

ETHNOBOTANY, PLANT TRADE GLOBALISATION AND FORESTRY MANAGEMENT: AN ETHNOBOTANICAL STUDY OF A TAMANG VILLAGE IN NEPAL

Kamal Adhikari, PhD
Palpa, Nepal

Background

The United Nations Agenda 21 of 1992 provides the context for this ethnobotanical research of plant resources in Nepal (Adhikari 2014). The agenda calls for the active involvement of local people in the administration and development of their forest resources, and for the utilisation of local knowledge (UNCED 1992). The nationalisation of Nepal's forests in 1957 led to the neglect of traditional ecological knowledge (TEK) and local needs. Forest officials trained on Western lines limited the access of local people to forest resources, assuming that the latter knew precious little about forest management (Gilmour and Fisher 1991). This study focuses on the distribution of ethnobotanical knowledge and its impact on the sustainable use of forest resources in Nepal at the village, district and central administrative levels. Three main sub-themes relating to the exploitation of Nepal's plant resources are explored: TEK; the globalisation of trade in plants; and the politics of some corrupt practices associated with forest management and the trade in plant resources.

Some ethnobotanical studies, for example, by Rijal (2011) on Chepang communities in central Nepal, Kunwar *et al.* (2006) on north-western Himalayan districts, Kunwar (2008) on Nepal Himalaya and Ghimire *et al.* (2004) on the Dolpo region of Nepal, have extensively documented ethnobotanical knowledge and plant use by the local communities in their respective areas. However, they have not discussed their findings in the context of Agenda 21. An extensive review of literature on Agenda 21 shows that there is frequently a gap between its objectives and what is actually happening on the ground. These gaps create

barriers to the achievement of Agenda 21 which aims to marry the globalisation of trade with sustainable use of plant resources. Local people, with their knowledge, perceptions and use of plants, should be regarded by scholars as partners in a collaborative process rather than simply as objects of study. Existing management processes would be improved by the incorporation of local knowledge derived from people's engagement with the environment. The globalisation of trade has only strengthened the tendency noted in top-down models to exploit local resources and people without due regard for sustainability. Demand is stimulated, creating an incentive to engage in illegal trade and corrupt practices.

Methods

The research utilised qualitative methods to glean information. Altogether 10 months of ethnographic fieldwork was conducted between September 2010 and June 2011 in three broad domains: the village, local government offices in the district administrative centre of Hetauda, and central government offices in the capital city of Kathmandu. It involved interviews with 45 key-informants including 10 forest officials working in Kathmandu and in Hetauda, three researchers, conservation workers and academics, 14 herbal plant traders, two journalists, nine senior local people, three shamans/traditional healers and three members of the Federation of Community Forestry Users' Groups Nepal. Key participants for longer interviews were selected based on their knowledge of plants and on their degree of engagement with and use of forest products.

A total of 115 households were surveyed in Deurali

village in Makwanpur district. The village of Deurali was chosen for the fieldwork centre because it was near the forest (altitude 2,200m asl) with rich biodiversity. The village lies on the traditional trade route between Tibet and India (Whelpton 2005), and traders in herbal plants still use this route. The site was accessible from Hetauda and Kathmandu, where the remainder of the research was conducted. Additionally, no ethnobotanical research seeking to understand the complex interrelationships between different actors for the sustainability of the plant resources had yet been conducted in this area or indeed in the Himalayas as a whole.

Findings

Ethnobotanical Knowledge

The ethnobotanical study, conducted in the largely Tamang village of Deurali, documents the use in domestic medical practice of medicinal plants and some minerals and animal parts. The household survey basically underpins Kleinman's generalisation that the popular sector is "for almost all societies the most active and widely used indigenous healing tradition" (Kleinman 1980, p.51). Detailed documentation from the 115 households reveals that 150 herbal plants were used by these households to treat 29 specific illnesses. Twenty-one plants were used as a cure for stomach related complaints and 20 for treating typhoid. Table 1 presents the name and use of some medicinal plants and ingredients in indigenous healing practices, and the form and manner in which they are used.

