry of fires from adjacent grassland areas. Grazing in the lopped forests is, for the most part, uncontrolled. In many grassland areas management is present and grazing is controlled, however, description is beyond the scope of this paper. Fires also are a major factor within lopped areas. These fires are set in grassland areas during the period prior to the monsoon to ensure a good grass crop. Given the dryness of the season they frequently spread to adjacent lopped oak areas and even into the main forest.

The *de facto* management occurring in forests is not resulting in rapid degradation of the resource. Regeneration of the oaks in some portions of the lopped and browsed area is good. In these locations, regeneration under continuous lopping pressure has resulted in a very dense growth of roughly two meter high oak bushes.* These areas are regarded as prime fodder collection locations by the villagers.** The soil in these areas is also in good condition, the organic content is high and there is a heavy covering of leaf litter. In contrast, the general pattern, particularly in exposed locations, on dry south-facing slopes, or

* Regeneration in this case refers to both "seed originated" and "coppice originated." In general, regeneration is good in moderately lopped and browsed forests which are not south-facing and which are a fair distance from grasslands. Singh *et al.* have noted similar high levels of regeneration in moderately disturbed mixed oak forests and a shift toward "coppice originated" regeneration and away from "seed originated" with increasing disturbance (Singh *et al.*, 1985).

** These sites tend to be in locations not prone to frequent burning and where moisture availability is better than average. In the most dense areas as many as 40-50 two meter high oak bushes occur in a 10x10 meter quadrat.

in locations where village grazing and lopping demand appears to be concentrated, is gradual degradation. Regeneration of *Quercus incanina* has declined and the soil is devoid of leaf or other organic litter. As a result the forest appears to be gradually retreating along its margins. The current management thus appears to result in good fodder production characteristics and to avoid rapid degradation, it does not, however, ensure the forest's long-term stability.

Despite the fact that this management system is a function of use and not based on an explicit set of rules, several elements basic to its functioning require control over access to the resource or more specifically, the exclusion of outsiders. These elements are 1) the ability to lop on an effective rotation which produces branches of the most desirable characteristics; 2) the ability to limit lopping to a point where the productive characteristics of the trees are not damaged and 3) the ability to reserve fodder in the vicinity of *chans* for use during periods of high labor demand. A number of adjacent villages are extremely limited in their access to good sources of leaf fodder. Without limitations on access to the forests near Mungluri these forests would be subjected to much greater utilization pressure and the system of management would probably change. Overuse occurs in forests near villages on the opposite side of the watershed from Mungluri that are near large towns and the road. Forests there, despite their extensive nature, are more heavily lopped than in the Mungluri area. Furthermore, villagers complain that people from a market town which has recently grown at the end of the road enter "their" forests and lop indiscriminately without care for the condition of the forest.

"TURF" IN ACTION

Officially, all forest areas surrounding Mungluri are reserved, owned by the government and under Forest Department control. Villagers are granted concessions in the forest which permit them to lop trees for fodder and fuel, graze animals, and collect minor forest produce. They are not permitted to cut trees except with forest department permission and there is no specific demarcated area for each village's use. As a result, the official position is one of access for all villagers living in the general area to the forests for permitted uses.

Inter-village

Turf in the Mungluri area operates both between villages and within village areas. On the inter-village level, villages have clearly defined areas of forest regarded as their own and which other villages recognize. This forest area has clearly defined boundaries

which generally follow natural features. Mungluri's forest is bounded by the ridge crest above the village and by a spur of land between it and the next village downstream within the main watershed. Within the area recognized as "belonging" to Mungluri, the village has exclusive "right" to collection of fodder, grazing of stock and the cutting of fuel. These rights are carefully guarded by the village — particularly in the accessible lower portion of the watershed where infringements may result in fights. Infringements are, however, rare and no fights occurred during the period of research. The upper ridge crest boundary of Mungluri's forest, although clearly defined, is not enforced to the same extent as the lower boundaries near to the village. Members of other villages, from across the ridge where forest is limited, often enter this upper area for fodder collection without objections. The area is, however, clearly acknowledged as "Mungluri's". Its limited use by outsiders is tolerated because of its inaccessibility and because forest areas close to Mungluri are sufficient for village fodder needs.

