Declining Instituted Collective Management Practices and Forest Quality in the Central Himalayas

There is a steady decline in instituted forest management practices and also a quantitative and qualitative decline of once dense and well-managed van panchayat forests in the Kumaon hills in the central Himalayas. This study examines and identifies the factors leading to this decline and suggests that any efforts at the revival of van panchayats must be made on an understanding of these causative factors.

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One of the most crucial issues in the collective management of natural resources is the sustainability of local institutions entrusted with the task of managing them. In the past few decades, a number of new local institutions at the community level have been established, while traditional local institutions have been strengthened to protect and manage community forests in developing countries. In India, over 84,000 (community) forest protection committees have been established in the past three decades involving more than 75 million people working with the forest department in the joint forest management (JFM) programme to manage around 17 m ha of forests. There are also other types of local institutions rehabilitating and managing community forests in India, e g, self-initiated forest protection groups, van panchayats and tree growers' cooperative societies.

The moot question is: how successfully are such local institutions achieving sustainable forest management? This question is relevant particularly in the context that literature on community forest management has not paid much attention to it. Recent literature does suggest that the paradigm shift from centralised to decentralised forest management has increased the access of local communities to forest resources [Post and Snel 2003], increased internal social mobilisation has helped communities challenge the traditional state authority and enabled them to create political capital, exposed the conflicts over resource interests [Nygren 2005; Rosyadi et al 2005], paved the way for positive changes and explored potentials for better forest management [Edmunds and Wollenberg 2003]. However, there is also a concern that there is little emphasis in the literature on the empirical evidence of decentralised forest management effects [Kaimowitz et al 1998; Rosyadi et al 2005].

The answer to the above question therefore is vital and needs to be addressed. Data from the newly established local institutions do not answer this question, and are also not an indicator of improvement in community forests. The fact is that all such local institutions in developing countries go through various developmental stages and very often arrive at "dead ends" [Sajise et al 2003:251] which can jeopardise the existence of institutions at any stage. That is, the local institutions managing forests are still vulnerable, and the sustainability of these institutions and therefore sustainable forest management are still distant objectives.

The sustainability of these local institutions rests on variables like socio-economic, physical, institutional, population and market pressures affecting the resource use [Ostrom 1994; Agarwal and Yadama 1997]. This study explains the interaction of these variables, their influence on institutional sustainability, and more importantly the quality or physical condition of community forests. This is done by analysing a traditional and legally supported community forest management institution, the van panchayat in the Kumaon hills in the state of Uttaranchal.

Uttaranchal covers 51,125 sq km (92.57 per cent hills and 7.43 per cent plains) and comprises of two divisions, Kumaon and Garhwal. Around 12.6 per cent of the hilly region is cultivated and 64 per cent is forested [Saxena 1995], signifying the importance of forests to the people's livelihood. The forests in this region are categorised as civil and 'soyam' forest, reserved forest, and van panchayat forest. Civil and soyam forests are controlled by the revenue department and managed by the gram sabha (village council), and usually people have unlimited rights and concessions for their use, whereas the forest department controls the reserve forests where people have limited rights and concessions.

In van panchayats, ownership and user rights lie with the people forming these micro-institutions. Historically, the formation of van panchayats in Uttaranchal was an outcome of local resistance against the ownership and management of forests by the government under British rule in the early 1900s [for details, see Ballabh and Singh 1988; Guha 1989]. The formation of van panchayats since India's independence in 1947 shows the continued dependence of people in this region on van panchayat forests for their livelihood. Van panchayats increased as the practice gained the people's confidence. Uttaranchal now has 6,777 van panchayats managing 5,24,100 ha of forest [Pai 2004]. This study therefore focuses purposively on van panchayats.

This history of formation of van panchayats differentiates this institution from rest of the contemporary institutional arrangements in India like forest protection committees established with state initiatives for management of community forests. The results of this study have institutional and policy implications for these

contemporary local institutions as well as self-initiated forest protection groups established and nurtured to achieve sustainable forest management.

I
Analytical Framework and Methodology

Two van panchayats, Parwara and Dolpokhra, were selected for detailed study in Uttaranchal's Nainital and Almora districts, respectively. The Parwara van panchayat forest, dominated by broadleaf tree species, was selected to analyse changes in its management practices over the past decade by comparing the results of this study with those of a previous study of the same van panchayat undertaken by this article's second co-author [Ballabh and Singh 1988]. The Dolpokhra van panchayat forest was also selected to represent a van panchayat forest with diverse vegetation dominated by *Pinus roxburghii* (chir-pine).

This study's institutional analysis and development framework hypothesis was that three sets of variables affect the performance of any local body of self-governance [Ostrom 1994]. These variables pertain to physical factors, community-related factors, and a set of variables associated with institutional arrangements that determine the rules of games in any collective endeavour. The methodology was based on the 'Field Manual' of the International Forestry Resources and Institutions, Indiana University [for details see IFRI 1996]. The presence and sizes of plant species were used to describe physical attributes like size class structure, dominance and density of forest vegetation, and forest condition indicators, which show the relevance and impact of forest management practices. Results based on the analysis of physical attributes or forest quality and institutional aspects characterising management practices are discussed simultaneously.

A sample of 30 van panchayat forest plots each in Parwara and Dolpokhra forests was selected to collect information on physical attributes. Forest maps were used to select sample plots using systematic random sampling. Concentric squares of 1 sq m, 3 sq m and 10 sq m were laid down for sampling vegetation. First for sampling ground cover and woody seedlings, second for shrub, sapling, and woody and herbaceous climbers, and third for trees and woody climbers, respectively. To evaluate forest condition, the plant growth indicators of tree height and diameter at breast height (dbh) were measured. Stem diameter was measured for seedlings and saplings, and young trees and shrubs. Forest ground cover information was estimated as the proportion of area covered by plant species in the 1 sq m sample plots.