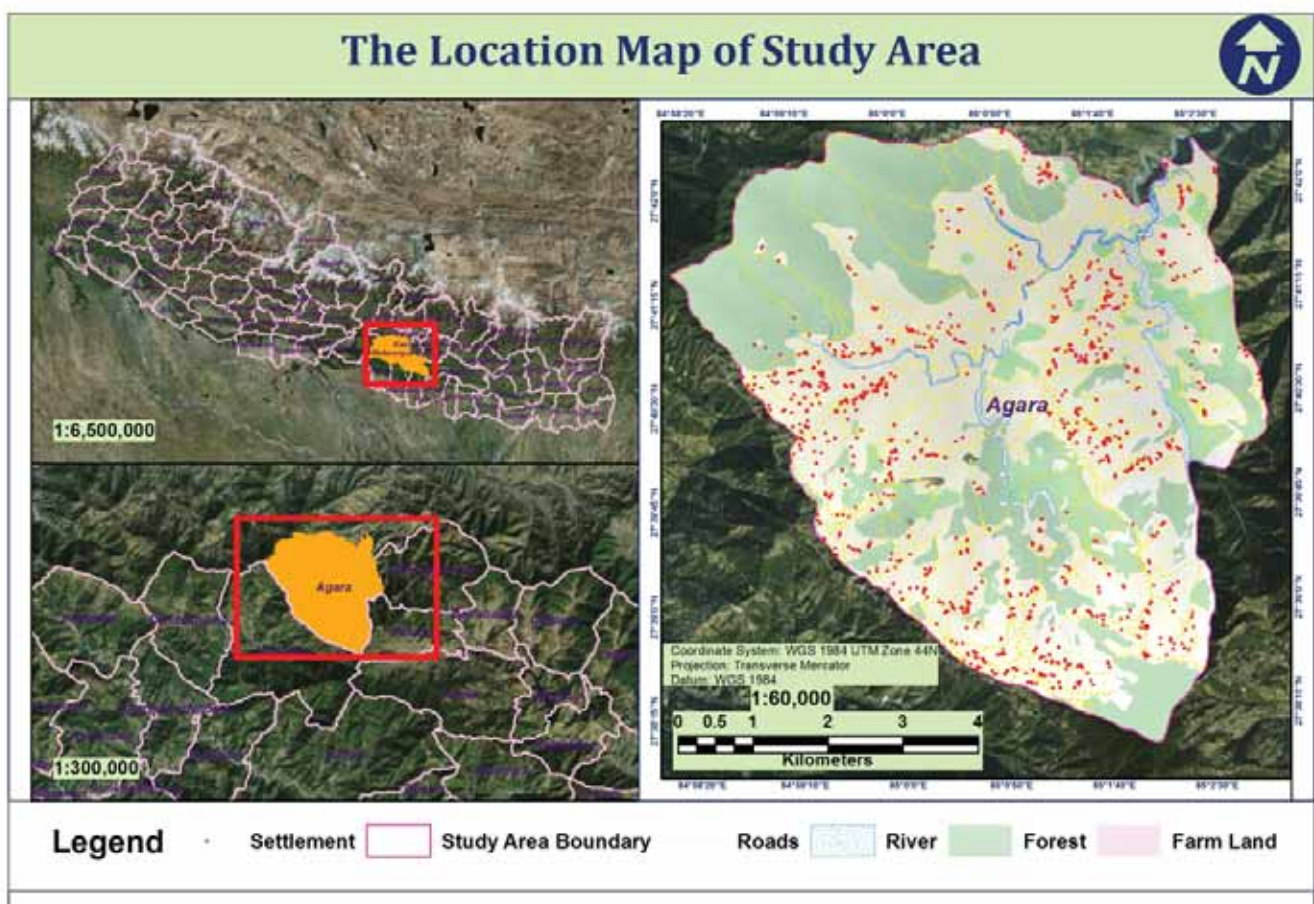


Table 1: Some commonly used medicinal plants with their Nepali, English and scientific names, their parts used for various illnesses and procedure of making medicines

