



Status of Grasslands in
Protected Areas of Nepal—
Management Issues and Research
Gaps

Terai Protected Areas⁵

Chief Wardens from the Terai PAs presented the status of grassland research and management in their respective areas. The highlights of their talks are summarised below. The Chief Wardens from Royal Chitwan National Park and Koshi Tappu Wildlife Reserve were not present to provide status papers and are thus not represented in this summary. Research from Koshi Tappu and Chitwan is presented in the summary of technical papers.

Parsa Wildlife Reserve (PWR)

Surya Bahadur Pandey

Parsa Wildlife Reserve, located in the central Terai, was gazetted in 1984 as an extension of the Royal Chitwan National Park to provide additional coverage of pristine habitat for the increasing population of wild animals in the National Park. The reserve is primarily located in the Bhabhar region south of the Churia hills, so the area is covered with dense forest and has hardly any natural grassland. However, a small patch of grassland has been created by clearing the *Eucalyptus* trees that were planted as part of a research project before the declaration of the reserve. There is a plan to create more grassland by clearing another *Eucalyptus* patch and relocating existing settlements outside the reserve. The newly created grassland has provided additional grazing land to the wild animals and thatching grass to the local people. The same is expected for the planned area. It is hoped that creation of the grassland areas will help in the conservation of biodiversity within the reserve.

Management Issues

Under the proposed management strategy framework and the grassland conversions, four settlements (Rambhouri, Bhata, Ramouli, and Pratappur) will be relocated. This will need the cooperation and commitment of several stakeholders, and these include local people, politicians, and the government authorities.

Research Gaps/Needs

- No detailed systematic research has been carried out on the change in plant species' composition on the grasslands created .
- Research needs to be carried out on biomass production and carrying capacity of the grasslands so that the population of wild animals in the area can be maintained at the optimum level.
- Baseline data should be gathered on the species' composition in and around the fields of settlements.
- The impact of grass harvesting by local people in the newly created grasslands should be monitored carefully so that it can be carried out at the optimum level.

⁵ Full papers are presented in Volume II of this Workshop Series

Management Recommendations

- Other grassland conversions should be carried out directly north of and adjacent to the first grassland to expand the created habitat.
- The village areas of Rambhouri, Bhata, Ramouli, and Pratappur should be moved and the area converted into grasslands.
- The plan for extension of the reserve's eastern boundary up to the Pashaha River (Bara District) should be implemented properly to provide extended habitat and protection for wild animals, especially elephants.

Royal Bardia National Park (RBNP)

Shiv Raj Bhatta

The Royal Bardia National Park is the biggest national park (968 sq.km.) in the lowland *Terai* of Nepal. The main types of grassland in the park are the tall floodplain grassland created by the Geruwa, Babai, and Orai river systems, and the *phanta* (previously cultivated and re-vegetated short grassland). There are three major grassland areas in the Karnali floodplain area, Bagaura, Khauraha, and Lamkauli. The granting of grass cutting permits has been continued to provide sociocultural and economic benefits to local communities and as a management tool for the conservation of biodiversity. In addition, cutting grass has helped to minimise park-people conflict. All the grasslands are subject to gradual encroachment by tree species and invasion by unpalatable species. The grassland of the Babai Valley is also decreasing as a result of succession. *Bombax* and *Acacia* have almost covered the valley. Several short-term research projects have been carried out to look at different aspects of the grasslands in the park. Management intervention by the park to maintain these grasslands has incorporated traditional practices adopted by the local community and the recommendations of researchers. Concrete management interventions and a system of continuous monitoring of the impact of interventions is essential for long-term management of the grassland ecosystem.

Research Activities Conducted to Date

Several research projects have been carried out in the grasslands of RBNP. Some of the research findings and recommendations are given below.

- The park authority should have a proper monitoring system.
- The park should try to keep harvests within sustainable levels.
- The floristic composition of the grassland should be recorded and maintained.
- Organic matter is removed annually by cutting grass and there is loss of nitrogen due to burning.
- Patches of sal (*Shorea robusta*) forest should be removed selectively on the Karnali River in order to increase the area of grassland.
- Invasive plant species should be removed.
- Patches of grassland should be left uncut and unburned in a two-year rotation.
- Plans to dam the river that enter the park should be strongly opposed (maintaining disturbance from river action and annual flooding is important for the persistence of the grasslands).