A primary function of turf on the inter-village level is, thus, to control access. The experience of villages near large towns and the road indicates that management activities, particularly those involving control of lopping, would not function if numerous villages had access to "Mungluri's forests."

Intra-village "locational turf"

Within the village turf area villagers have equal access and equal right to all portions of the resource. That is, there are no areas where individuals or groups have an explicit use-right. When asked which portion of the forest they can use, villagers indicate that they could go anywhere within the village area. At the same time, they indicate that fodder in the forest immediately adjacent to agricultural outbuildings (*chans*) is saved for periods of need. Each family owns between two and four *chans* where stock are kept within easy access of fodder sources and where the dung produced can be distributed on family agricultural fields. Stock are rotated between *chans* on a seasonal basis depending on fodder availability and agricultural work requirements. When stock are kept in a given *chan*, the owner tends to collect fodder from the portion of the forest in the general vicinity of that *chan* but not immediately adjacent to it. All individuals are viewed by the village community as having equal access to all portions

Villagers also plant farm trees such as *Grewia oppositifolia* (*bhimul*), *Celtis australis* (*kharik*) and *Ficus nemoralis* (*dudhala*) near outbuildings. These trees are explicitly owned by the planter and the fodder they produce is used as a supplement to other fodder.

of the village forest. Actual use patterns tend to be more localized and are constrained by local norms defining appropriate use.

Chans are frequently located in small groups and there are no explicit rules to control the cutting of fodder in their vicinity. Still, convenience, courtesy, informal social control, and, possibly, the potential for retaliation serve to protect use rights. Villagers refrain from cutting fodder in parts of the forest far from their *chan* because of the difficulty of carrying it back. They refrain from cutting fodder immediately adjacent to *chans* except during seasonal periods of high labor demand because of their need for accessible fodder sources at that time.

The net result of the patterns of use within the village is hazily defined turf areas where individuals and small groups manage the forest to meet their specific needs. This locational turf encompasses the general area where individuals collect fodder during periods when stock are kept in *chans* and a more clearly defined core where fodder cutting is limited to periods of need.

In summary, turf as it operates in the Mungluri forests has two basic elements. These are: 1) a clearly defined area of forest use for the village as a whole and 2) hazily defined areas of individual or group use within the village area. The first of these elements, although unofficial, is explicitly recognized by other villages. The second element is implicit in patterns of use but is not explicitly recognized by village society.

TURF AND VILLAGE MANAGEMENT— DEVELOPMENT IMPLICATIONS

The concept of turf can be useful in designing forestry projects. Unofficial village level control over forest resources is common and much of this can be viewed as a form of turf. In many areas, traditional forest management systems are also common at the village level. These factors provide basic opportunities for and place fundamental constraints on community forestry programs and other rural development activities.

Turf controls forest use and access. If intra or inter-village turf rights are ignored in the development of afforestation projects there is a high potential for conflict between the project and the village. Given the importance of forests to village life and the effective control which villagers can exert over activities in local forests any conflict is likely to result in project failure. Furthermore, if conflict does not arise there is a significant chance that project benefits will be skewed to the rich (Cernea, Chapter Six, this volume). On the other hand, turf represents an opportunity. The successful introduction and development of new

institutions is one of the most difficult features of any development project. If turf rights could be acknowledged by government or development agencies, even in an un-official manner, they might provide a basis for the introduction of improved management activities without requiring the development of a new institutional base.

The same types of opportunities and constraints that exist in the case of turf occur with village management. As Messerschmidt (1985) has noted as a general case in the northern border districts of Nepal, replacement or change of existing management practices tends to be resisted. This appears to be particularly true where new management systems are perceived as a threat to local control over the forest and/or are introduced from the outside with little understanding of village level goals and concerns. Successful integration of village forest management practices with project forest improvement goals has occurred, despite initial village opposition, where project officials and villagers have been willing to negotiate on the techniques of management and joint goals to be met (Thompson & Warburton, 1985b, pp. 217-218, quoting Jeff Romm). Thus, the presence of village level management limits the possibility of introducing any new system. At the same time, if handled carefully, it may provide a basis for the introduction of management elements which improve forest conditions from the perspectives of both forester and villager.

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