SN	Nepali Name	English Name	Scientific Name	Parts Used	Complaint	Procedure
1	Abijalo	Lightning weed	<i>Drymaria diandra</i> Blume	Whole plant	Sinusitis	The whole lightning weed plant is burned in a fire and the resulting smoke is inhaled.
2	Aduwa	Ginger	<i>Zingiber officinale</i> Roscoe	Rhizome	Coughs and Colds	Pieces of rhizome of ginger and cumin seeds are put in hot water and then drunk.
3	Aklebir	Lobelia	<i>Lobelia pyramidalis</i> Wall	Leaf and flower	Wounds	The juice extracted from lobelia leaves and flowers is applied to wounds.
4	Banmara	Crofton weed	<i>Eupatorium adenophorum</i> Spreng.	Leaf	Cuts	The leaves of crofton weed are crushed and the juice extracted from them is applied to a cut to stop bleeding.
5	Bojho	Sweet flag	<i>Acorus calamus</i> L.	Rhizome	Coughs and Colds	The rhizome of the sweet flag is chewed.
6	Bukiphul	Common dandelion	<i>Taraxacum officinale</i> Webb	Root	Coughs	The roots of the common dandelion are cleaned and crushed, mixed with water and the resulting juice is drunk.
7	Chiraito	Chiretta	<i>Swertia chirayita</i> (Roxb.) H. Karst.	Whole plant	Fever	The whole chiretta plant is either chewed or crushed, mixed with water and the resulting liquid is then drunk.
8	Dhasingre	Wintergreen	<i>Gaultheria fragrantissima</i> Wall.	Leaf	Colds	Wintergreen leaves are crumbled together and the resulting fragrance is inhaled.
9	Jira	Cumin seeds	<i>Cuminum cyminum</i> L.	Seed	Colds	Cumin seeds and pieces of rhizome of ginger are put in hot water and then drunk.
10	Kane sinki	Maiden hair fern	<i>Adiantum venustum</i> D.Don	Root and leaf	Blockages in the urinary track	The roots and leaves of the maiden hair fern are crushed and ground into a powder, which is taken with or without water to cure blockages in the urinary track.
11	Lokta	Nepali paper plant	<i>Daphne bholua</i> Buch.-Ham. ex D.Don	Root	Food poisoning	The roots of the Nepali paper plant are crushed, mixed with water and drunk for <i>bigār</i> caused by a <i>boksi</i> .
12	Pakhanved	Rockfoil	<i>Bergenia ciliata</i> (Haw.) Sternb.	Rhizome	Stomach ache	The rhizome of rockfoil is mixed with the skin of guava, oak and mango. These are ground together and the syrup made from these herbs is drunk for stomach ache.
13	Saur	Alder-leaf birch	<i>Betula alnoides</i> Buch.-Ham. ex D.Don	Bark	Childbirth and delivery problems	The bark of the alder-leaf birch, rhizomes of rockfoil and the roots of the tall false-buck's-beard are crushed and ground together. The resulting powder is eaten with or without water. It helps to stop bleeding after delivery and makes the mother stronger.
14	Supari	Betel nuts	<i>Areca catechu</i> L.	Fruit	Dysentery	Betel nuts are chewed to cure dysentery.
15	Thulo okhati	Tall false-buck's beard	<i>Astilbe rivularis</i> Buch.-Ham. ex D.Don	Root	Fever	The roots of tall false-buck's-beard's and cogon grass are crushed together, mixed with water, and the resulting liquid is then drunk.