- Management experiments should also be established to investigate the effect of rotational patch management of the grassland.
- Disturbance of ungulates utilising regenerating *Phanta* grassland should be minimised by closing roads.
- Input and output of nitrogen and phosphorous should be quantified.
- Grassland ecosystems can sustain the current level of nitrogen loss. However, several experimental plots would need to be monitored for several years to see whether or not continuous harvesting and burning deplete grassland resources.
- The management strategy should be to maintain a mosaic of areas that are cut, cut-burn, and unmanaged tall grass
- Cutting should be done in two phases spaced 20 days to one month apart.

In addition to the research findings, some conclusions on the management practices have been drawn from ongoing regular management practices. However, only systematic research will show whether these practices would improve the condition of grasslands or not. These conclusions are as follow.

- Controlled burning should be carried out twice a year.
 - ❖ Fire should be set immediately after October in the daytime when there is wind.
 - ❖ Fire should be set again after cutting thatch grass in January-February.
- Grass should also be cut twice a year, in January by people and after June by a grass cutter.

Management Issues

- Invasion of tree species such as *Bombax* and *Acacia*, occurring throughout the grassland, and especially pronounced along the boundary of the grasslands
- Invasion by unpalatable species in Baghaura, Khaura, and other small grasslands
- Lack of a proper monitoring system
- Ungulates, ground nesting birds, and smaller mammals are affected by uncontrolled burning as well as by harvesting grass
- Damage to infrastructure, signposts, bridges, and animals during the grass cutting season

Research Gaps/Needs

Long-term systematic study of the impact of grazing, burning, grass harvesting, and other management activities needs to be done.

Royal Shukla Phanta Wildlife Reserve (RSWR)

Ram Prit Yadav, Sher Singh Thagunna, and Jay Prakash Sah (Presented by Sher Singh Thagunna)

The Royal Shukla Phanta Wildlife Reserve, located in the western Terai, is famous for its large herd of swamp deer (*Cervus duvauceli duvauceli*). The reserve has diverse types of habitat within its relatively small area. A large tract of grassland, the Shukla Phanta, is the main habitat of 1,500 to 2,000 swamp deer. There are many small and moderate sized grasslands besides Shukla Phanta,

some interconnected and others scattered. They include the Barkaula *Phanta*, Sundari *Phanta*, Karaiya *Phanta*, and Haraiya *Phanta*. The open grassland in the forest is locally called '*Phanta*'. One of the main objectives of the reserve is to manage these *phanta* in order to keep them as a suitable habitat for swamp deer and other wild animals. To fulfill the objective, several management activities, including regular burning, ploughing, up-rooting, and constructing water holes, have been carried out within these *phanta*. Despite these activities, portions of many *phanta*, such as the south-eastern part of Sundari *Phanta*, the northern part of Shukla *Phanta*, and the south-eastern part of Karaiya *Phanta*, have been invaded recently by tree species which are spreading fast, and thus threatening the importance of the grasslands. Block-wise management activities with a long-term perspectives need to be conducted in order to manage the grasslands of international importance within the reserve.

Management Issues

- Poor road infrastructure makes patrolling and other management activities difficult during the rainy season, especially near the Bauni River between Singhpur and Shukla *Phanta*, near Barkaula post, and near the Headquarters in Maghgaon.
- Despite the grazing by swamp deer and other wild animals and regular controlled burning, some areas of grasslands, such as the northern part of Shukla *Phanta*, Karaiya *Phanta*, Sundari *Phanta*, and Barkaula *Phanta*, have been heavily invaded by trees like *Dalbergia sissoo*, *Bombax ceiba*, *Acacia catechu*, and *Butea monosperma*.
- Drying up of marshes in the grassland area
- Livestock grazing in Haraiya *Phanta* and the eastern part of Singhpur *Phanta* where wild animals have to compete with domestic animals
- Uncontrolled burning of grasslands

Research Gaps/Needs

- Carrying capacity of *phanta*
- State of water quality and status of wetlands in and around the grasslands
- Prey and predator relationships in grasslands
- Flooding pattern and their effect on grasslands
- Effect of grassland burning on grassland quality and wild animals, including lower fauna
- Ecology of swamp deer

Management Recommendations

- Roads should be properly maintained so that the movement of vehicles is smooth throughout the year. The roads near Barkaula post, the Bauni River, and the Headquarters should be repaired by filling with gravel.
- Management activities such as burning and ploughing should be done in a block system. For this purpose, the grasslands should be divided into blocks with additional fire lines, and then these activities should be carried out on a rotational basis.
- To ensure a regular water supply in the Shukla *Phanta* area, existing ponds should be renovated and filled with water. For this, three pumping sets should be bought and kept in running condition.
- Saplings of simal (*Bombax ceiba*), sissoo (*Dalbergia sissoo*), and other trees growing near the view tower, north of the access road, near the Barkaula

