Conservation's Visions:
Poverty, Participation, and Protected Area Management in Nepal's Terai

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ABSTRACT

Since the 1980s, the landscape of resource use and management has undergone a revolution. The chief characteristic of this shift is a focus on the participation of local populations in the management of resources. The transformation, which can be characterized as "Exclusion to Participation" is especially striking when protected areas are considered. This paper examines the effects of the ongoing shift in management strategies by analyzing what is happening in two protected areas in Nepal's Terai. It does so by focusing on two important assumptions that underlie recent efforts to involve local communities in conservation. The first is about participation by local peoples and the impact of their participation their willingness to protect resources. The second is about the relationship between poverty and environmental degradation. Using household survey data collected over four months, the paper suggests that participation is insufficient to lead local residents toward effective conservation. The data also indicate that the assumption of poverty leading to greater environmental degradation may be flawed. Therefore, policy efforts that hope to enable conservation by increasing incomes and assets need to be rethought and more finely tuned to the particular type of assets that local peoples create.

KEYWORDS: Protected Areas, ICDPs, Community-based Conservation, Participation, Nepal, South Asia, National Parks.

CONSERVATION'S VISIONS: POVERTY, PARTICIPATION, AND PROTECTED AREA MANAGEMENT IN NEPAL'S TERAI

INTRODUCTION

Since the 1980s, the landscape of resource use and management has undergone a revolution. The transformation has been radical enough that visions on which conservation is based currently would have been unrecognizable even 20 years ago. Earlier conservationists saw the protection of nature to hinge on the exclusion of humans. Today many donors, researchers, and governments see people as the lynchpin of conservation (Arnold and Stewart 1994; Fellizar 1994; Ghai 1993; Gurung 1992; Pandey and Yadama 1990; Poffenberger and McGean 1998; Wells and Brandon 1992; Western and Wright 1994; Wisner 1990). In country after country, new policies on forests, wildlife, irrigation, protected areas, fisheries, and other types of renewable resources seek to involve local residents in the management of these resources (Ascher 1995; Bromley 1992; Chapman and Barker 1991; Ghimire and Pimbert 1997; Kull 1996; Ostrom 1992; Slayter-Thomas 1992). Local peoples are no longer merely an obstacle to effective conservation; they are seen by many to be critical to conservation (Brosius, Tsing, and Zerner 1998). Terms such as participation, integrated conservation and development, local knowledge, community, and civil society have entered the lexicon of conservationists, it seems for good.

The chief characteristic of this shift in strategy is a focus on participation of local populations in resource management. Even a cursory survey of some recent writings on resource use reveals that local populations were earlier seen as one of the chief culprits in environmental degradation. Today they are regarded as necessary, and potentially significant actors in

protection.[1] The qualifier "potential" is important. Even today, many believe that the subsistence of poor local populations can lead to overharvesting of products from a threatened resource base.[2] But at the same time, it has also now become conventional wisdom that excluding people from resources or pursuing draconian, top-down conservation policies is the surest path to making them the enemy of conservation. At the same time, it is believed, the involvement of local residents in the protection of resources can lead to more effective conservation. From "exclusion to participation" is a fair characterization of how the terrain of environmental protection has tilted (Ribot 1995).

The transformation of conservation strategies is especially evident where protected areas are concerned (Durbin and Ralambo 1994; Fiallo and Jacobson 1995; McNeely 1994; Price 1996; Tisdell 1995).[3] Indeed, in perhaps no other arena of environmental protection is the shift more conspicuous than in protected area management. Local use and protection of forests, fisheries,

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[1] Some of the most spirited advocacy on behalf of local involvement in resource management has come from NGOs (among them the IUCN), anthropologists of local resource management practices (Anderson 1990; Denevan and Padoch 1988; Dufour 1990; Sponsel et. al. 1995; Treacy 1982), and scholars of common property (Berkes 1989; Bromley 1992; McCay and Acheson 1987; McKean 1992; NRC 1986; Ostrom 1990; Peters 1994; Wade, 1987).

[2] For example, see the review of evidence in Brandon (1995) who suggests that parks are an important element in any strategy for conservation. A somewhat more critical note is struck by Sharpe (1998) in his argument that the role of communities in protection has been much overrated. Spinage (1998) on the other hand, sees community-based conservation as little more than left-wing political dogma.

[3] It is obvious, however, that even in the case of protected areas, the shift is only symptomatic of a wider phenomenon. The exact reasons for the change are beyond the scope of this paper. But some of them have been examined partially in a number of other works (Agrawal and Gibson 1999; Vandergeest 1996). See also Fortmann (1995) for an interesting discussion of local people's claims to resources.

and irrigation is a common enough phenomenon, and has perhaps occurred almost everywhere around the world for millennia. But protected areas are a recent invention. The first protected areas, as we know them today, began to be established only in late 19th century with the Yellowstone National Park in the United States (Coolidge 1972: 29-31). The exclusion of humans to protect a slice of nature contained within a secluded Eden was the founding logic of protected areas: national park = no resident population (McNeely, Harrison, and Dingwall 1994: 5). Human activities, many advocates for protected areas argued, led to erosion of biodiversity and higher levels of consumption and harvesting pressures on fragile ecosystem processes. The willingness of conservation-oriented activists and policy makers to involve humans in protected area management is therefore all the more striking.[4]

There is another reason that makes the new advocacy on behalf of the involvement of local populations in protected area management striking. Despite more than a decade of efforts on behalf of local residents, efforts that deserve sympathy and praise overall, there are few systematic studies that investigate the impact of local involvement on the effectiveness of protection or on the well-being of local populations. There is a remarkable degree of consensus around the belief that local involvement is a good thing. But there is little concrete evidence on what transpires when local residents are explicitly included in resource management planning and implementation. Since new policies to give local users a greater role in protected area management are under way in perhaps more than 50 countries around the world,[5] the paucity of such systematic investigation

[4] For some examples, see Brechin and West (1991), Gezon (1997), Ghimire (1994), and McNeely (1995).