The most commonly used were ginger (*Zingiber officinale* Roscoe), rockfoil (*Bergenia ciliata* (Haw.) Sternb.), cumin seeds (*Cuminum cyminum* L.) and the roots of the common dandelion (*Taraxacum officinale* Webb) and of the tall false-buck's beard (*Astilbe rivularis* Buch.-Ham. ex D. Don). Minerals such as wood ash, salt and red mud were also used. Different combinations of plants were used to prepare a variety of powders for oral consumption. Some had to be cooked before use. Pastes were used to treat dislocated and broken bones, sprains, boils, scabies and headaches. Other remedies were chewed, like betel nuts (*Areca catechu* L.) and rhizome of sweet flag (*Acorus calamus* L.), or inhaled, like lightning weed (*Drymaria diandra* Blume) and wintergreen (*Gaultheria fragrantissima* Wall.). Most of the herbal plants used were available locally in their fields or cultivated lands or in the forests, although spices and salt had to be bought.

The knowledge of plants and other medicinal ingredients has been handed down from generations through oral tradition, but their use is now in decline. For instance, cases of bone fractures, with some exception for animals, are now treated in hospitals.

Belief in witchcraft, known locally as *boksi*, is widespread in Nepal, and many villagers turn to jhankris (shamans) for protection. The use of plants by jhankris in their healing practices and rituals was documented. Six jhankris were identified in Deurali village. Although the use of jhankris is in decline villagers still turned to them for remedies for various illnesses. The main illnesses mentioned by jhankris and their clients were childbirth and delivery problems, child illnesses, various stomach complaints caused by food poisoning and by witchcraft. They also treated sprains, dislocated and broken bones, headaches, toothache and backache.

While the households depended on herbal medicines, the jhankris relied heavily on rituals. The basic treatment by a jhankri included performing a ritual with the chanting of mantras, burning herbs as an incense, blessing rice grains and throwing them over the ill person. In some cases they made amulets by using

different herbs or a selection of animal parts. Sometimes they sacrificed animals and played the drum. These elements were distinctive to jhankri practice. The jhankris made widespread use of animals and their parts which in contrast were only used by the households in making paste for dislocated and broken bones. Both used herbal plants to make a medicine to cure tuberculosis. The households used herbal plants to make medicines but the jhankris used them additionally in their rituals. The jhankris alone treated specific illnesses and conditions perceived as being caused by unknown forces or witchcraft.

The use of plants by the jhankris may constitute a separate branch of ethnobotany but more detailed research is needed to form a definitive conclusion. However, the role of jhankris in the area is in decline, especially since the construction of a road to the village in 1995. This led to the opening of allopathic drug stores which even the jhankris were observed using. Knowledge passed on from healer to healer is now being superseded by western scientific medicines promoted by the state. International agreements declare that development programmes should pay due regard to TEK but in this case it is being side-lined rather than incorporated. However, so long as popular belief in witchcraft continues the services of jhankris may continue to be in demand.

Changes in Deurali

The construction of a road through Deurali has led to significant changes in life style as well as in the use of plants. It has created new possibilities for making a living as tea shops and restaurants, a hotel, pharmacies and general stores have been opened. Tin roofs, motor bikes, chemical fertilisers, allopathic medicines and schooling have made their appearance. All of these require money and some older participants complained of a decline in morality as relationships have been monetised. Whereas in the past it was the social norm to help each other, help was now provided only for money. A material downside of the road has been the disturbance of the fragile environment and the destruction of forests in places.

Even the creation of a community forest with Japanese help, which had led to reforestation and the raising of significant funds for local development projects such as schools, had also brought with it controls over the amount of firewood and timber allowed to be taken from forests.

Trade in plants has been facilitated by the road, leading to significant changes in the local cultivation and use of plants. Diet and living standards have improved. In the past, villagers used to depend on subsistence crops like maize, wheat, barley, millet and mustard seed but now new crops such as potatoes, cabbages, cauliflowers and radishes have been introduced for sale as well as consumption. Rising temperatures have made it possible to grow red chillies and tomatoes. The road has made it possible to get perishable products to Kathmandu and other markets expeditiously. The resulting rise in income from the new crops has enabled the villagers to abandon their previous illegal main cash crop of cannabis. Cannabis is now only grown and harvested in villages without a road.