Following an IFRI-recommended rule of thumb [IFRI 1996], 30 plots were selected in all natural forests ranging in size from 0.5 to 200 ha. The forests being studied are highly variable with respect to natural landscape and size (Table 1), suggesting more plots to adequately describe the whole forest. However, due to constraints on research resources, the sample size was confined to 30 plots each in Parwara and Dolpokhra. Specific observations on forest health based on sample forest plots were further complemented by observing forest conditions during joint walks with villagers. These observations are reflected in the discussion later. The drawback of this study is that there is no baseline data for comparison on forest conditions in selected van panchayats.

Our analysis of the past forest management and conditions are based on the information provided by elders in these two villages while the present state is based on information collected during the survey. The evidence of forest condition in case of Parwara van panchayat provided by Ballabh and Singh (1988) did facilitate a comparison between past and present forest management conditions in case of this van panchayat specifically.

A sample of 70 households (out of 140 village households) in Parwara and 20 households (all households) in Dolpokhra were interviewed using a structured questionnaire to obtain information on household characteristics, livestock holding pattern, forest produce collection and utilisation pattern [for details, see Ballabh et al 2002 Table 3] and their opinions on forest management. The sample households were selected using the records of Parwara and Dolpokhra van panchayats (available with president of van panchayat committee) in such a way as to represent households belonging to all the castes in the villages. A group discussion was held with the members of the van panchayat committees to solicit their views on past and present forest management conditions. Further, the written records of van panchayats were thoroughly investigated to collect information on forest management aspects.

The major limitation of this study is that it is not possible to draw any definite conclusions and make any generalisations based on two case studies. However, we do expect that the results of this study throw light on grassroots realities and challenges in managing common pool resources.

II
Analysis

Van Panchayat Forest Profile

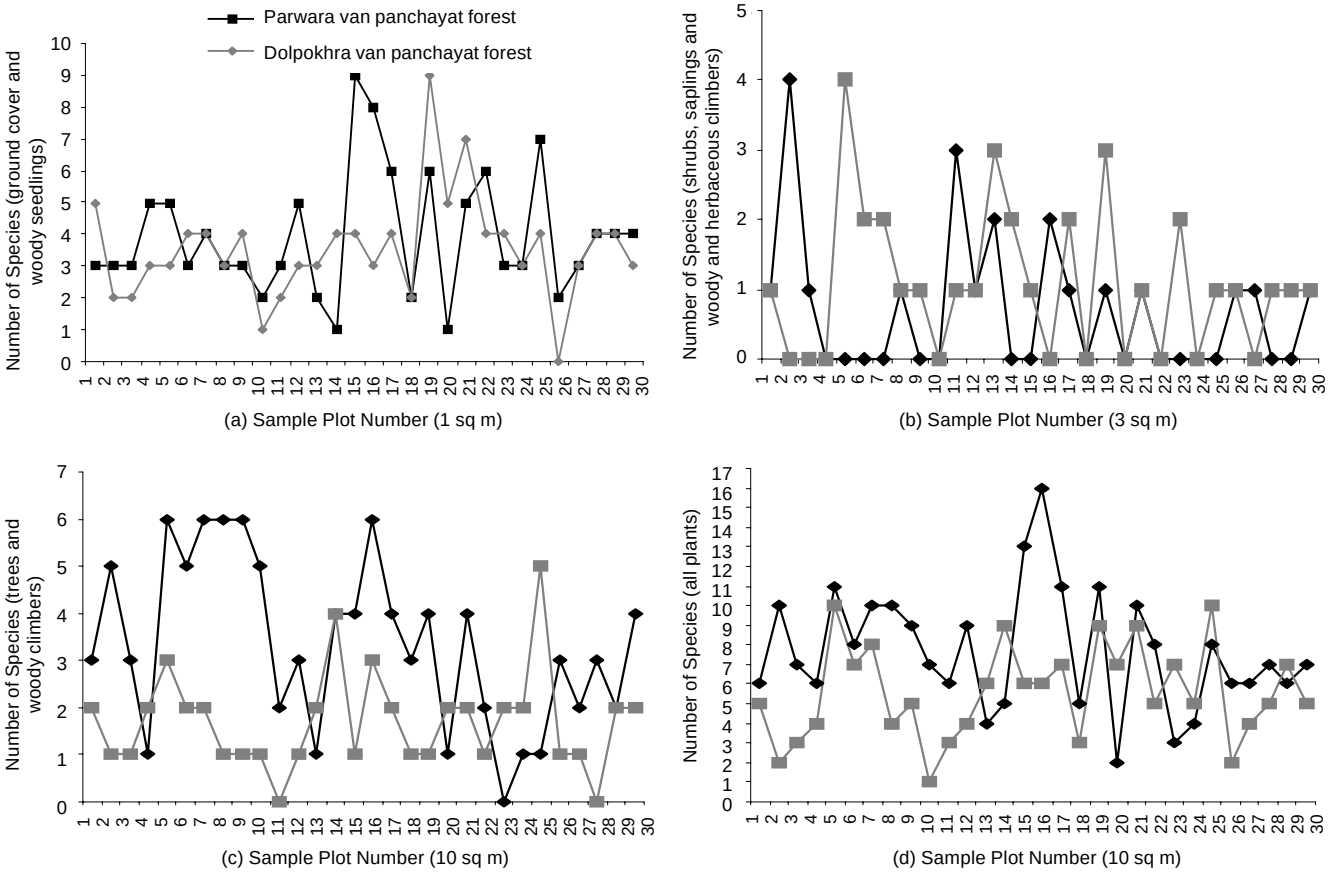
The Parwara van panchayat was formed in 1932 when the first van panchayats were instituted, whereas the Dolpokhra van panchayat dates to 1958, after Indian independence. These two villages are dominated by the households of a single caste. In these two villages the households and communities are found in scattered settlements. Table 1 presents basic information about the villages. Physical characteristics of van panchayat forests as observed and enumerated by researchers are shown in Table 2, and Figures 1 through 3. Per capita van panchayat forest area was 0.37 ha in Parwara and 0.86 ha in Dolpokhra, suggesting that Dolpokhra households were better off in terms of average forest area. Sustainable use dictates that each individual have access to about 0.81 ha of forest [Ashish 1979]. The ratio of cultivated land to uncultivated land was 1:0.68 and 1:3.76 in village Parwara and Dolpokhra, respectively, which is less than the 1:6 ideal for hill agriculture [Sharma 1997]. As much uncultivated land in the Uttaranchal hills is used for grazing, its

Table 1: Basic Information about Villages

Particulars	Parwara	Dolpokhra
Land (ha)		
Total geographical area	504.4	178.4
Cultivated land	130.4	19
Van panchayat forest	322.6	88
Year of establishment	1932	1958
Forest per household	2.3	5.5
Forest per individual	0.37	0.86
Grazing land, cultivable and other wastelands	89	71.4
Livestock population (cattle unit)	677	94
Forest per cattle unit (ha)	0.48	0.94
Demographic details		
Total population	875	102
Total households	140	20

Source: Adapted from Ballabh et al 2002, Table 1.