[5] The precise list of countries where local populations are now involved in protected area use and management is beyond the scope of this paper. However, even a cursory look through the pages

is at least as striking as the transformation of resource management strategies from "exclusion to participation".[6] In the absence of such investigation, one might say that the current spate of policy changes is based primarily on faith.[7]

This paper presents evidence on the nature of involvement of local residents and the impact of such involvement on park resources for two protected areas in Nepal's Terai. Nepal is one of the most visible countries where protected areas and research on protected areas are concerned (Basnet 1992; Heinen and Kattel 1992; Keiter 1995; Wells 1992). The Parks and People Program, a joint undertaking of the Department of National Parks and Wildlife Conservation and the United Nations Development Program, is possibly the most ambitious effort in Nepal to involve local residents in the buffer zones of protected areas. Beginning with the five protected areas in Nepal's Terai, the program will be extended in its second phase to other parts of Nepal.[8]

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of journals that publish often on this subject (for example, A*mbio, Biodiversity and Conservation, Conservation Biology, Environmental Conservation, Environmental Management, Human Ecology, Oryx, Society and Natural Resources, or World Development)* demonstrates that the actual number may be far larger. Almost all tropical countries either have some programs that seek local participation in park management, or they are in the process of developing such plans.

[6] A number of scholars have cast some doubt on the ability of community-based conservation programs to actually reconcile the goals of conservation and development (Gibson 1999; Barrett and Arcese 1995; Wainwright and Wehrmeyer 1998). In providing specific household level data on groups of beneficiaries and non-beneficiaries of a particular community based conservation program, and in questioning a foundational assumption between poverty and resource degradation, this study builds upon and extends some of this existing work.

[7] For a sympathetic questioning of an easy faith in community, see Leach and Mearns (1997) and Li (1996).

[8] The second phase of the Parks and People Program started in 1998, and it has been extended to two other sites: Khaptad and Rara National Parks in the middle hills of Nepal.

Like similar initiatives in other countries, the Parks and People Program belongs to the general category of protection that goes by the name of Integrated Conservation and Development, community-based conservation, or community-based natural resource management (Brandon and Wells 1992; Agrawal and Gibson 1999). Greater participation, Parks and People Program authorities believe, promotes among local residents a sense of ownership and kinship with park resources. The Program also initiated a range of activities designed to generate income and enhance local skills that could move users away from a reliance on park resources. Using household level data collected over four months in 1998-99, this paper examines how local residents in the buffer zones of two parks have responded to the activities that aim to gain their participation, and wean them away from a reliance on park resource. The findings from the paper indicate that some basic questions remain unresolved when trying to involve local populations in resource management in protected areas. Therefore, greater care is needed when designing programs that appeal to local populations and also serve the goal of conservation. More significantly, the research results suggest that at least some of the founding assumptions of many programs to involve local people in protection need rethinking and more systematic research. The most critical of these assumptions are about the links between a) participation, ownership, and protection, and b) poverty and environmental degradation. Existing assumptions about these relationships, especially the idea that the poor overuse the environment, are called into question by the research presented in this paper.[9]

[9] For a dissenting note, see Broad (1994) on Philipppines as a case study.

BACKGROUND

Nepal is today a leading developing country in setting conservation goals and priorities, and creating programs and legislation (Brown 1997; Heinen and Kattel 1992; Lehmkuhl, Upreti, and Sharma 1988). The origins of protection can be traced back to efforts made by the monarchy to protect small patches of the forest in the Terai. These efforts were primarily aimed at protecting large mammals such as wild rhinoceros from poachers, preventing villager encroachment, and creating hunting grounds. But serious preservation efforts began from 1973 when His Majesty's Government (HMG/N) passed the National Parks and Wildlife Conservation Act and established the Royal Chitwan National Park in central Terai as Nepal's first protected area (Basnet 1992). The Act stipulates that the "primary objective of such areas is the protection of sites, landscapes, or geological formations of scientific or aesthetic importance, together with their associated flora and fauna" (UNDP1994: 3). From that beginning, Nepal has created an extensive network of 13 national parks, wildlife areas, hunting reserves, and conservation areas that cover nearly 14% of the country's total area.

The Department of National Parks and Wildlife Conservation came into being in 1980, with authority to administer the protected areas system in Nepal. It is part of the Ministry of Forestry, along with the Department of Forestry, the Department of Soil Conservation, and the Department of Plants. The Royal Nepal Army and the Ministry of Tourism are other institutional actors whose activities influence the management of the protected areas. Contingents of the army discharge important responsibilities related to the enforcement of park regulations. The Ministry of Tourism improves tourism-related facilities and regulates the flow of tourists to the different parts of the country, including the parks.

Government legislation is the dominant means to practice protected areas management in Nepal, but conservation areas and buffer zone management have come to rely on user groups created among the residents of settlements located close to or within protected area boundaries. The objective of management has shifted to include the provision of economic opportunities to and sustainable development of local populations. Many of the changes in the theory of protected area management and in perceptions about how best to convert this theory into practice are reflected in amendments to the 1973 Act in 1975, 1983, and 1989 to allow for the establishment of Conservation Areas. An additional amendment in 1993 relates to buffer zones, and includes management provisions for buffer zones. An area of controlled land use, a buffer zone, "separates a protected area from direct human or other pressures and provides valued benefits to neighboring rural communities" (Nepal and Weber 1994: 333). The legal definition of buffer zones is areas "set aside around a national park or reserve... for granting opportunities to local people to use forest products on a regular basis" (UNDP 1994: 3). The 1993 Amendment empowered the government to declare areas surrounding a park or wildlife reserve as buffer zone. The warden of a protected area can constitute user groups to coordinate the management of fallen trees, firewood, fodder, and other grasses. Of the income earned in a national park, reserve, or conservation area, 30% to 50% can be used for community development in consultation with local agencies and communities.

