Distribution and utilization of bamboos in the mid-western and the far- western regions of Nepal

A. N. Das[1] and H. B. Thapa[2]

The distribution and utilization of bamboo species in the mid-western and the far-western regions were recorded using various methods including Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA) tools, field visits and specimen collection. Of the eleven genera of bamboo recorded from the regions, most of the species were found to be of indigenous types. In the mid-western region, 48 bamboo species were recorded: 18 identified at species level and 11 at genera level. However, 19 species could not be identified, although their local names were recorded. Similarly, in the far-western region, 31 species were recorded: 10 were identified at species as well as genera levels. In this region too, 11 species could not be identified, only local names were recorded. Greater diversity of bamboos exists in the hills than in the Terai belt of the regions studied. High Mountain districts such as Jumla, Dolpa, and Darchula contain considerably less quantity of large diameter sized bamboos (*bans*) than small sized diameter bamboos (*nigalo*). Although, in these regions, 18 uses of bamboo were noted, many species are mostly used for weaving. The development of bamboo resources in the regions can help reduce poverty, generate employment and sustain rural livelihoods.

Key words: Distribution, utilization, bamboo, district, region

Bamboos, the perennial woody grasses are among precious natural resource of Nepal. They have intimately been associated with human being since time immemorial in the country and have become an integral component of rural farming system. They have pivotal role in the rural economy and thus, help sustain livelihoods of many rural households including socially and economically disadvantaged groups. It is difficult to imagine the rural economic scenario without them (Das, 2001; 2002 and 2003).

The natural range of bamboo species extends from the plains of the Terai to the High Mountains (4000 m). They are distributed both in natural forests and farm land (Das, 1988). Bamboos, which have versatile uses, are treated as multipurpose raw material from which almost anything can be manufactured both in the rural and the urban areas (Carter, 1995; Das and Seeley, 1996; Das, 2000).

Bamboos in the natural forests are valuable not only for the local people and communities of the Terai and the Mid hills but also for those of the high mountains. However, many of the bamboo species in natural forests have been over-exploited to the extent that some have already reached in the state of extinction. Bamboos also serve as a good habitat and a source of food for various endangered wildlife species. But, due to biotic factors and grazing pressures in natural forests, bamboo forests have been decreasing continuously from many parts of the country. The problem is severe particularly in cases of those species that flower gregariously at an interval of 40 to 50 years.

Bamboos are among the important renewable natural resources that can reduce poverty if grown and managed on a sustainable basis. As such, their role in poverty reduction programme, which has been highly emphasised by the Government of Nepal (GoN) right through the Ninth and Tenth five year plans to the subsequent periodic plans is very crucial.

Although potential of bamboos for socioeconomic and livelihood development has been recognised, no comprehensive study has been conducted to explore indepth knowledge and information on distribution,

[1] Planning and Human Resource Development Division,
Ministry of Forests and Soil Conservation Singh Durbar Kathmandu, E-mail: dasannapurna@hotmail.com
[2] Department of Forest Research and Survey, Babarmahal, Kathmandu

use and identification of bamboos in Nepal. Some studies that have been carried out in scattered manners focussed only on the Eastern and the Central regions of Nepal.

The Department of Forest Research and Survey (DFRS) has initiated taxonomic work on bamboos from early eighties. However, such work is yet to be carried out in most parts of the mid-western and the far-western regions of Nepal. In this pursuit, the present study has been carried out in these two regions with a view to identify bamboos existed in the regions and to understand their distribution and utilization patterns.The information obtained will provide valuable input for development and management of bamboos, technology transfer from one region to another, and adoption of best utilization practices.

Materials and methods

This study was completed in two-years, between 2003 and 2005. The study area covered 19 of the 24 districts encompassed by the mid-western and the far-western regions of Nepal. The study area also included Khaptad and Bardiya National Parks. Before initiating the fieldwork, rigorous discussion and interaction were made and species information sheets, semi-structured questionnaires, checklists for key informants' interview and group discussion were developed. Questionnaires were pre-tested in two districts: Banke and Surkhet, and some minor revisions were made before applying in the field. Species information sheet was used to record the bamboo species that were located during the study.

Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA) techniques and their tools such as focus group discussion, key informants' interview and semi-structured questionnaires were applied to collect required information. Concerned officials at District Forest Offices, Range Forest Offices and District Soil Conservation Offices, Community Forest Users, local knowledgeable persons, bamboo growers and craft-makers were consulted to gather information on distribution and utilization patterns of bamboos. Four participatory discussions were held in different parts of each district of the study area. On an average, twenty persons took part in each discussion session.

For the study purpose, the concerned districts were divided into two areas: forest land and farm land. Geographical boundaries of Village Development Committees (VDCs) were demarcated on the available maps and overlaid on the topographical and land use maps. Based on the information available from the staff of district forest offices, forest lands were demarcated into bamboo growing and non- bamboo growing areas and were accordingly, delineated on the maps. In each district, at least two natural forest sites and four villages having bamboos were visited to crosscheck the validity of the information acquired from discussion and questionnaires.