Figure 1: Number of Species in Sample Van Panchayat Forest Plots



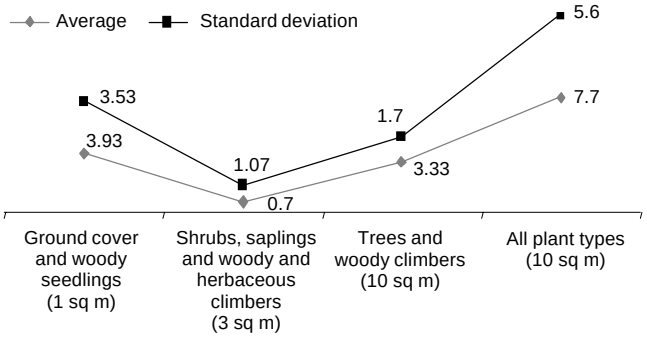
wide availability reduces grazing pressure on forests. Van panchayat forest area per head of cattle was lower for Parwara (0.48 ha) than Dolpokhra (0.94 ha).

In terms of species, *Quercus sp* (oak) dominates Parwara van panchayat forest, constituting 40 per cent of trees, saplings, and seedlings in the sample forest plots. Dolpokhra van panchayat forest is dominated by chir-pine, and it constituted 63 per cent of total plants in the plots. The dominant tree species in both forests are shown in Table 2. Broadly, Parwara van panchayat forest is a broadleaf forest and Dolpokhra van panchayat forest is a pine forest. Besides naturally growing trees, plantations of exotic tree species were established in both forests to rehabilitate degraded areas. Figure 1 shows the number of species found in the concentric plots.

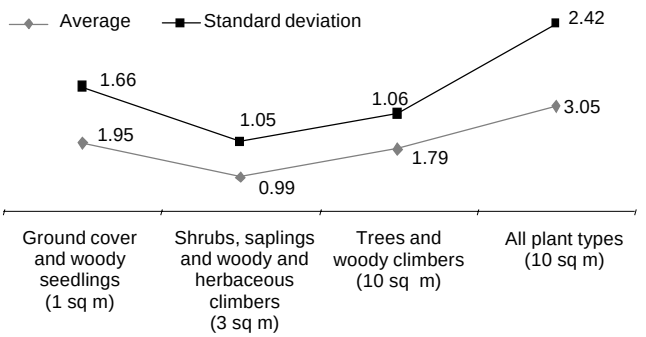
Table 2: Size Class Structure, Frequency and Dominance of Plant Species in Sample Van Panchayat Forest Plots

Species	Number of Plants in a Diameter Class (in cm) (plot size)								Total Plants
	1sq m (Woody Seedling Excluding Ground Cover Herbaceous Plants) – Stem Diameter	3 sq m (Shrub, Sapling, Woody and Herbaceous Climber) – Stem Diameter	10 sq m (tree and woody climber) – Diameter at Breast Height						
	0–2.5	2.5–10	10–20	20–30	30–40	40–50	50–60	60–70	
Parwara									
Quercus leucotrichophora	3	11	30	20	1	3	0	0	68
Quercus semicarpifolia	0	2	28	13	0	0	0	0	43
Pinus caribaea	0	1	29	2	0	0	0	0	32
Others	18	20	56	19	13	0	1	3	130
Total plants	21	34	143	54	14	3	1	3	273
Dolpokhra									
Pinus roxburghii	14	34	30	5	1	0	0	11	95
Myrica sapida	3	4	3	0	0	0	0	0	10
Lyonia ovalifolia	5	4	0	0	0	0	0	0	9
Others	13	22	3	0	0	0	0	0	38
Total plants	35	64	36	5	1	0	0	11	152

Figure 2: Average Number of Species and Standard Deviation across Sample Van Panchayat Forest Plots



(a) Parwara van panchayat forest



(b) Dolpokhra van panchayat forest

We evaluated species diversity across plots in terms of species richness and evenness in the forests using average number of plant species and standard deviation. Figures 1a to 1c show our findings for different plot sizes: 1 sq m, 3 sq m and 10 sq m, respectively. We are using only the data on the total number of all plant species (including all plant categories: ground cover, woody seedlings, shrub, sapling, woody and herbaceous climbers, trees, and woody climbers) in the entire 10 sq m plots (Figure 1d). The overall average number of species in the sample forest plots was relatively higher in the oak-dominated Parwara van panchayat forest (7.7) than in the chir-pine-dominated Dolpokhra van panchayat forest (3.05) (Figure 1d), signifying greater species richness in the former compared to the latter. This is not uncommon, as chir-pine needles cover the ground and affect the emergence and growth of other species. Coverage (percentage) by all plant species in the 1 sq m plots (Figure 3) also reveals that the area covered was less in Dolpokhra van panchayat forest (33 per cent) than in Parwara van panchayat forest (49 per cent) for this reason. Plots near human settlements in Parwara had less species richness than areas far from settlements, due largely to soil erosion caused by excessive grazing and logging. We also collected information about the ground realities of each and every sample plot in Parwara and Dolpokhra van panchayat forests during the field visits. We have only highlighted important information in the article.

The standard deviation (sd) of the overall number of species in all 10 sq m plots revealed relatively less variation in Dolpokhra van panchayat forest species (sd-2.42) (Figure 2a) than in Parwara van panchayat forest (sd-5.6) (Figure 2b), indicating that there was more species evenness in the chir-pine-dominated Dolpokhra van panchayat forest than the oak-dominated Parwara van panchayat forest. The physical attributes of Parwara and Dolpokhra van panchayat forests are further discussed while analysing institutional and management aspects of van panchayats.