The Parks and People Program identifies the main problem in the management of Nepal's protected areas to be conflicts between people and park management authorities rooted in local poverty and subsistence practices. Because protected areas in the Terai have open boundaries and no effective barriers, wildlife within parks has easy access to cultivated fields and domestic

animals access to grazing within park boundaries. At the same time, the formation of the protected areas has reduced the grazing land and forest products that villagers could earlier access and use. The two main areas of conflict that heightened tensions between the local populations and the officials supposed to protect resources related thus to poaching and encroachment on park resources by the people, and crop damage and human casualties by park animals.

To address these conflicts, officials in the Parks and People Program aims at three objectives. One, they attempt to provide new sources of income for local residents so that they do not rely on park resources as much. Two, they aim to devise compensation mechanisms for local communities in exchange for resources from which they were excluded as a result of the formation of parks. Finally, they have tried to change the incentives of local users in relation to the protected areas by forming user groups that can participate in park management. Development of the buffer zones is a key component in the conservation strategy. Community user groups are seen to play a significant role in the development of the buffer zone and amelioration of demographic pressures on protected areas. Five National Parks and Wildlife Reserves in the Terai are the focus of the Parks and People Program: The Royal Suklaphanta Wildlife Reserve, the Royal Kosi Tappu Wildlife Reserve, the Royal Bardia National Park, the Royal Chitwan National Park, and the Parsa Wildlife Reserve. The basic statistics on these protected areas are presented in Table 1.

[Table 1 here]

The table makes it clear that the average population per sq. kilometer of protected area in the five Terai sites is approximately 220. The comparable number for the mountain protected areas in Nepal is 5. Even in Suklaphanta and Bardia in the west, there is a large number of people living close to the protected areas. Clearly, despite a casual dismissal by Heinen (1993) of the need to examine human-nature interactions in the western protected areas, the likelihood of conflictual interactions between protected areas officials and local residents is high, and the reliance of local populations on park resources equally significant.

The focus of activities of the Parks and People Program is the population residing in the buffer zones of the protected areas. The Program implements a range of activities such as community organization, savings and rotating credit schemes, infrastructure construction, afforestation, skill development, and income generation programs. These activities, it is believed, will lead to the economic development of the local population, create alternative employment opportunities and develop new sources of income for them, promote more positive attitudes within the communities toward protected areas, and thereby, help local authorities manage park resources with fewer obstacles. Thus there are two chief assumptions behind the management strategies deployed in the PPP. Both of these are also shared by community-based conservation programs more generally. The first is that through participation in the Parks and People Program, local residents will come to have a more positive orientation about the resources contained within park boundaries. As a result, they will stop using these resources profligately. Participation and its virtues are therefore a key element in the benefits programs designed under the PPP. The second key assumption of the Program is that poverty forces local residents to use park resources beyond sustainable levels. That is to say, even were local populations to become convinced

through participation that park resources should be protected, they are forced because of the pressure of daily subsistence needs to consume these resources. The policy prescription that follows from this assumption is that local incomes should be increased.[10] The specific form in which this occurs is through the provision of new productive assets and enhancement of skill levels among local peoples. Local populations, through better assets and new skills can raise their incomes and become less dependent on resources in protected areas. The creation of community organizations, the launching of savings and credit schemes, and skill development are based on these twin assumptions about the benefits of participation and about the relationship between poverty and environmental degradation.

Afforestation, infrastructure construction, and the continuing use of army units to enforce park-related regulations are a mix of earlier and new views about park management. In several of the buffer zones, the vegetation cover is simply insufficient to meet people's needs for firewood or fodder. In many cases, therefore, local residents use animal dung, or crop residue as domestic fuel or as fertilizer for their fields. In these cases, the pressure on contiguous park resources is even higher. Tree plantation is seen as a remedy. New infrastructure development, especially in the form of better trenches around parks and embankments along rivers, is also seen to be an important set of activities related to the PPP. Finally, these new activities occur in conjunction with some previous ideas about enforcement so that in most of the Terai protected areas there is continued presence of units from the Royal Nepal Army to assist park authorities in enforcement.

[10] See Ostrom (1990) and Leach and Mearns (1996) for a discussion of the relationship between underlying cognitive models and policy prescriptions.

The chief mechanism through which the Parks and People Program is implemented locally is user groups formed at the settlement level. Villagers meet regularly to contribute savings. Their collective savings are used to provide loans at collectively decided interest rates to those who can deploy the funds for productive activities. The mechanism for investment is called the Internal Credit Fund. In addition, the contributions from external actors such as the UNDP toward a Village Credit Fund also create a corpus of money from which loans are advanced to user group members. The loans advanced through the Village Credit Fund are paid back to the user group. Thus the main difference between the Internal and the Village Credit Funds is that the entire amount of the Internal Credit Fund is created through contributions from villagers but the Village Credit Fund is created by the contributions of an external agency. The total area for demarcation as the buffer zone for the 5 protected areas is close to 1866 square kilometers. There are 91 VDCs in the buffer zones in the Terai. But only the wards that are close to the park boundaries are included. The population of the buffer zone (for all five protected areas) is estimated at 683,000. In its first phase (1994-97), the Parks and People Program covered only a part of the buffer zone of the five protected areas as table 2 shows.

[Table 2 here]

METHODS

Data and results presented in this paper are part of a larger cross-national research project on local management of resources. They are derived from research carried out in two buffer zone sites in the Terai protected areas in Nepal. The sites are located in two of the five protected areas

covered by the Parks and People Program: Pipariya lies in the buffer zone of the Royal Suklaphanta Wildlife Reserve and Shivapur is in the Royal Bardia National Park's buffer zone. Each of the sites has a population of between 500 and 1,000 households. We selected sites where the full suite of the Parks and People Program activities had been implemented, but for differing lengths of time. This ensured that the effects of these activities would be discernible in the selected sites. The study gathered data on the extent to which people living in the buffer zone depend on forests in the protected areas for their daily fodder, firewood, and livestock grazing needs. In addition, it also examined how participation in program activities has influenced the relationship of household members with park resources.