The degree of continuity and change in the use of specific plants has varied greatly in response to factors including new knowledge, international demand and the prices outside traders are prepared to pay for them. To take some examples, the income from new crops meant that it was no longer worthwhile to collect rockfoil because of its low price. As a result the threat from over-exploitation has decreased. The advent of computers has decreased the demand for the Nepali paper plant (*Daphne bholua* Buch.-Ham. ex D. Don.), although it is still exploited for medical purposes. There is still a medical demand for chiretta (*Swertia chirayita* (Roxb.) H. Karst.) but it has run up against competition as a cure for fever from paracetamol from the new pharmacies. The value of Himalayan yew (*Taxus wallichiana* Zucc) on the international market has led one plant trader to make a long-term investment in 40,000 seedlings. The demand for the numerous different plant species used in making yeast for alcohol fermentation has been reduced by the

advent of commercially produced alcoholic drinks with established brand names.

In spite of all these changes most villagers from Deurali remained heavily dependent on the surrounding forests for leaf litter and fodder for their animals. Their previous reliance on forest plants for survival may have diminished but some fruits, roots, green vegetables, mushrooms and potato yams are still utilised.

Globalisation of Trade in Plants

A detailed case study of an orchid on its journey from the village where it is gathered to the border for usually illegal export demonstrates how the globalisation of trade can significantly alter people-plant relations. This orchid is locally known as sunakhari, a collective name for three species of dendrobium, namely (i) *Dendrobium eriiflorum* Griff. (ii) *D. gamblei* King & Pantl. and (iii) *D. longicornu* Lindl. This particular orchid is one of the top 50 herbs used in Chinese traditional medicine. In Deurali it was traditionally regarded as being beautiful but of no commercial value. The arrival of international traders in the village led locals to realise that it could be exploited for significant financial gain. The result was gross over-exploitation despite its internationally protected status, and a threat to its sustainability. The government's response was inadequate, not least because of forest officials' self-confessed lack of interest in plant conservation.

At the heart of the orchid story is a discussion of the politics of knowledge as applied to the conservation and exploitation of sunakhari. Knowledge about sunakhari, its value and its qualities is a defining political factor for the organisational conservation of this orchid and also for its smuggling. The dynamics are different at the central, middle and local levels and so are the results. Knowledge influences the behaviour of villagers at the local level where the collection and sale of sunakhari is on a small scale and entrepreneurial in nature, with specific material goals in mind, such as education for their children. The middlemen involved operate on a larger

scale, accumulating sufficient quantities of sunakhari to make it worth the while of incoming Chinese traders.

Knowledge influences policy action at the middle level where district forest officials hold back from acting against sunakhari smuggling, partly because they lack the botanical knowledge required to identify this plant and partly because they have received no formal complaints or writs. Official knowledge is seen to be necessary before action can be taken. Their training and focus is on trees rather than herbal plants.

At the central level, ministry officials not only have knowledge but also seek more. This influences the formation of policy. At the same time they are aware that increased knowledge at the local level can encourage illegal activities and threaten conservation. Officials blame the traders for pressurising local collectors into using unsustainable collecting techniques but do not go out into the field to supervise collection or to provide training courses for collectors. The complicated and protracted procedures framed at the central level for obtaining export permits encourage smuggling. Bureaucratic confusion and lack of coordination between different departments impedes effective action. The Department of Forests has the authority and resources but not the expertise, whereas the reverse is true of the Department of Plant Resources. Consequently neither body is able to act effectively even though issues related to herbal plant conservation have received much attention at government level and some good ideas have emerged even if they have not been effectively implemented.