Governance by Van Panchayats

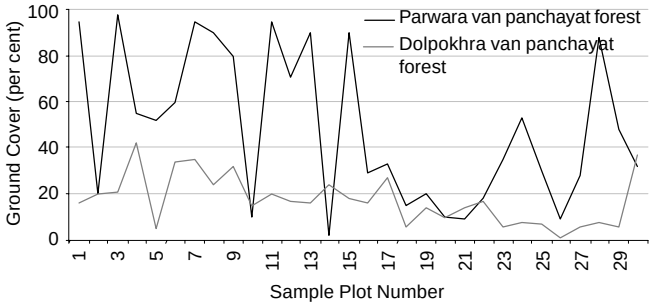
Influence of heterogeneity and group size: A van panchayat committee (hereafter committee) manages a van panchayat forest. Members are democratically selected from amongst villagers; see Ballabh and Singh (1988) for organisational structure of a van panchayat. The study revealed that village population composition and committee membership have a profound impact on forest management.

Parwara has a homogeneous population as a majority of the households (129 out of 140) belong to the brahmin caste. The Parwara Committee has nine members and a woman sarpanch (president). A committee election is held regularly and no organisational issues were reported. Committee members meet regularly and meetings are also convened whenever deemed necessary. In Dolpokhra there are seven committee members including a woman member. If our discussions with households are any indication, the majority of households belonging to kshatriya caste had more say in Dolpokhra van panchayat management decisions. Further, the last election for Dolpokhra committee members was held in 1987. Households belonging to the minority brahmin caste (19 per cent) revealed that they have tried in vain to hold new committee elections. In Dolpokhra, few committee meetings discuss forest management, and are mostly boycotted by the minority group. A communication gap amongst committee members arises from caste differences and the geographical dispersion of settlements.

Complete dominance of forest management by the Dolpokhra van panchayat president for many years is apparent from the establishment of a community orchard inside the forest. Two ha of mostly chir-pine in the van panchayat forest were cleared for a community orchard at the president's instance. Most households perceive this development either as van panchayat forest commercialisation or de facto privatisation, as the encroached land is near the van panchayat president's house. This is one possible reason that minority group households oppose decisions by the president. This finding suggests that heterogeneity amongst stakeholders has a detrimental impact on collective action. There was no inter-caste power struggle in Parwara and therefore this attribute does not affect collective forest management. The minority group (belonging to a scheduled caste) has little influence over village governance.

Group size may also influence the success or failure of collective resource management. Based on analysis of five van panchayats in Almora district in Uttaranchal, Agarwal (1998) argued that larger van panchayats are more successful, which he says contradicts the conventional wisdom on the relationship between group size and collective action. We reached the same conclusion, while the condition of forest cover in both forests is deteriorating, the effectiveness of the two van panchayats varies. The Parwara van panchayat still holds relevance given the advantage of many stakeholders (140 households). The van panchayat committee members informed us that even when there are substantial number of free riders (those involved in pilferage of forest products and/or not participating in forest management and protection), a few stakeholders shoulder forest management responsibilities seriously. On the other hand in Dolpokhra (20 households) the van panchayat has over the years lost relevance,

Figure 3: Area Covered (Percentage) by Different Species (Ground Cover and Woody Seedlings) in 1 sq m Sample Van Panchayat Forest Plots



Average = 48.67, Standard Deviation = 17.40 in Parwara
Average = 32.76, Standard Deviation = 10.69 in Dolpokhra

which to a large extent is due to the group's small size.

State intervention: State intervention in the van panchayat management of forests seems to be in name only as there appears to be a lack of human resources for it to be effective. The government has deputed van panchayat inspectors (hereafter inspectors) to look after the van panchayat administration, but there was only one inspector supervising about 179 van panchayats in Nainital district. It is not possible for one inspector to visit and supervise all van panchayats even once a year. Inspectors are a link between the revenue department and van panchayats. One inspector said that the resources provided to inspectors are meagre compared to their responsibilities. People of Parwara reported that the inspector does nothing except make an annual visit to audit van panchayat accounts. The inspector last visited Dolpokhra in 1987, when committee elections were held. On the other hand, state intervention sometimes is unwanted and excessive, as discussed later.

Multiple common property rights: Confusion over local stakeholder property rights over common resources, and the lack of initiatives to revise past land settlements very often pose problems to resource management in India. In villages Parwara and Dolpokhra a few households have, in addition to rights to collect forest produce from their own van panchayat forest, stakes in the van panchayat forests of neighbouring villages too. One reason for multiple property rights in a van panchayat forest is that a small number of households migrated from one village to another while still holding private land in their former village. Hence in Dolpokhra van panchayat there is always at least one committee representative from amongst stakeholders belonging to nearby village(s).

Such stakeholders do not participate in van panchayat forest management or protection. This complexity in property rights only increases the number of free riders, and is a factor leading to the decline in the institution of van panchayat and thereby the deterioration of forest management in Parwara and Dolpokhra. The presence of such stakeholders does not decrease the external cost (protecting property rights) but only increases the decision-making cost (coordination cost).

Impact of Resource Management and Utilisation on Forest Quality

Under the Van Panchayat Act each van panchayat crafts its own rules and regulations, which vary from one van panchayat to another [Ballabh and Singh 1988; Agrawal and Yadama 1997]. We have analysed forest management and utilisation and the impact of these practices in this context, simultaneously comparing past and present van panchayat forest management to reflect changes. Table 3 summarises the rules for using major forest produce.