Information was collected using a set of ten data collection instruments developed at the Workshop in Political Theory and Policy Analysis at Indiana University. These instruments focus on information about the forest resource, people and their socio-economic conditions, and institutional arrangements. By allowing researchers to gather detailed data on these constructs, they permit an analysis of how variables related to these constructs interact at the local level, specifically the settlement level. To supplement this information, a household instrument was also developed. This instrument aimed at data on how particular families benefit from or respond to activities aimed at increasing their incomes and skills, and reducing their dependence on park forests. The same team of field researchers collected data in both sites, spending approximately a month in each site. The data collection instruments are available upon request. General information about the sites and the Program was collected in interviews with protected area officials, and individuals in the United Nations Development Program/Nepal. Some factual information has been culled from publications distributed by the Parks and People Program.

Household information was collected from 60 households randomly selected in each site. Of these, 40 households were selected from among those participating in the activities launched by the Parks and People Program. The remaining 20 households were from among those that had not benefited in any direct fashion from Parks and People Program activities. Further, in one of the sites--Pipariya in Suklaphanta buffer zone--beneficiary and non-beneficiary households were matched on the most obvious indicators of their socio-economic status: caste, land ownership, and livestock holdings. In the second site--Shivapur in Bardia buffer zone--households in the beneficiary group had higher levels of asset ownership (land and livestock) than those in the non-beneficiary group, and also had a higher socio-economic status. The objective of varying the socio-economic status of the selected households in the two groups was to examine how variations in this factor affect the dependence of people on protected areas. Because the study has been carried out at a single point in time, information on how the consumption patterns of the same household changed over time could not be collected. The cross-sectional data, thus, only allows reasonable inferences about how variance in asset ownership affects consumption. These inferences have some implications about change over time, but do not constitute direct proof on the subject.

RESULTS

The Royal Suklaphanta Wildlife Reserve, its Buffer Zone, and the Pipariya Site

The Royal Suklaphanta Wildlife Reserve began as a royal hunting reserve in 1969 but the region was used for royal hunts even before that. It was officially founded in 1976. The reserve

boundaries initially covered an area of 155 square kilometers. They were extended in 1994 so that the current area is 305 square kilometers. The Reserve is located in the extreme southwest part of Nepal in Kanchanpur district, with part of its boundary overlapping the international boundary with India. A number of settlements were present both in the initial demarcation and the later extension, and the process of resettlement of these people is still under way. Strategically located army posts protect the park's boundaries and its biodiversity and wildlife.

The reserve is located between the rivers Syali in the east and Mahakali in the west. The landscape is mostly flat, being part of the flood plain of the river Mahakali. The vegetation contains deciduous forests of sal (*Shorea robusta*), Khair (*Acacia catechu*), and sissoo (*Dalbergia sissoo*), grasslands (dhaddi and imperata), and marshes. The three important wildlife habitats in the reserve are riverine forests, Suklaphanta (home to swamp deer and tigers), and marshy wetlands which are a relatively small proportion of the total area. The riverine forests are dominated by sissoo and acacia. The grasslands are situated in the southern flood plains, and most of them get flooded during high flood period. More than 26 species of mammals and 300 species of birds have been recorded in the region. The animal species include tigers, leopards, sloth bears, hyena and large herds of swamp deer. The Suklaphanta grassland is opened for harvesting of thatch grasses every year for a week, and then burnt for regrowth. Suklaphanta is the largest open grassland in the Terai, and park authorities also express the fear of shifts in vegetation composition owing to grazing pressures. The wetlands in the reserve are home to many different species of migratory species of birds, fish, crocodiles, and other aquatic animals. Deposits of fresh sediment in the reserve's shallow lakes threaten to convert the existing marshes into woodlands.

Today, Suklaphanta Reserve has settlements on all sides. In 1995, the government through the Warden's office identified 152 square kilometers of the area surrounding the parks as buffer zone. The proposed buffer zone is divided into 5 management sectors with 10 Village Development Committees (VDCs). Of the 90 wards in these VDCs, 52 have been selected as buffer zone wards. The population is 14,500 households with close to 98,000 individuals. The major occupation of the buffer zone residents is farming, and only a minuscule proportion of the land is under forests.

Pipariya, the selected research site, is located in Ward 13 of the Mahendranagar municipality in the buffer zone. It has six settlements: Vijay Tole, Sonepur, Baijnath, Laxmi Nagar, Shiva Nagar, and Siddhanath. Starting from approximately 300 households in 1978, the number today stands at 622 (approximately 4,600 individuals), a result of natural increase and in-migration from the hills. Of these, 477 (77%) have joined user groups sponsored by the PPP. Upper caste members are dominant in terms of their proportion in the population. Chhetris and Brahmins are 65%, occupational castes are 27%, and tribal groups such as the Tharu and the Majhi and other castes are 8% of the population.

Agriculture is the main economic activity. The most common combinations of activities are agriculture and service, and agriculture and wage labor. A large number of households have to resort to off farm employment and such incomes are an important component of the household income. This is not surprising since all households own some land but the average land holding is as low as 0.64 ha per household. Such low land amounts of land are simply insufficient to produce enough food for an average household size of nearly seven. Most farmers grow traditional crops such as paddy, lentils, maize, and mustard although some families have recently

started growing vegetables and some fruit trees. Animal husbandry is a major activity supplementing farm agriculture, and almost all households have some animals. Cattle are reared by 96% of households, 53% have buffaloes and 25% own goats.

Residents in the settlement have access to vegetation in Suklaphanta as well as their community forest, "Shahid Smriti Community Forest." But the community forest is relatively small: only 13.4 hectare in size. All the members of the six settlements have some use rights in the forest. The specific aspects of use and management are decided by a user committee that has the authority to manage the forest since 1997. This forest provides a small number of residents with a proportion of their needs. In 1997, for example, 70 or so households were able to get some firewood and thatch grass from the forest upon payment of fees. A few households have also harvested leaf fodder.