The Forest Department and Corrupt Practices

Corruption in its varying forms is rampant in Nepal and the forestry sector is no exception. The Transparency International Corruption Perception Index for 2016 ranked Nepal at 131 out of 176 countries (Transparency International 2017). People linked with the exploitation and management of plant resources are making extra money in a variety of ways, operating through the 'system', an unwritten but very powerful mechanism

under which unofficial payments on a clearly understood and accepted scale are made to accomplish or speed up passage over bureaucratic hurdles. This 'system' operates at all three levels and at interstices of levels in a variety of locations and contexts.

The scale of corrupt practices is limited at the village level. The absence of a range post in Deurali limits the contact between officials and villagers, and hence the scope for corruption. By contrast, corrupt practices are rife at the middle level where the face-to-face administration of forest resources between officials and the public takes place. Money greases the bureaucratic wheels and speeds or enables the issue of permits for the exploitation of forest resources. Traders need an official signature before they can make money while underpaid officials need supplementary income. Smugglers have to pay up at every turn of their journey. At the central level, corrupt practices are involved in transfers and promotions, for which senior officials receive payments. The 'system' influences the size of payment required from a district forest officer to achieve promotion or transfer to a more lucrative position. These senior officials in turn pay bribes to those in political power for elevation to receive higher posts. Bribes may also be paid by those seeking to influence the formation of policy. The 'system' is broadly accepted by many of those affected by it and is considered normal unless payments over the norm are exacted. However, the general public outside the 'system' has a more negative opinion and tends to regard officials in general with suspicion and as being corrupt.

The corrupt practices incorporated within the concept of the 'system' are underpinned by five factors, namely cultural practices, education, political instability, international influence and demand, and porous borders. Cultural practices range from the frequently heard refrain 'I do not have any change' to a demand for 'tea money', or a gift or service to a senior colleague or powerful individual in return for or in anticipation of a favour. Education holds the key to many lucrative positions giving opportunities for enriching oneself. There is a

general perception that forestry is one of the sectors where one can benefit from under the counter payments. Political instability also contributes to corruption as political parties want to make as much as possible when they are in power and regard traders in forest products as a potentially good source of funds. They also pressurise officials for contributions to party funds. International demand for herbs such as sunakhari and chiretta has hugely increased their price and led forest officials, security personnel and traders to become involved in corrupt or at least ethically dubious business activities. The porous borders with India and China have facilitated smuggling, which itself is aided by the payment of bribes to police and customs officials. The sunakhari story shows how knowledge and corruption go hand in hand on the sunakhari trail.

Conclusion

Three themes underlie this research. The first of these is TEK. A detailed case study shows the extent of ethnobotanical knowledge which survives among the villagers of Deurali. My field work has demonstrated that their ethnobotanical knowledge is considerable. Their traditional medical practices are informed by a detailed insight into how plants are used for healing purposes. The research identifies which plants are used to treat specific illnesses and conditions. Although local people are still using herbal plants to make household remedies they are increasingly using allopathic medicines at the expense of herbal plants. They are also beginning to use English and biomedical terms. A conceptual change in terminology is being introduced alongside changing practice. Nevertheless, villagers still use traditional remedies alongside allopathic medicines. Modern medicine also utilises TEK. This interface demands a strategy to sustain and enhance TEK.

The second theme is the globalisation of trade in plants, facilitated by roads and improved communications with the outside world and by the arrival of outside traders, some of them international. Globalisation may, as in the case of sunakhari, threaten certain plant species through

over-exploitation in the pursuit of short-term gain. On the other hand, globalisation has led to the adoption of new crops and agricultural practices, and hitherto neglected plant species growing in the wild have been exploited. This demonstrates how globalisation may be transformed in the right circumstances into a vehicle for conservation and sustainable use.