- post, and in Sundari Phanta should be uprooted so that further colonisation by these trees is checked.
- Growing trees of sissoo, simal, and palans should be killed by girdling so that further colonisation is checked, and, at the same time, the dead intact trees can provide a habitat for several bird species.
 - Uncontrolled burning by people during the grass harvesting season should be checked by employing temporary guards and making people aware of the damage caused by such burning. Fire-fighting equipment should be made available to control uncontrolled and untimely burning.
 - The existing villages along the Chaudhar River should be removed as soon as possible. This will help to control livestock grazing in the Haraiya phanta and add additional grassland habitat suitable for swamp deer and even rhinos.
 - The location of the army post near the view tower in Shukla Phanta, which is a sensitive area in terms of the habitat of swamp deer, needs to be reassessed and appropriate measures taken.
 - Regular monitoring programmes should be conducted to monitor the impact of management activities so that necessary changes can be made to the programme.

Mountain Protected Areas⁶

Chief Wardens from the mountain PAs presented the status of grassland research and management in their respective areas. The highlights of their talks are summarised below. The Chief Wardens from Sagarmatha National Park, Makalu Barun National Park, and Manaslu Conservation Area were not present to provide status papers and are thus not represented in this summary. Research from the Annapurna Conservation Area (ACA) is presented in the summary of technical papers.

Langtang National Park (LNP)

Jhamak B. Karki and Colleen McVeigh (presented by Jhamak B Karki)

The Langtang National Park, gazetted in 1976, covers a total area of 2,130 sq.km. in the high mountain and Himalayan region of Central Nepal, including 420 sq.km. of buffer zone. The park has extremely varied vegetation, ranging from sub-tropical forest to alpine. Over 3,000 people reside within the park, and close to 17,000 people in the adjoining villages south of the park depend on park resources to a varying extent. Economically, local residents still rely primarily on agro-pastoralism. They are permitted to graze and gather dead wood within the park. Other human activities that affect rangeland resources include burning practices and hunting/poaching activities. These activities may account for the declining quality of winter pasture and diminishing fodder supplies. Similarly, a growing trade in medicinal plants is threatening entire species outside the PA, particularly those that are naturally rare. Current

⁶ Full papers are presented in Volume III of this Workshop Series

management practices include local pastoral management systems which comprise defined user groups and associated access rights, specific decision-making patterns, rotational grazing, deferred grazing, burning practices to promote desired herbaceous growth, and religious beliefs and practices geared at promoting the pastoral sector. Future park management strategies should include: registration of livestock owned by park residents; development of a local policy on trading of medicinal plants; strict monitoring of wild plant harvesting; coordination between the District Forest Office and local park authorities; and participation of local harvesters in policy development and enforcement.

Research Gaps/Needs

RESEARCH GAPS	RESEARCH NEEDS
<ul style="list-style-type: none"> Local harvesting of wild plants and its impact on plant communities is poorly understood. The available information needs to be updated. There is no information differentiating local vs. outside impacts/ practices; commercial vs. subsistence harvesting; or impacts of specific harvesting practices (e.g., whole plant being destroyed) 	<ul style="list-style-type: none"> A park-wide ethnobotanical survey of indigenous plants, including an inventory of local names, uses, and harvesting practices, resident dependence on plant species, and determination of critical population sizes. Monitoring of the resilience of local species to harvesting practices, with emphasis on differentiation between subsistence vs. commercial harvesting, as well as harvesting by local residents vs. outsiders
<ul style="list-style-type: none"> Lack of up-to-date information on rangeland resources and conditions throughout the entire park, and the impact of use activities on them. Available information is old and out-dated. 	<ul style="list-style-type: none"> Detailed survey of all grazing grounds inside the park, identifying 1) active grazing areas; 2) animal user groups (both domestic and wild) including numbers, origin, and time of grazing; and 3) plant species' composition, including seasonal variations and their response to different (including herbivore) user groups and user activities
<ul style="list-style-type: none"> Lack of current data on fodder use and management 	<ul style="list-style-type: none"> Survey of fodder resources and livestock requirements
<ul style="list-style-type: none"> Lack of information on the long-term effects of current burning practices 	<ul style="list-style-type: none"> Study of the short- and long-term effects of burning in alpine grassland and forest areas
<ul style="list-style-type: none"> Lack of information on hunting and poaching 	<ul style="list-style-type: none"> Form anti-poaching units and collect information from informants