Local residents also use approximately 175 ha of the Suklaphanta Wildlife Reserve for their subsistence needs for fodder, firewood, and grazing. Although the formal rules for managing this forest are strict and do not permit any products to be harvested apart from thatch grass for ten days in the year, the informal use of the forest for firewood and grazing is substantial. After the formation of the Reserve in 1976, local residents had been forced to use some of the local community forests outside the Reserve. But the situation is reversed today. Settlement dwellers follow regulations for restricting the use of the community forest, and rely upon vegetation in the Reserve despite the tight security and harvesting rules imposed by the Reserve authorities (see next section). The available agricultural land and community forest land are simply inadequate to supply the villagers either with their needs for firewood, or the fodder for their nearly 2,500 animals.

The Royal Bardia National Park, its Buffer Zone, and the Shivapur Site

The Royal Bardia National Park, like Suklaphanta, was also initially a royal hunting reserve. It was declared the Royal Karnali Wildlife Reserve in 1976, extended to include the Babai valley and renamed Royal Bardia Wildlife Reserve in 1984, and finally reclassified as a National Park in 1988. The park is about 70 kilometers long, and between 10 and 20 kilometers wide at different points along its length.

With the new acquisition in 1984, the park can be considered to have two main habitat types: the left bank of the Geruwa river, and the Babai riverine area. The terrain comprises rugged hills, foothills, bhabhar area, and alluvial floodplains of the river. Seven major vegetation types have been identified in the park (Brown 1997: 61), but forests cover more than 70% of the park area, much of them sal (*Shorea robusta*). The remaining 30% of the park are riverine grassland and savanna vegetation, with some interspersed hardwood and khair-sissoo forests. Natural vegetation regeneration is beginning to cover the cultivated areas of the Babai valley that was recently made part of the park. With an area of 968 square kilometers the park contains some of the most undisturbed wildlife habitat in the Terai, and is famous for its wildlife. It has 38 recorded species of mammals of which 13 are considered endangered and protected in Nepal. Among them are tigers, wild elephants, leopards, sloth bear, and the recently introduced rhinoceros who have successfully reproduced in their new habitat. There are several ungulates, among them five kinds of deers, boars, and bulls. The park also contains more than 325 species of birds with 50 of them being rare species, other mammals, 23 species of reptiles, and more than 60

species of fish. Local residents rely extensively on the park for grasses and other products related to their subsistence needs (Brown 1997: 59).

Under the Buffer Zone provisions of the National Parks and Wildlife Act, the government has identified and demarcated nearly 327 square kilometers of the agricultural and forest land next to the park, including settlements, as lying in its buffer zone. The buffer zone is divided into five management sectors. They together contain 17 Village Development Committees with 137 settlements and an estimated population of 87,500 in 1997. About two thirds of this population lives west of the Babai river, rearing a large number of livestock and goats.

Shivapur is one of the 17 VDCs in the buffer zone of the Bardia National Park. There are 16 settlements in the site. This study, however, selected its sample from only 12 since the other four are not part of the community forest user group proposed in the VDC. The twelve settlements in the site are: Bakuwa, Kanpur, Karmalpurba, Khokarpur, Lanakpur, Lathuwa, Mainkapur, Mathilo Bankhet, Mohanpur, Motipur, Talo Bankhet, and Tulsipur. Since 1978, the population of the VDC has increased by 80% and most of this increase occurred before 1990. The total number of households in the 12 settlements is 641. Of these just about half are upper caste households (46%), a third are tribal groups (33%), and about 15% belong to occupational caste groups.

Agriculture (together with wage labor and off farm service) is the main occupation of the local population with a focus on paddy, corn, lentils, and some vegetables since the recent past. More than 90 percent of the households own some land but a majority does not have enough land to grow enough food for its annual needs. Most households depend on the forest for additions to

soil fertility through the transfer of nutrients as leaf litter and animal manure. There are close to 3,000 cattle and more than 1,000 small ruminants in the settlements.

The settlement residents have access to two different forests to meet their needs for fodder, firewood, and timber. There is a community forest in the buffer zone (91 hectare), called the "Shivapur Phanta Bahiri Forest." The second forest is divided into two patches that are a part of the Bardia Park: Lamkoilee Forest (147 hectare) and Shivapur Phanta Forest (63 hectare). The two patches of park forest were privately owned by landlords prior to 1946 but were taken over by the national government that year. The Lamkoilee forest vegetation is mostly the result of natural growth over the past 60 years, and there is a significant diversity in tree, shrub, and ground cover species in the forest. The vegetation in the Shivapur Phanta Forest resembles more a grassland since most of its trees were felled under an aborted plan to convert the area into an airstrip. Although local residents are only allowed to harvest thatch grass from these two forests, they depend on these forests for their daily needs for fodder and firewood despite tight security and restrictions.

Comparing People's Participation in Suklaphanta (Pipariya) and Bardia (Shivapur)

The Parks and People Program has successfully secured the participation of a significant proportion of the residents in the selected sites in the two protected areas. In both the sites, the Program officials have formed new user groups, the members of these user groups meet frequently, and contribute savings in conformity with the Program objectives to create an Internal Credit Fund. They have used loans from this fund for a range of productive activities. Table 3 provides the basic details on credit and development related activities in the two sites.

[Table 3 here]

Of the seven user groups that exist in Pipariya, three have members from both genders, two have only men members, and one has only women members. For Shivapur, six groups have mixed membership, five exclusively men, and three only women. Most households have one member in a user group. But because some households have opted to save at a higher rate, the total number of members in Pipariya is 549, and the corresponding figure for Shivapur is 976. The user group members are supposed to meet every week so that members can deposit their savings. The proportion of households that come to the weekly meetings is quite high: 75% for Pipariya and 87% for Shivapur. The amounts raised as savings and disbursed as loans are equally impressive. Table 4 provides the aggregate figures for the user groups accomplishments in this regard for the two sites.