Excessive grazing: In Parwara van panchayat forest cattle grazing by locals is unrestricted except in a 60 ha area which is being rehabilitated by planting trees. All stakeholders once had open access to the entire forest for cattle grazing or grass cutting. Of late, Parwara van panchayat provided for equitable distribution of grass amongst the households by earmarking 8 ha for grass production. Grazing and grass cutting are restricted here to provide a sustained supply of grass. This area is open for harvesting 15 days a month, from September to October, and each household may cut one bundle of grass (around 20-30 kg) each day. Ballabh and Singh (1988) did not report such collective harvesting of grass. This implies that scarcity of grass has forced the van panchayat to regulate cutting for equitable distribution. However, restricted grass cutting in a relatively small part of Parwara van panchayat forest does not compare with excessive grazing and its consequences in the rest of the forest. The impact of grazing on the forest can be ascertained from forest ground cover (Figure 1a and Figure 3). Unexpectedly, in the Parwara van panchayat forest which is a broadleaf forest, there were overall only 20 ground cover species in the 1 sq m plots as compared to 28 species in the Dolpokhra van panchayat forest. The reason for the small number in Parwara can be attributed to excessive grazing and soil erosion resulting in unfavourable growth conditions.

Dolpokhra has more grazing land (0.94 ha per cattle head) than Parwara (0.48 ha per cattle head). In Dolpokhra, households graze their cattle in the forest without restrictions. People from neighbouring villages, Badgal Rautla and Deoli Khan, that do not have a van panchayat forest also graze their cattle in the Dolpokhra van panchayat forest. Reserve and civil forests surrounding Dolpokhra reduce the grazing pressure on the van panchayat forest except for those parts located near settlements. During the survey, we found that the van panchayat forest close to settlements is more or less used as private land. Some households in

Table 3: Regulations and Methods of Forest Produce Utilisation in Sample Van Panchayat Forests

	Parwara	Dolpokhra
Grazing	Unrestricted (prohibited in areas with new plantation)	Unrestricted
Grass cutting	Restricted in newly planted area; collective harvesting for 15 days during September-October	Unrestricted
Lopping for fodder	Prohibited	Prohibited
Collection of dry and fallen leaves	Restricted (only during March to May; it helps in reducing fire hazards)	Unrestricted
Collection of fallen twigs	Unrestricted	Unrestricted
Timber	Ban of felling of living trees (trees fallen during wind- and snowstorms are sold for a nominal fee to the villagers)	Ban on felling of living trees (trees fallen during wind- and snowstorms are sold for a nominal fee to the villagers)
Tapping of resin from Chir-pine	Not available	On contract basis (income is shared between forest department and van panchayat)

Dolpokhra sell surplus grass to nearby villagers. There was no system for equitable grass harvesting among Dolpokhra villagers.

Decline in broadleaf tree species: The decline in the number of oak trees due to anthropogenic factors is a serious issue because oak is the most valuable tree species for people's livelihoods in the area. Before 1990 in Parwara, every January two van panchayat forest compartments were opened on a rotational basis by local people. Some village elders revealed that many years ago there was no rule on collecting green fodder, indicating its abundance. People got fodder by lopping oak and other broadleaf species and were allowed one bundle estimated to be between 20 and 30 kg per day for a nominal fee. For conservation purposes people were allowed to lop only three-fourths of a tree's crown, leaving the remaining one-fourth for future growth. However, owing to the increasing scarcity of tree fodder people no longer follow this rule, resulting in fodder tree decline and thus forest degradation.

Fewer fodder trees have affected seed production, leading especially to poor oak forest regeneration. Overgrazing has further affected the natural regeneration process. Absence of natural oak regeneration in large patches of Parwara van panchayat forest was found to be a serious problem. Average tree density for all Parwara van panchayat forest plots was one tree per 13.76 sq m, while the average occurrence of seedlings was one seedling per 1.43 sq m.

Analysis of vegetation information based on the sample plots revealed that a major proportion (52 per cent) of woody species in Parwara van panchayat forest were 10 to 20 cm in diameter (Table 2). Excessive lopping of trees for fodder is retarding their growth and preventing advance to the next diameter class. Most oak trees were severely lopped and many had been reduced to stumps. The average height of oak trees was 10 sq m.

Fearing oak tree loss, the Parwara van panchayat decided in its 1990 annual meeting to stop opening certain compartments for lopping so as to expedite regeneration. Since 1990, households have been allowed to collect only dry oak leaves from the forest from March through May. Collecting leaves meets people's fertiliser requirement, and also reduces the danger of summer forest fires. Oak leaves are mixed with cow dung to make fertiliser. This study found that conditions in Parwara van panchayat forest indicate that this new rule may not be strictly followed.

The survey found that three Parwara households had successfully raised oak trees on their private lands in anticipation of forest decline. Most Parwara households have a few oak trees on their private lands, but that is not sufficient to supply all the green fodder needed for cattle. This indicates a gradual loss of faith in the traditional van panchayat system, and also the rising importance of tree farming on private lands.

Forest areas with oak trees in both Parwara and Dolpokhra were in about the same condition. Dolpokhra households reported an acute fodder shortage in their van panchayat forest. In the past two decades there are much fewer fodder-yielding trees like oak, *Alnus nepalensis* (alnus), and other broadleaf species due to unsustainable lopping, which was an outcome of higher cattle populations in their village and in neighbouring villages. Higher cattle population is a general trend in Kumaon [Sharma 1997]. In Dolpokhra van panchayat forest there were few fodder trees, with overall tree density at one tree per 56.6 sq m. The result is a shortage of good quality cattle fodder and hence lower milk output.

Dolpokhra households further revealed that chir-pine has become the dominant species in recent years. What was once a mixed broadleaf forest is about to become a pure chir-pine forest. Fewer oak trees have resulted in the drying of perennial water sources and a change in edaphic conditions conducive to encroachment on broadleaf tree habitat by chir-pine. This is also affecting agriculture and horticulture in Dolpokhra.

The broadleaf tree species decline in these two van panchayat forests is not an exception. Pine dominance over oak and other broadleaf species is reported in the central Himalayas in other studies, e g, Guha (1989), Maikhuri et al (2003) and Sinha (2002). They also report the impact of ecological succession on hill people livelihoods. Oak forest decline in the Uttaranchal hills, however, cannot be directly correlated with apathy towards conservation or the decline of the traditional van panchayat. This is a gradual process which started with commercial chir-pine introduction under the British during the 19th century. Resin tapping for turpentine and timber for building railways were primary reasons for introducing chir-pine in the Himalayas [Sinha 2002]. Chir-pine by nature suppresses other plants, thus contributing to the decline of vulnerable oak forests. Global warming is another factor [Maikhuri et al 2003].