Management Gaps and Needs

MANAGEMENT GAPS	MANAGEMENT NEEDS
<ul style="list-style-type: none"> Ineffective management of wild plant collection and suppression of smuggling 	<ul style="list-style-type: none"> Strict monitoring of wild plant harvesting, particularly by outside groups Greater coordination between the District Forest Office and LNP Development of local policy on trading of medicinal plants Participation of local harvesters in policy development and enforcement
<ul style="list-style-type: none"> Lack of monitoring of livestock numbers and pasture use 	<ul style="list-style-type: none"> Registration of livestock owned by people from each settlement within the park

Kanchenjunga Conservation Area (KCA)

Fanindra R. Kharel

The Kanchenjunga Conservation Area (KCA) was declared recently with the purpose of ensuring sustainable, productive use of natural resources by local people and protection of threatened habitats and species by means of a system of community participation in natural resources' management and conservation. Transhumant pastoralism is one of the principal livelihoods for people within the KCA, and livestock are a major source of cash income. A management model that neglects biodiversity conservation interlinked with pastoralism could lead to deterioration in the condition of existing grazing lands and rangelands. To address this problem, a two-week exploration trip was made to temperate and alpine zones within the KCA. This paper highlights the findings of the trip. The potential solutions discussed here emphasise the need for the KCA to organize participatory research programmes to address rangeland resource management issues.

Management Issues

- Growing local population
- Poaching of wildlife
- Shortened cycles of shifting agriculture
- Encroachment on forests for cropping combined with transhumant pastoralism creating increasing pressure
- Competition between livestock and wild herbivores
- Acts of herders as informers to professional poachers on the movement of wildlife
- High pressure on the lower temperate zone oak forests by both low altitude resident cattle in the summer and transhumant herds in winter

Research Gaps/Needs

- No information or preliminary assessment of the biodiversity situation in the grazing areas within the KCA

- No research on grazing areas, users, and their grazing area management practices
- No data on the impact of grazing in the KCA
- Participatory research programmes needed to address the issues of grazing land and rangeland resources' management in the KCA

Management Recommendations

- Community-based grazing user groups should be established through formation and mobilisation of Conservation Area Management Committees (CAMC) in all VDCs within the KCA to ensure that biodiversity conservation receives a proper place in rangeland management systems.
- The KCA authority should introduce the concept of joint grazing area management through the development of a forum for collaboration between herders and the KCA management authority.

Dhorpatan Hunting Reserve (DHR)

Ramchandra Kandel

Dhorpatan Hunting Reserve, located in the mountain region of western Nepal, covers 1,325 sq.km. and comprises alpine, sub-alpine, and high temperate forest types of vegetation. It is surrounded by settlements in eleven VDCs in the east, west, and south of Rukum, Baglung, and Myagdi Districts. Pasture lands occupy more than 50 per cent of the total area of the reserve at higher elevation, and more than 100,000 livestock belonging to about 5,000 households are brought to the reserve for grazing each year. The reserve is affected by human activities such as livestock grazing, wood harvesting, poaching, and unauthorised collection of medicinal plants. People from adjoining and neighbouring VDCs in three districts enter the reserve to graze their livestock during mid March to October, in addition to people from distant areas like Palpa District. Any problems may be resolved if the capacity of the grassland is improved in a scientific, strategic, and participatory manner. For this a more comprehensive database is needed that can help the DHR managers to make better management decisions. In DHR, participatory management practices can be a successful tool for pasture land management in the mid-mountain region.

Management Issues

- Local peoples' dependence on forests to meet fuelwood, timber, and fodder needs, resulting in degradation of forest resources, especially in critical high altitude areas
- Potential for overgrazing of pasture by livestock and increased competition for forage between livestock and wild ungulates
- High risk of transfer of diseases from domestic to wild animals, especially from goats and sheep to blue sheep and vice versa
- Cultivation of land for agricultural crops by *gothalo* (herd watchers) during the grazing season may allow them to claim ownership of parts of the reserve area, in addition to the loss and degradation of grasslands resulting from this action

- Extraction of chir pine resin
- Collection of herbs for local treatment and selling to outsiders
- Settlements inside the reserve
- Conflicts between local communities' agricultural and animal husbandry practices and management of the protected areas
- Lack of trained natural resources' managers and inadequate infrastructure for management of the area
- Inadequate knowledge about and planning for the impacts of tourism and grazing in culturally and environmentally sensitive regions
- Poaching and illegal trade of wild and endangered protected species