Specimens of both identified and unidentified bamboo species were collected from all the nineteen districts representing all ecological regions. The herbarium samples were collected from each studied district and specimen collection sheet was used to document the necessary information. These samples were brought to Kathmandu and identified with the help of local advisors and experts. A separate sheet was prepared for bamboos grown in national forests (community and government managed forests) so as to collect information on the distribution pattern.

Results and discussion

Distribution of bamboos

In Nepal, twelve genera and more than fifty species/ varieties of bamboo have been reported (Das 1988; Stapleton 1994; Das 1999; Das, 2004). Although they have been believed to be widely distributed throughout Nepal, they are not as common in the regions studied as in the eastern and central regions. However, these regions possess a good diversity of bamboos. The field study also revealed the presence of a large number of bamboo species in the regions.

Distribution and utilization of bamboos in nineteen districts of the mid-western and far-western regions are presented in table 1. In these regions, more than 60 local names were enlisted for different bamboo species. However, there is confusion with the local names. In many instances, two different species bear the same local name, and in other instances, same species bear different local names.

Distribution by district

Eleven genera identified during the field study included: *Dendrocalamus, Bambusa, Thamnocalamus, Borinda, Ampelocalamus, Cephalostachyum, Drepanostachyum, Himalayacalamus, Melocanna, Yushania,* and *Arundinaria*. The genus for Deu nigalo and Kathe Bans (masino) may be either *Yushania* or *Chimnobambusa* and *Phyllostachys nigra* or *Borinda emeryi*, respectively (Table 1). Further investigation is needed to identify the genus for these species. The Inner Terai as well as the Terai districts such as Kailali and Bardiya mostly had big diameter sized bamboo species (*Bans*) of genera *Bambusa* and *Dendrocalamus*. Bamboo was more commonly found in districts like Surkhet, Dailekh, Dang, Baitadi, Pyuthan and Doti, which generally experienced comparatively wetter climate. Greater diversity of bamboos was prevalent in these districts. In spite of the wetter climate in Kailali and Kanchanpur districts, there were fewer bamboo distributed on farm land, because most settlements were new and the forests were accessible for meeting the household needs of fuelwood, timber and fodder.

Bamboos found in different land categories of studied districts in two regions are presented in table 1. The most commonly distributed species in the Terai districts were *B. balcooa*, *B. nutans* subsp. *nutans*, *D. strictus, B. bambos, D. hamiltonii, B. tulda, and B. nepalensis*. The other sparsely distributed species were *B. alamii* and *M. bacciferra*.

Bamboo species such as *B. balcooa, B. nutans* subsp. *nutans*, *Drepanostachyum* sp., *Himalayacalamus* sp. and *Thamnocalamus* sp. were commonly distributed in Baitadi, Doti, Dailekh, Pyuthan and Achham districts of the Mid hills. The forests of the Mid hills and High Mountains had a large number of small diameter sized bamboo species of the genera *Drepanostachyum, Himalayacalamus, Thamnocalamus* and *Yushania*. Jumla district is quite rich in *nigalo* species. Out of nine *nigalo* species in Jumla, only two species were identified at genera level. All these *nigalo* species were grown in natural forest. The list of bamboo species identified (genera and species level) is presented in table 2.

Distribution by region

The far-western region had less diversity of bamboos in comparison to the mid-western region (Table 1). More than 70 local names were enlisted in the mid-western region whereas only 40 local names were enlisted in the far-western region. This could be attributed to the higher forest cover and large number of new settlements particularly in the Terai districts such as Kailali and Kanchanpur in far- western region. Fewer number of bamboo species existed in the farm land of this region. *B. balcooa*, *D. strictus* and *B. bambos* were the commonest species in the Terai. The species such as *B. nutans* subsp. *nutans* was less frequently found in the districts of this region in comparison to the mid-western region. The mid-western region had *B. nutans* subsp. *nutans* clumps in sufficient quantity both in the Terai and Mid hills. Forty-eight species were recorded in mid-western region, in which eighteen were identified at the species level and eleven species were identified at genera level. Nineteen species were unidentified, although their local names were recorded in this region. Thirty-one species were recorded in far-western region, in which ten were identified at the species level and ten only at genera level. Eleven species were unidentified, only local names were recorded.

Distribution by physiographic region

There was a greater diversity of bamboos in the hills than in the Terai parts of the regions studied. This could be due to the fact that the cold climate of the hills is more suitable to the bamboos than the comparatively hotter climate of the Terai areas. The cold districts such as Jumla, Dolpa, and Darchula in the High Mountains had very small amount of large diameter sized bamboos. However, the natural forests of High Mountains (above 2200 m) were rich in bamboo resources and had several *nigalo* varieties. The large diameter sized bamboo species which were found in the Terai were also found in the Mid hills. Districts like Dailekh, Pyuthan, Rolpa, Achham and Baitadi of the Mid hills regions also had large number of small diameter sized bamboo species.