Reportedly dense oak forests are more often found in van panchayat forests than in reserved forests. Based on a study of van panchayats, Prabhakar and Somanathan (1999) reported that dense oak forests are 15.6 per cent more common in van panchayat forests. The reason perhaps is that local people in a scarcity situation would harvest forest products from state-managed reserved forests first, then turn to their van panchayat forest. Nevertheless, this study shows that oak trees in van panchayat forests too are declining. This may continue owing to poverty, poor resource endowments hampering agricultural production, and high dependence on forests to sustain livelihoods in the Uttaranchal hills.

Cutting of standing trees for construction timber and fuelwood: Reasons for van panchayat institutional decline, as observed in Parwara van panchayat, are the increasing supply/demand gap for construction timber, and restrictions on logging. There has been a severe state-imposed restriction on logging for more than a decade in Uttaranchal, but there is no policy provision to satisfy construction timber demand. Construction timber has no close substitutes in the hills, except those too expensive for poor people. Currently the market mechanism has not played a decisive role in providing timber from elsewhere owing to high transportation cost. Given this lack of alternatives, people can only resort to illegal logging. This directly affects the van panchayat because gradually people are becoming disenchanted with this institution or find it irrelevant because one of their major demands from the van panchayat forest cannot be met.

A traditional right, 'haque', which provides logs for every household from reserve forests, is also losing its relevance. The restriction on logging affects timber supply under this right. According to the Parwara Committee president, each household has a right to chir-pine logs every year from the reserve forest. Van panchayats and gram sabha (village councils) allot logs among the villagers. There are no conflicts among households regarding timber distribution. However, it costs much to transport timber from the reserve forest to their houses. Poor households therefore often illegally cut large oak trees from the van panchayat forest.

Tree pilferage from van panchayat forests by locals for construction timber was a management issue faced by the Parwara Committee. Pilferers generally cut trees at night and leave the remains. Such trees are auctioned or taken free of cost by villagers.

Very often poachers themselves buy trees at auctions. This appears to be a tacit understanding where everyone benefits by breaking the rules.

The situation in Dolpokhra was better in terms of timber provision because it has better chir-pine cover; and the sale of chir-pine under state supervision generates revenue for the van panchayat. However, even then households of Dolpokhra and neighbouring villages pilfer timber from nearby reserve forests. Discussions with households indicate that as the forest department managed reserve forests are not well-protected, they are a more or less free-access resource. In fact, village elders opined that reserve forests should be compartmentalised and handed over to local van panchayats for protection. These forests became a free-access resource owing to the lack of any institutional mechanism for their management.

There are van panchayat restrictions on cutting fuelwood from living trees. People of Parwara and Dolpokhra have the right to collect fallen branches and twigs, but they are not allowed to cut green twigs and branches. Our discussions suggest that this prohibition is not strictly followed in either village. We observed that households had large stocks of fuelwood. Instead of collecting fuelwood every day, they prefer to collect it in huge quantities occasionally.

State-induced change in resin extraction: Resin collected from chir-pine for extracting turpentine is a major product of the Dolpokhra van panchayat forest. It substantially contributes to van panchayat income. Resin is also collected from chir-pines on private lands, generating income for village households. Recently the forest department banned resin extraction with the traditional method ('vasula') in state- and community-managed forests and also private lands, issuing guidelines to all regional van panchayats to convert to the rill method by 1997. This method has many advantages over the traditional method: there is less tree damage and trees are not uprooted during storms. However, people were reluctant to adopt this method because it makes less money, even though it is sustainable.

This change in resin extraction method reveals that the state is more inclined towards conservation of commercial tree species, which is no different from the period of British rule. The rill method provides a sustainable resin supply and a continual flow of revenue to the state. There seems to be no initiative from the state/forest department to conserve and rehabilitate oaks and other broadleaf species more valuable to local people however.

Ranking of economic tree species: The households were asked to rank tree species in terms of importance. The top three species were two oak species and chir-pine in Parwara and chir-pine, oak, and alnus in Dolpokhra. Ranking of oak as the most important by Parwara households is consistent with the dominance of oaks in the forest (Table 2). Parwara households ranked chir-pine third because it provides construction timber and fuelwood. However, chir-pine does not constitute a large proportion of Parwara van panchayat forest. That is why the bulk of their demand for construction is met by the reserve forest. This is why the forest department has introduced the fast-growing exotic Pinus caribaea in degraded sites.

Chir-pine was ranked the most important by Dolpokhra households, where it is dominant (Table 2). Oak and alnus were ranked second and third, even when more important to livelihood. This inconsistency is explained by the fact that income from chir-pine resin, a marketable product, outweighs what is gained (non-marketable) from other species. Instead of planting and promoting oak and alnus, the forest department introduced fast-growing species in Dolpokhra van panchayat forest, but with not much success.

Erosion of Enforcement Regulations

Regularisation of offences: The Van Panchayat Act empowers van panchayats to enforce resource utilisation regulations and protect forests. Van panchayats also evolve informal institutional arrangements to manage and protect forests. A committee can collect fines up to Rs 50 for offences, a source of revenue for van panchayats. Collection of revenues may indicate strong governance, but not necessarily sustainable resource use. The more crimes, the more fines, and the more revenue, but at the cost of van panchayat forest sustainability. In Parwara, imposing fines has become a form of regularising offences or rent evasion. People generally pay fines, which they consider a fair price of the forest produce gained. However, analysis of the records of the Parwara van panchayat indicated that offenders were not paying fines and these accumulated fines indicate an erosion of institutional robustness and the degradation of the van panchayat forest.

Moreover, the amount of fines collected by the Parwara van panchayat does not equal the value of the produce pilfered because often offenders cannot be identified. Further, fines against some defaulters accumulate year after year. The van panchayat cannot compel offenders to pay. As the village is a close knit society with good social cohesion, the van panchayat at times ignores offences. The number of offences by neighbouring villagers has increased over time, and these offenders rarely pay the fines.