A case study of sunakhari helps to develop the third theme, of corruption, which is widespread and clearly present in the forestry sector at all levels. This has significant effects on the relationship between people and plants, and for the sustainable exploitation of resources. The ethnobotanical study of the three administrative levels has shown how all these levels are intertwined, and both the system of governance and the pattern of corruption are affected by the spheres of exchange of knowledge between these levels. An essential feature is control of knowledge and of access to it. Knowledge brought by Chinese traders that sunakhari was valuable led to overexploitation and undermined sustainability. Agenda 21 wanted both globalised trade and sustainable exploitation of plant resources. This study has shown the difficulty of marrying these two objectives and raises questions with respect to knowledge dissemination at the lower level and participatory strategies for the conservation and sustainable use of medicinal and aromatic plants.

The findings of the research concurs with Messerschmidt (1990) that it is important to listen and learn from local people, and to engage and encourage, and enable and empower them. Some at the central administrative level have been responsive to this message but at lower levels it is systematically ignored. Ironically it is the illegal traders who are listening to locals and learning from them about the location of valuable plants. They are engaging the locals in the trade, and encouraging and empowering them by providing them with new income which enables them to embrace new opportunities. The sustainability of medicinal and aromatic plants is the missing link where the traders as well as locals can come together to create

a win-win situation. Government policy and programme implementation should focus on facilitating this process. The ethnobotanical realities of contemporary Nepal, to put it mildly, are complex.

References

- Adhikari, K. (2014) *Plants, People and the Politics of Ethnobotanical Knowledge in Nepal*. PhD thesis: University of Aberdeen
- Ghimire, S.K., McKey, D. and Aumeeruddy-Thomas, Y. (2004) Heterogeneity in ethnoecological knowledge and management of medicinal plants in the Himalayas of Nepal: implications for conservation, *Ecology and Society*, 9(3).
- Gilmour, D. and Fisher, R. (1991) *Villagers, Forests and Foresters: The Philosophy, Process and Practice of Community Forestry in Nepal*. Kathmandu: Sahayogi Press.
- Kleinman, A. (1980) *Patients and Healers in the Context of Culture: An Exploration of the Borderland between Anthropology, Medicine, and Psychiatry*. London: University of California Press.
- Kunwar, R.M. (2008) Ethnobotany in the Nepal Himalaya, *Journal of Ethnobiology and Ethnomedicine*, 4(24).
- Kunwar, R.M., Nepal, B.K., Kshhetri, H.B., Rai, S.K. and Bussmann, R.W. (2006) Ethnomedicine in Himalaya: a case study from Dolpa, Humla, Jumla and Mustang districts of Nepal, *Journal of Ethnobiology and Ethnomedicine*, 2(27).
- Messerschmidt, D. (1990) Indigenous environmental management and adaptation: an introduction to four case studies from Nepal, *Mountain Research and Development*, 10(1), pp. 3-4.
- Rijal, A. (2011) Surviving on Knowledge: Ethnobotany of Chepang community from midhills of Nepal, *Ethnobotany Research & Applications*, 9, pp. 181-215.
- Transparency International (2017) Corruption perceptions index 2016. http://www.transparency.org/news/feature/corruption_perceptions_index_2016
- UNCED (1992) *Earth Summit Agenda 21: The United Nations Programme of Action From Rio*. New York: United Nations Department of Public Information.
- Whelpton, J. (2005) *A History of Nepal*. Cambridge: Cambridge University Press.

Kamal Adhikari received his PhD in Ethnobotany for University of Aberdeen, Scotland.
Readers may write to him at adhikari.kamal@gmail.com



Ground Realities, Good Science and Knowledge-based Decisions Since 1986

RESOURCES HIMALAYA FOUNDATION
Dr. Pralad Yonzon Memorial Conservation Chautari, Naya Bato, Sanepa Ring Road
GPO Box 2448, Kathmandu, Nepal
Tel. +977 1 5537502
team@resourcehimalaya.org
www.resourcehimalaya.org

Habitat Himalaya - A Resources Himalaya Foundation Factfile • Volume XVIII Number II • team@resourcehimalaya.org