[Table 4 here]

In the two sites, members have raised a substantial proportion of funds as savings that can be used for increasing incomes. The average level of savings is more than Rs. 200 in Pipariya, and 500 in Shivapur. The principal determinant of the extent of savings that have been mobilized in the two sites is time. The longer the user groups have existed, the higher is the average savings raised by members. At present, the groups in the two sites have been in existence for just about two years. Over time, it is clear that the user groups will be able to mobilize even higher levels of savings for their own development. The principle on which these savings and credit user groups work are

very similar to involved in the formation of savings and credit societies in other parts of the world. That households living near subsistence margins can raise enough cash to service their own needs for credit is an important idea, and can be instrumental in moving village residents out of the grip of local moneylenders and usurers.

In the cases under consideration, however, the additional fact to be noted is that in each case, a substantial proportion of the loans that are advanced by the user group credit societies are employed for farm-related economic activities. In Shivapur (Bardia) the proportion of loans used for agriculture and farm-related productive activities is nearly 80%. The lower figure of about 45% for Pipariya (Suklaphanta) is actually somewhat misleading. Some of the loans that have been classified in the program records as being used for off-farm activities are still closely related to agricultural production. For example, loans for crop-related marketing transactions or for rice hulling are classified as off-farm loans, but they are closely related to agricultural activities. The relevance of this orientation of development activities in the context of the Parks and People Program will become clear in the next section when we discuss the impact of the Program on forest conditions and use by local residents.

In addition to mobilizing savings and providing loans for economic activities, the Parks and People Program has also contributed to improvements of local infrastructure, vegetation, and skills. Infrastructure improvement has taken place in the areas of tube well installations, trench construction, the repairing of river embankment, and school repairs among other things. Thus, in the settlements of Bijay Tole and Sonapur nearly 30 households have received help for irrigating their fields. The Program has also imparted training to about 30 individuals in areas that create alternative employment and income generation skills. In Shivapur, similarly, the Program has

provided funds for boring sixteen wells to irrigate the fields of 105 families in the site. To help contain wild animals within park boundaries, 8 kilometers of trenches have been constructed along the Bardia National Park boundaries. Residents have also planted more than 100,000 seedlings in private and communal lands. More than 40 members have received some sort of skill development training.

The activities that have a more direct impact in reducing the reliance of local residents on the protected area resources relate to forestry. Forest resources in the buffer zones of both the protected areas are scarce. Only 65-70 hectares of scattered forests exist, usually with only a sparse vegetation cover, in the entire buffer zone of Suklaphanta. The Program has helped hand over approximately 40 ha of community forests to local residents in Pipariya and established three nurseries for growing saplings. Residents in the buffer zone of the Bardia Park have access to a larger area of forest but the vegetation in the 91 hectare community forest is degraded, and does not provide a significant proportion of the needs of the local residents for fodder or firewood.

To examine how local residents rely on protected area resources in comparison to other sources for fodder and firewood, we collected data on the level of withdrawal of fodder and firewood from different areas in the buffer zone. The data for the surveyed sixty households for each site is shown in table 5.

[Table 5 here]

The figures reveal that the households in the buffer zones of both the protected areas rely on park resources to a significant degree. Household members withdraw levels of firewood,

thatch grass, and forage for animals that are quite significant. There are some important differences. In Pipariya in the Suklaphanta buffer zone, the overall level of reliance on forests is less than that in Shivapur in the Bardia buffer zone. Part of the reason is that the river Mahakali yields a large quantity of driftwood that Pipariya residents can use as firewood, and no similar alternative sources of firewood are available to the buffer zone residents in Shivapur. As for forage harvests, a significant number of farmers reported grazing their animals in park forests in both Pipariya (reported later), but between the two sites, more farmers resorted to grazing of animals in Pipariya in comparison to Shivapur. In part, this is a result of more strict enforcement of protection in the Suklaphanta sites as perceived by local residents. We can also see that the protected area forests are the sole source of most of the grasses that local residents need for thatching roofs, making sheds, brooms, mats, ropes or handicrafts. The figures reported in this table compare nicely with those in several other studies of the levels of harvests of forest products from protected areas in Nepal's Terai (Brown 1997; Lehmkuhl, Upreti, and Sharma 1988; Sharma and Shaw 1993). The data I report are based on a small sample size of sixty residents in each site. But they are more comprehensive in their coverage of the range of products withdrawn from the protected areas than most existing studies. The reason is that existing writings have tended to collect information from large samples, but focus only on one or two products instead of examining the suite of material benefits for which residents depend on protected areas.

The continuing reliance of households in the buffer zone on protected areas shows that the rhetoric of participation is insufficient to make people conserve. The nature of participation in the Parks and People Program is such that it does not lead local residents to ownership. Their participation primarily allows them to gain some rights of access and use of protected area

resources. They gain few or almost no rights to manage the protected area forests, or to prevent others from using these forests. Nor are they involved in the creation of rules that might allow them to control the use of resources in the protected areas. Participation in the form encouraged by the existing institutions in the Parks and People Program, the data reveal, is unlikely to encourage local residents to limit their use of resources.

The research also collected data on the gendered division of labor in the collection of firewood, forage, thatch grass, and other products from the forests. This information is critical when designing programs to alter harvesting behavior of local residents. Table 6 presents this data. The figures show that women are reported most often to be involved in the harvesting of products.

[Table 6 here]

This finding is not very different from a host of studies that show that it is primarily women who bear the primary responsibility and burden of gathering firewood, harvesting forage, or collecting water for the household in rural areas.[11] It is to be noted however that in two of the cases (firewood in Pipariya and thatch grass and other products in Shivapur), both men and women are mentioned by the interviewed households as being involved in collection. The reason again may have to do with the fact that significant amounts of firewood are collected in the Pipariya site as driftwood from the river Mahakali.