By contrast, analysis of fines imposed by the Dolpokhra van panchayat revealed that no fines have been imposed since 1992. Dolpokhra van panchayat's president said that this was because, no village resident has committed any illegal activity, but villagers refuted the president's claim and revealed that over the years the forest has become an open-access resource.

Protection measures: Van panchayats employ paid forest guards to protect van panchayat forests. However, very low wages for guards are not an inducement to protect forests. This is evident from Parwara van panchayat, whose inability to generate revenue from forest produce sales and failure to collect fines are the reasons for low forest guard wages. Meanwhile, Dolpokhra van panchayat has earned substantial income from resin and timber sales, but was also unable to pay high forest guard wages.

The people of Parwara and Dolpokhra do not provide voluntary protection of forests on a rotational basis, even though social fencing is still used in Uttaranchal. Van panchayat forest social fencing is not possible in Dolpokhra because of the very few households (20) relative to forest size (88 ha). On the other hand, the majority of households in Parwara are reluctant to undertake van panchayat forest social fencing as the time spent on protection would be too great. Further, they feel that forest protection is the job of paid forest guards.

Recently Parwara Committee members have attempted new protection measures by dividing into three teams, each of which supervises one-third of the van panchayat forest. Each team inspects the forest once a month to find forest damages, but this just assesses damage instead of preventing it. Findings are discussed in van panchayat meetings to stop illegal activities, but again, measures undertaken have been unsuccessful in controlling pilferage. This was corroborated by discussions with

households, by the number of tree stumps in sample forest plots, and by the generally degraded forest condition.

The women of Parwara have taken protection measures for their van panchayat forest since 1996 by organising three women forest protection committees. The forest has been demarcated into three parts, and each committee cares for one part. Five or six members of each committee assess forest damage once a month and note any cases of encroachment. Women have a big stake in the forest as they spend substantial time collecting forest products, and therefore directly face the consequences of forest degradation.

These two protection measures in recent years reflect concern amongst the village community over declining forest cover. Perhaps further scarcity of forest resources and the perception of this amongst villagers may revive the relevance of the van panchayat.

Influence of Population and Market Pressures

The decreasing relevance of enforcement regulations is more evident from encroachment on van panchayat forests for expanding agricultural activities. Comparatively large areas of van panchayat forests in the Uttaranchal hills make forest management difficult. For example, in Nainital district, around 69 van panchayats manage over 100 ha of forest. A large forest area (323 ha) managed by Parwara van panchayat is one of the main reasons for pilferage and encroachment. It is difficult for one forest guard or even a village community to look after such a vast common resource, as it takes many days to visit all parts of a van panchayat forest.

Small landholding sizes and changing demographic trends are increasing pressure on van panchayat forests. The consequence is encroachment on forest land for agricultural purposes. Parwara households say that transient encroachment on van panchayat forest during the agricultural season is common. Concerned van panchayat people leave encroached land when van panchayats caution them to do so, but by the time warnings are issued, the encroachers have already cultivated the land. Encroachments on Parwara by people from adjoining villages are more troublesome. One reason for frequent encroachments is the dearth of cropland because some households have converted their fields into orchards.

Reporting to the revenue department is the only institutional means van panchayat forests have to evict encroachers. Another reason for encroachment is the lack of proper demarcation between van panchayat forests and private landholdings. Proper demarcation is required to differentiate between private land and the van panchayat forests to avoid conflicts. Forest encroachment illustrates the effects of population and market pressure on resource use. The inability of a van panchayat to evict encroachers reveals that these micro-institutions lack institutional capacities to protect forest boundaries.

Introduction of Exotic Tree Species and Plantation Management

Conflict between ecological and commercial orientation: Changing forest ecology as a result of decline in broadleaf species and replacement by chir-pine is further complicated by exotic tree species plantations. The forest department has been establishing plantations on degraded van panchayat forest sites in the study villages. In the Parwara van panchayat forest, the forest department has introduced Pinus caribaea and Cupressus sp to rehabilitate degraded oak patches and fire-damaged areas. A majority of sample households in Parwara said that the forest department introduced these species without their consent, while a few said that fast-growing P caribaea would enhance the supply of construction timber.

A historical dimension here is forest commercialisation. British rulers introduced chir-pine for their commercial value. This commercial orientation apparently still prevails in the mindset of the forest department. The important point is that ecological aspects of the Himalayas are still being ignored, despite a long struggle by the people of Uttaranchal against the commercialisation of their forests.

This study illuminates a typical situation in which local people fear losing the endemic tree species (mainly broadleaf), but must accept exotic species to supply construction timber.

Conflict between traditional and enforced management: Forest department plantations illustrate another management dilemma: the conflict between traditional van panchayat management and new methods enforced by the forest department as participatory forestry or joint forest management (JFM). There is ongoing debate that the van panchayat is being replaced or overtaken and is losing its original character because of JFM; (for details see http://www.rlek.org.cfmp.htm).

The forest department cares for newly planted sites for the first three years, which is usual for JFM. The forest department appoints forest guards to protect planted sites. In Parwara as well, a forest guard (not the van panchayat-appointed guard) protects the planted site. Committee members reported that the guard has a lackadaisical approach towards forest protection as he belongs to another village. This seems to be an exception because in the JFM programme households of a beneficiary village are generally given preference for JFM generated gainful employment.

Parwara Committee members suggested that instead of employing a new guard, the wages should go to the van panchayat-appointed guard. This would help the van panchayat solve the twin problems of non-payment of wages to their forest guard, and the ineffective protection of plantation sites. Moreover, most of the labourers employed for plantation work did not come from Parwara. This was a factor underlying low plantation achievements. Further, the Parwara van panchayat had no say in the management of newly planted sites as the forest department cares for plantations for the initial three years. The same area was being replanted many times due to ineffective protection. Overall, local Parwara people are indifferent to plantation sites. They graze their cattle in planted areas and disapprove of van panchayat decisions for site protection and management. We observed that plantation sites were in a worse condition than other van panchayat forest areas.

The introduction of JFM methods consists of efforts to improve the conditions of van panchayat managed forests. Households in Parwara were at a loss to assimilate the new situation. Some Parwara Committee members opined that the forest department should care for plantations for at least 10 years. This suggests that people want to depend on external resources for van panchayat forest rejuvenation.