Research Gaps

- Gaps between the database of the reserve and the strategy for effective management of the reserve; lack of systematic surveys, inventories and studies of fauna and flora, especially threatened species
- Insufficient information about local uses of natural resources including non-wood forest products and illegal exploitation of herbal plants
- Trends in population numbers of key plants and animal species over time, including historical evidence wherever possible
- The measurement of reproductive success or productivity of different species
- Assessment of the quality and condition of species and habitats, including examination of soil loss and water runoff patterns, measuring total biological productivity, and assessing species' composition

Khaptad National Park (KNP)

Nilamber Mishra

Khaptad National Park (KNP) includes parts of four districts, Achham, Bajhang, Bajura, and Doti, and represents a unique landscape of rolling plateau grasslands rich in Middle Hills flora and fauna. It encompasses various religious spots including the Khaptad Baba's hermitage, temples, and stone statues and Khaptad lake. These grassy plateaus are the traditional grazing land of local people from surrounding areas. The grazing pressure in Khaptad plateau is intense during the summer season (April through August) and illegal grazing is common all year round at the periphery of the Park. Potentially this can lead to degradation of the grasslands, increasing soil erosion and gully formation and decreasing the number and variety of flowering plants. The wildlife population, such as musk deer (*Moschus chrysogaster*) is decreasing rapidly as a result of poaching and possibly of disturbance caused by livestock grazing. Little research has been done in the grasslands, and a study should be made on the impact of grazing on grassland composition. Controlled burning of grassland to increase the nutrient quality and reduce unpalatable species is recommended, although this needs confirmation from trial research.

Grassland Management Issues

- The livestock population is increasing annually due to the growing human population in the proposed buffer zone community.
- During the summer and rainy seasons, there is no alternative pastureland outside the park for grazing livestock.

- The quality of pastureland is being degraded (warden's observation).
- The population density (biomass) of flowering plants in the grassland is decreasing (warden's observation).
- Because of the degradation of grasslands, gully formation and soil erosion are increasing.
- The number of wolves in the park is gradually decreasing and the reason for this is not known.

Research Gaps/Needs

- There is no up to date information on the number of livestock grazing in the Khaptad National Park area.
- The effect of controlled burning on grasslands has not yet been studied.
- The impact of grazing on the species' composition and productivity of the grassland needs to be studied.
- There is no research on the impact of livestock grazing on the wild animals.
- The reason for wolf decline is not known, and prey predator studies need to be made.

Management Recommendations

- Participatory research needs to be conducted on grassland management and sustainable resource utilisation to address research gaps and improve conservation awareness among local communities. Such programmes could include such activities as mass meetings, an extension programme, and establishment of demonstration plots.
- If controlled burning in this area is proved beneficial by research, it should be applied on a rotational basis.
- A plan should be prepared to encourage the communities in the buffer zones to plant more fodder and grass species on their private and community forest lands.

Rara National Park (RNP)

Coyal Ghimir

Rara, the smallest National Park in the country, covers an area of 106 sq.km. and is situated in the Mugu and Jumla Districts of the Mid-western Region of Nepal. The park was established with the objective of maintaining its natural beauty by protecting its watershed area. The beautiful landscape around the lake is the main attraction of the park. Important ungulate species found in the park are musk deer (*Moschus chrysogaster*), jharal (*Hemitragus jemlahicus*), barking deer (*Muntiacus muntjak*), and ghoral (*Nemorhaedus goral*). About 20 per cent of the park area is semi-natural and natural grassland. As a result of the implementation of strict conservation practices, such as a complete ban on grazing, pine trees have re-established in the majority of these grasslands. In other parts of the park, the grasslands are experiencing illegal livestock grazing. The impact of such grazing on biomass production, species' composition, and livestock-wildlife competition needs to be studied in detail in order to manage the grasslands more efficiently.

Management Issues

- Potential overgrazing in the Bota side of Jumla District and around Ghuchchi that may cause grazing competition with wildlife
- Invasion of the grassland areas near Rara Lake by pine trees; although a natural component of the ecosystem, re-establishment of these trees may be reducing habitat for wild ungulates
- During winter, some locals use routes along grassland areas to take their livestock to drinking water, causing trampling effects in localised grassland areas

Research Gaps

- No research has been done on the impact of grazing on species' composition and biomass production in the grasslands.
- There may be competition between livestock and wildlife for food, at least in some parts of the grasslands, and this needs to be studied in detail.
- The reason for the invasion of grasslands in some areas by pines is not well understood.