[11] See, for example, Agarwal (1994, 1997).

The information above makes it clear that protected areas are important in meeting the basic biomass needs of households living in the buffer zone. The dependence of the buffer zone residents on park resources continues despite the efforts of Program officials to undertake activities that would reduce the level of products harvested by the local population from protected area forests. Although the research was carried out in a single time period, it focused on the collection of some data that could hint at how likely the Program activities are to lead to desired objectives.

Poverty and Environmental Conservation in Suklaphanta (Pipariya) and Bardia (Shivapur)

The main strategy being followed by the Parks and People Program to wean buffer zone residents away from a dependence on protected area resources is to increase their incomes and skills so that they no longer feel compelled to use those resources. The underlying assumption is that the poor, even if they do not wish to, are forced to harvest forest products from protected areas because of their subsistence needs. The corollary assumption is that as the poor gain more wealth and increase their incomes, they are likely to need less from protected areas, and therefore will harvest less. To test this assumption, we collected data on two groups of respondents in each site as described in the methods section of this paper. The basic socio-economic information for the two groups is presented in Table 7.

[Table 7 here]

Consider first the data on how the respondents in the two groups from Pipariya and Shivapur are distributed across caste categories. In Shivapur, a greater proportion of the respondents are from the upper caste groups. The proportion of respondents from tribal groups and occupational castes is more or less reversed between the beneficiary and non-beneficiary households when Pipariya and Shivapur are compared. The main reason is simply that these proportions more or less reflect the proportions of these two categories in the population in Pipariya and Shivapur. There is a much larger number of tribal households in Shivapur and of occupational caste households in Pipariya. Once we selected a higher proportion of upper castes in the sample from Shivapur, we simply allowed the rest of the caste proportions to be reflected in the sample.

Come now to the land and livestock holding for the selected households. In Pipariya, the ownership of these assets is almost the same for the beneficiary and non-beneficiary households. Although the non-beneficiary group of households owns slightly less animals and land than the beneficiary group of households, the difference is statistically insignificant. In Shivapur, however, the asset ownership of the beneficiary group of households is significantly higher than that for the non-beneficiary group. On the average, households in the beneficiary category own almost twice the animals and land owned by the households in the non-beneficiary group.

The consumption patterns of these different groups of households and their reliance on protected area resources are highly instructive. To make the case clearly, focus on three main dimensions: average number of animals grazed, forage, and firewood. Table 8 presents this data.

[Table 8 here]

The figures in the table reveal a provocative contrast between the two sites. They show that in Pipariya, where the asset ownership and social status of the beneficiary and non-beneficiary households are roughly parallel, the level of benefits that households in the two groups harvest from the Suklaphanta Reserve forests are also more or less comparable. This rough parity hold for each of the three major products that households use. In contrast, in Shivapur, where the productive asset ownership and social status of the households in the beneficiary group is higher than for the non-beneficiary households, the level of benefits withdrawn by beneficiary households is also significantly higher. This finding would seem to undermine the basic assumption and hope on which programs to raise income and asset levels of local residents are founded.

A hasty conclusion that may be drawn from this finding is that development programs in the context of conservation should be abandoned because the two work at cross purposes. Nothing could be further from the intent of this paper. To clarify, consider the information presented in table 4. The last row in the table shows the extent to which the activities of the Program under consideration are aimed at aiding agricultural activities and production. In each site, a substantial proportion of the loans advanced through the local user groups is deployed for agricultural activities. The information in table 8 also shows that it is agricultural assets--livestock and land--that are closely related to higher levels of consumption of protected area resources. Instead of advocating that development programs be abandoned, the lesson from the information presented in this paper is more that development assistance in the context of conservation initiatives needs to be honed and better aimed. Although the Parks and People Program documents argue that it is important to orient asset development loans and skill development away from agriculture, actual practice remains tied to agriculture. Admittedly, it is difficult to

provide non-agricultural assets and sources of income in a predominantly agricultural context. But that is clearly an important challenge for integrated conservation and development.

CONCLUDING SUMMARY

This paper examines the role of community in protected area management. It does so by focusing on two important assumptions that underlie recent efforts to involve local communities in conservation. According to the first assumption, community members depend on resources near which they dwell. They, therefore, have an interest in the protection of these resources. They are likely to protect these resources if they have the opportunities to participate in the use of these resources. The second assumption is about the relationship between poverty and environmental degradation. Many of the new programs for community-based conservation are founded on the belief that the poor are forced to degrade the environment more. This is because they need such resources for their subsistence and because of the lack of alternative opportunities for finding fodder, firewood, or grazing for their animals. Both these assumptions are intuitively plausible and lead their holders to straightforward policy prescriptions. The first assumption indicates that local residents of communities should have greater rights to use local resources. Although the first assumption would also lead to greater devolution of authority to make rules for managing resources toward local groups, political exigencies often prevent such devolution from actually taking place. We see that this condition holds in the context of the protected areas in Nepal. The second assumption indicates that the poor should be aided in their efforts to increase their incomes. However, the second assumption also ignores the politics of wealth. It ignores the

possibility that those with greater wealth and income are also likely to have more power.[12] Therefore, even if they need protected area resources less in some utopian objective sense, they may exercise their ability to take more and harvest more to improve their conditions of life further.

The paper examined these two assumptions in the context of a specific resource: forests in protected areas; in a specific region: Nepal's Terai; and for a specific conservation program: The Parks and People Program which is a joint undertaking of the United Nations Development Program and His Majesty's Government/Nepal. The particular focus of the paper is well suited to examining the more general question about the usefulness and validity of the twin assumptions that underlie a significant number of community-based conservation initiatives.