Disenchantment among Stakeholders

The allocation of benefits from forest management between local people and the forest department is a very contentious issue. Most contemporary local institutions crafted since the inception of JFM face this issue. It is an unresolved issue in the relatively old van panchayats as well [Purohit 1996-97; Agarwal 1988].

Under government by-laws, van panchayat forest management by a van panchayat entitles it to a part of the income. The income of van panchayats varies considerably, depending on forest composition and the degree of management success. However, van panchayats do not control the sale of timber and resin, and the utilisation of revenue therefrom. Van panchayats manage and use only the income from other forest produce. Such income is used to pay forest guards' wages, finance village development, and make other miscellaneous van panchayat expenditures. The forest department completely controls the sale of timber and chir-pine resin. Under the Van Panchayat Act 1972, 20 per cent of the revenue from timber and resin is given to zilla parishad (district council) for development projects and 40 per cent is deposited with the forest department. The remaining 40 per cent is utilised by van panchayats. However, the last revision of this act (1986; came into force in 1988) considerably reduced the van panchayat share, thereby leaving unused millions of rupees in income from all Uttaranchal van panchayats [Purohit 1996-97].

The Dolpokhra van panchayat account balance maintained with the district magistrate (DM) office was Rs 1,96,805. All the interviewed Dolpokhra households said that the van panchayat's revenue account should be transferred to the village, even when two groups in the village were at loggerheads with each other. They candidly revealed that withdrawing money from their van panchayat's account in the DM's office is a cumbersome job that takes days. Purohit (1996-97) has also described strong resentment of the people over inaccessibility of income generated from their van panchayat forests.

III
Conclusions and Suggestions

This study found a steady decline in van panchayats and the forest resources they manage. This decline is associated with a number of community-related factors, complexities in property rights, increased forest use pressure, deterioration of social fencing with increase in free riders, failure of government machinery to realise the ground realities and to act accordingly and other variables explained above. This situation is contrary to the past when this institution worked well as the forest use (and population) pressures may have just been lower. The situation will likely to worsen further because of socio-economic changes in village communities, population and market pressures. Agrawal and Ostrom (2001) have also cautioned that formal and informal institutions of common pool resources management in Kumaon are either eroding completely or facing challenges over past two decades. The situation demands appropriate policy measures.

A widening social gap in the village community has nearly paralysed the van panchayat in one of the study villages. The forest management pattern as found in Dolpokhra suggests that heterogeneity characterised in terms of political power influences collective resource management, i e, when the power struggle is between majority and minority groups within a community. We also found that the stakeholder group size hinders collective management success. While large groups favour collective management, small groups are unable to internalise the externalities imposed by group stakeholders as well as non-stakeholders given the big size of the forest resource.

Growing population pressure and the growing demand for forest produce are inducing a decline in forest resources. In all likelihood the market will greatly influence, more than the community-related factors and performance of the van panchayat institutions, sustainable forest resource management in coming years. Expansion of horticultural activities into forests is indicative of market influence. Eroding van panchayat institutions and declining van panchayat forests cannot satisfy the expanding demand for non-forest use or the increasing demand for forest produce. Meanwhile, positive resource friendly changes aided by market intervention have yet to take place.

The motivation to sustain livelihoods is eroding the relevance of enforcement regulations, as seen in the regularisation of offences in one village (Parwara). A tacit understanding to ignore offences arises among stakeholders because everyone benefits. Increasing state intervention in handling the income generated from van panchayat forests is a source of disenchantment amongst stakeholders in Dolpokhra. State promoted tree plantations under a participatory forestry programme in Parwara have created confusion amongst the community. The overall analysis of state intervention reveals that it has no positive effect and is undesirable from the community point of view.

Rules and regulations crafted by the Parwara van panchayat [Ballabh and Singh 1988] in the past do not match the current ground realities found by this study. Further, this study also raises a fundamental question about the sustainability and the capacity of newly formed micro-institutions managing community forests in India.

Ongoing state intervention in van panchayats as in the case of Parwara, under the rubric of participatory forestry, needs in-depth examination.[1] The government must carefully examine the issue of benefit sharing between local people and forest department to consider the people's voice and to take measures in accordance with central and state government JFM resolutions. Van panchayats have steadily lost control of their incomes and management [Agarwal 1998], and the Uttaranchal panchayati rules implemented in 2001 have imposed more restrictions on van panchayat functioning.

The participatory forest programme in India mostly falls under the category of "informing" participation, where "the local people are simply told what has been decided and unilateral announcements are made by external agents such as administrators [state]…[and] the information flows to the local people with neither a channel for feedback nor power for negotiation" [Inoue 2003: 351-52].[2] Ideally, participation in the van panchayat forest management system should come under the category of self-mobilisation, which is an endogamous bottom-up approach to participatory forestry. This means that independent initiatives by local people are realised with state advice and support. In other words, van panchayats are to have control over decisions and resource use, with state facilitation.

There are suggestions for alternative ways of managing resources (i e, different property regimes) when resources are degraded [e g Singh 1994]. Following Singh (1994), the conversion of common property regimes into state property regimes under the circumstances of degraded van panchayat forests and eroding van panchayat institutional capacity is most feasible. In other words, state management seems to be a better option than collective management in the present circumstances. However, such a proposition would conflict with the ongoing decentralisation and devolution processes undertaken by the state in India in most rural development arenas including forest management. Under such circumstances, the choice is narrowed to the revival of the

van panchayat institution, but reviving this institution on the basis of social capital is not sufficient as it would be too romantic to think along such lines in a region with a high incidence of poverty. Therefore, there is a need for necessary and correct state intervention to revive van panchayats while carefully analysing their history, past policies, and present ground realities. EPW

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Notes

[The authors thank the Ford Foundation, New Delhi and the Japan Society for the Promotion of Sciences, Tokyo, for providing the support necessary for this study.]

1 See Ballabh et al (2002) for a comparative analysis of van panchayat forest management by Parwara and Dolpokhra van panchayats and two forest protection committees in West Bengal state under the JFM programme in India.

2 Inoue (2003) has proposed a new typology of participation suitable for discussion in the tropical countries.

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