Management Recommendations

- Once research is done to discover whether livestock grazing is an effective grassland management tool in Rara National Park, appropriate steps need to be taken for management of the grasslands that are being invaded by pine trees and those that might be overgrazed.
- Reports show that, in other areas, controlled burning suppresses the invasion of grasslands by tree species, thus it might be needed in Rara National Park.
- Water resources in areas outside the National Park should be managed so that livestock do not need to be taken through the National Park. This would avoid the negative impact, if any, of trampling.
- If research shows signs of competition between wild herbivores and livestock for food, then appropriate measures should be taken to avoid such competition.

Shey Phoksundo National Park (SPNP)

Tulsi Ram Sharma

Shey Phoksundo National Park is the largest park in the country (encompassing an area of 3,555 sq.km.) and represents the Trans-Himalayan ecosystem. It was gazetted in 1984 and is located in the Dolpa and Mugu Districts of the Mid-western Development Region of Nepal. With wide climatic variations, the park has more than 1,300 species of plants, 30 species of mammals, 200 species of birds, and six reptile and one amphibian species. There are 2,600 people living within the park boundary, and approximately 5,000 people within its buffer zone. The local economy is mainly based on highland agro-pastoralism. Livestock rearing is the main source of income, food, and transportation. Over 70 per cent of the park area is covered by grassland of which nearly half is estimated to be inaccessible as a result of its steep rocky topography. During the summer, local residents graze their cattle in specific pasturelands delineated

according to their traditional norms. This paper highlights whether grazing by both livestock and wildlife can function as a management tool.

Management Issues

The important management issues in SPNP are livestock grazing and potential livestock-wildlife conflicts. The main question is the severity of the situation. Observational accounts suggest that wildlife-livestock competition for grazing is not very obvious, mainly because of:

- the relatively low density of livestock (compared to pasture area) and the fact that their number has been decreasing recently, possibly as a result of the changing socioeconomic condition of the local people and increasing frequency of predation by wildlife; and
- the fact that pasture productivity (biomass per unit area) and vegetation cover are quite high and in good condition.

People residing in the buffer zone area occasionally graze their cattle inside the park although they do not have a legal right to do so. This may cause competition for food between livestock and wildlife in these border areas.

Detailed survey and research work has been conducted on the following.

- Baseline survey of SPNP
- Socioeconomic and tourism surveys of SPNP
- Bio-diversity survey
- Strategy for sustainable use of medicinal plants
- Traditional system of grazing in highland pastures

Discussion

Following the presentation of Papers on the Status in Nepal, the presiding chairperson, Shyam Bajimaya, opened the floor for discussion. The salient points raised were as follow.

- There was concern that nearby irrigation schemes would impact flooding regimes in Shukla Phanta Wildlife Reserve, although there have been no floods in the reserve in the last three years. At present, invading tree species pose the major problem within the reserve.
- Regarding the prerequisites for the declaration of a buffer zone in Shukla Phanta, and the initiative by the government, it was stated that in the absence of additional staff it would be difficult to manage the forests in the buffer zone. The forests outside the reserve have the potential of serving as important corridors for wildlife species, but as yet have received little attention.
- New Management Plans for *Terai* parks should have been completed by the end of 1999. A task force had been formed to look into research needs, prevalent gaps, and the need to do proper mapping of pastureland and important wildlife areas.

- *Terai* parks and the mountain PAs have different regulations regarding settlements within PA boundaries, varying in the degree that regulations permit local people to collect fuelwood and fodder and graze livestock.
- The question was asked whether there were traditional or regulated grazing practices in Dhorpatan Hunting Reserve, and the point made that the local people practice traditional grazing management which includes customary pasture rights in the reserve.
- To a query on grazing practices and conflicts, if any, in Shey Phoksundo National Park, it was stated that grazing is a traditional practice in the area and as the settlements are far apart no conflict has arisen. Local communities practice rotational grazing in the alpine pastures and manage well, given the constraints.
- His Majesty's Government of Nepal (HMG/N) has permitted regulated hunting of blue sheep in DHR, as it is not an endangered species.
- There was general consensus that there is a lack of information flow between the mountain parks in Nepal and variable efforts across the PAs. For example, many studies have been done on floral and faunal diversity in some mountain parks such as Makalu, but little in Rara National Park. There should be a balanced effort in all PAs with better efforts at compiling and sharing information.