The contributions of this study are threefold. One, the study presents information on two relatively understudied protected areas in Nepal's Terai. Although Nepal's protected areas are among the more widely and intensively studied, few studies have examined the western parks in Nepal's Terai, especially Suklaphanta. Further, almost no studies examine the range of contributions from protected area forests to the subsistence of local residents. The information presented in this study shows the extent to which local community residents depend on protected areas along a number of dimensions. Two, the study presents comparative data on two different parks. It examines and explains some of the variations between the two parks. Again, most

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[12] An entire literature on resource management that highlights the political can be accessed by attending to political ecological works. See Bryant (1998), Bryant and Bailey (1997), and Neumann (1997). Excellent case discussions with sharp theoretical insights are exemplified by Moore (1996) and Peluso (1996). See also Sivaramakrishnan's masterly examination of Joint Forest Management policies in India (1996), and some of its historical antecedents (1997).

existing studies tend to focus on a particular protected area instead of considering differences in patterns of resource use across protected areas. Finally, and most importantly, the study contributes to the analysis of two of the most widely prevalent assumptions that underlie the recent advocacy of community in the management of protected area resources. Although the data from the study are based on a relatively small sample of households, they are fairly unambiguous in their implications.

The data suggest that neither of the two assumptions can be held and that they both may need to be modified. Participation must be taken to mean more than simple access or permission to use resources. It must involve some additional attributes of ownership such as involvement in the management of resources, or in the creation of rules to use resources and devolution of authority to control them.[13] Nor is a straightforward link between poverty and resource degradation likely tenable. It must be modified to take into account issues of power and the type of assets from which income is derived. Richer households who depend on agricultural income may harvest far higher levels of forest-based products from protected areas in comparison to poorer ones who do not have agricultural assets. As a result policies to involve local populations in protected area management are in urgent need of examination and reformulation.

[13] See Ribot (1998) and Rangan (1997) for interesting discussions of the relationship between access, control, and rights.

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Table 1
Basic Statistics on the Five Protected Areas in the Nepal Terai

Name	Area (square kilometers)	Population in Contiguous Settlements(in 000's)	Target number of user groups under the Parks and People Program	Tourism Revenues in 1993 (Million Rs)
Royal Suklaphanta Wildlife Reserve	155	74	153	.23
Kosi Tappu Wildlife Reserve	175	172	136	.54
Parsa Wildlife Reserve	499	126	167	.17
Royal Bardia National Park	968	69	460	2.72
Royal Chitwan National Park	932	242	750	48.3

Table 2
Coverage During the First Phase of the Parks and People Project, 1994-97

Dimension of Coverage	Overall Figure	Coverage by PPP	Proportion Covered
Area	1,866 sq.. kms	1866 sq. kms	100%
VDCs	91	43	47.3%
Wards	461	132	28.6%
Population	683,000	88370	12.9%

Table 3
Participation in Credit Related Development Activities in Pipariya and Shivapur Sites

	Pipariya (Suklaphanta)	Shivapur (Bardia)
Total number of households	622	766
Number of member households	514 (82.6%)	622 (81.2%)
Number of user groups formed	7	15
Average proportion of meetings attended by member households	75.5%	87.3%

Table 4
Savings and Loan Performance of the User Groups in Pipariya and Shivapur

	Pipariya (Suklaphanta)	Shivapur (Bardia)
Amount raised as savings (in Rs)	122,000	345,000
Average savings per member	237.7	556.1
Amount disbursed as ICF loan	131,000	330,000
Amount Disbursed as VCF loan	178,000	210,000
Average amount of loan per member	2,026	1,179
Proportion of Loans disbursed for farm-related activities	45.3%	78.9%

Table 5
Extent of Reliance for Subsistence Products on Protected Area Resources in Pipariya and Shivapur

Type of Product Harvested	Pipariya: Reserve Forest (Tons/year)	Pipariya: Other Sources (Tons/year)	Shivapur: Park Forest (Tons/year)	Shivapur: Other Sources (Tons/year)
Firewood	80	128	206	69
Forage	1	217	129	27
Thatch Grass	26	0	33	0
Other Products (Grasses for making ropes, mats, brooms, etc.)	7	0	12	0

Table 6
Gender Division of Labor in Harvesting of Products from Forests

Site and Product	Men (Proportion of Times Mentioned)	Women (Proportion of Times Mentioned)	Both Men and Women (Proportion of Times Mentioned)
Pipariya (Firewood)	10%	18.3%	71.7%
Pipariya (Forage)	0%	74.2%	25.8%
Pipariya (Other)	15.1%	76.5%	8.4%
Shivapur (Firewood)	1.6%	86.4%	12%
Shivapur (Forage)	0%	88.4%	11.6%
Shivapur (Other)	10.7%	11.6%	77.6%

Table 7
Socio-Economic Characteristics of the Surveyed Households in the Selected Sites

Dimension of Socio-Economic Difference	Pipariya (User Group Members, N=40)	Pipariya (Non-User Group Members, N=20)	Shivapur (User Group Members, N=40)	Shivapur (Non-User Group Members, N=20)
Caste: Upper	24	14	23	8
Occupational	15	4	5	7
Tribal/Other	1	2	12	5
Landholding in hectare/household	.74 hectare	.64 hectare	.88	.43
Cattle/buffalo ownership/ household	5.8 animals	5.2 animals	4.5	2.5

Table 8
Comparing the Level of Benefits Harvested by Beneficiary and Non-Beneficiary Households From Protected Area Forests in Pipariya (Suklaphanta) and Shivapur (Bardia)

Activity in the Protected Area (Annual Figures)	Pipariya (Beneficiary Households)	Pipariya (Non-Beneficiary Households)	Shivapur (Beneficiary Households)	Shivapur (Non-Beneficiary Households)
Cattle and Buffalo Grazed on average	2.2 animals	2.8 animals	2.9 animals	1.4 animals
Fodder Collection/ Household	.39 tons	0 tons	2.4 tons	1.3 tons
Firewood Collection/ Household	1.5 tons	1.47 tons	4.5 tons	1.3 tons