In the Terai, farmers had mostly grown bamboos on homesteads. They were grown in home gardens in conjunction with fruit trees and other timber species. In the Mid hills, bamboos were grown in gullies and edges of terraced land or homestead gardens in an intricate combination of fodder, fruit and multipurpose trees. *B. nutans* subsp. *nutans*, *B. balcooa* and *Drepanostachyum* sp. were the most common species on farm land of the the Mid hills. Unlike in eastern Nepal where farmers grow two to five species on farm land (Das, 1999); farmers grow only one or two species in these regions. The choice

of species was based on the household demand. Usually, different bamboo species were grown to meet different household needs. This is to maintain supply even when flowering occurs. It was found that farmers often grew more than one bamboo species because of their different uses. The species such as *D. hamiltonii* was grown to produce edible shoots and fodder for livestock where as small diameter sized bamboos were grown for making woven-products.

The natural bamboo resources in Churia hills were depleted due to over-exploitation. The most commonly found species in the national forests of the Churia hills were: *D. strictus, D. hamiltonii, B. nutans* subsp. *nutans* and *B. nepalensis*. The forests of the Mid hills and the High Mountains had large number of small diameter sized bamboo species of the genera *Drepanostachyum, Himalayacalamus, Thamnocalamus* and *Yushania,* etc. These forests were in better condition where the population pressure was low and the forests having bamboo patches were protected in community forests (CFs).

Distribution in different types of land

Most large sized bamboos (*Bans*) were found on farm land and homestead in both regions. Some large sized bamboo species found in such places included: *B. nepalensis*, *B. balcooa*, *B. nutans* subsp. *nutans*, *B. nutans* subsp. *cupulata*, *B. tulda*, *B. bambos*, *D. strictus* and *D. hamiltonii*. Most *nigalo* species (*Drepanostachyum*, *Yushania* and *Thamnocalamus* sp.) were distributed in natural forest and community forests. However, some species like Kathe nigalo, Deu nigalo, *Drepanostachyum* sp. (Dum nigalo), *Drepanostachyum* sp. (Tite nigalo), Ghar nigalo, *Yushania maling* (Malingo), and *H. spathiflorus* (Jarbuto) were also found on farm land. *D. strictus* var. *wild*, *Cephalostachyum latifolium*, *B. alamii*, *B. nepalensis* were distributed in natural forests.

Many community forests had natural stands of bamboos. Most of these community forests were found in the Mid hills and High Mountains. However, the community forests of the Terai districts such as Dang, Bardiya, Kailali and Kanchanpur did not have any natural bamboo stands. Many of such community forests were planted with bamboos of large diameter size. A high level of interest was found in bamboo planting amongst forest user groups in the community forests, both of the Terai and the Mid hills.

Utilization aspects

The species utilised for making bamboo products in different districts of the mid-western and the far-western regions are presented in table 1. There are no other species with as many uses as bamboos, except perhaps palms. Bamboo is commonly used for house construction, walling of huts, thatching and roofing, grain storage (*bhakari*), scaffolding, walking sticks, mats, basket making of different types, furniture, fencing material, handles for agricultural implements, and tool handles (Seeland, 1980; Das, 2002). Bamboo leaves are an important source of fodder. Many bamboo species produce edible shoots, which are an important source of food. Its pickles are very popular among both the rural and urban households in the mid-western and the far-western Nepal. Bamboo also has many small but important uses such as pots and pipe for homemade millet beer (*tongwa*), fishing rods, fishing traps, handicrafts, packing cases for tea and fruits, cages for poultry, pipes for water supply and irrigation, cradles, cart yokes, bullock carts, ladders, winnows, and sieves for cleaning grains. Bamboo shoots as vegetables and pickles are considered a delicacy by the people of hill ethnic origin in these regions and were becoming increasingly popular among the Terai ethnic groups. However, in these regions, uses of bamboo shoots were not common as in other regions of Nepal. Demand for bamboo shoots for consumption in urban areas has increased considerably in recent years.The branches are used not only for fencing, but also for construction of walls, partition of houses and roofing.

This study recorded eighteen uses of bamboo in these two regions. Woven-products were commonly found in all the districts studied. Many species of *bans* and *nigalo* were used for weaving. For instance, 36 species were used for making woven-products in the mid-western region. Majority of *nigalo* species were found to be suitable for weaving. Large bamboos: *B. balcooa*, *B. nepalensis*, *B. bamboos*, *B. nutans* subsp. *nutans* and *nigalo* species, Deu nigalo, *Drepanostachyum* sp. (Putro nigalo), Sadha nigalo were used in construction. There was a large variation in use pattern in these regions, yet the uses of bamboo were limited in the sense that only a few species were used for making many types of bamboo products.

Bamboos have medicinal value. In urban areas, bamboos are also planted as ornamental plants

(Seeland 1980; Das 1988). However, ornamental uses of bamboos were not common in these two regions. Bamboos are the best species for soil conservation as they form a mat-like structure above the ground and thus prevent seepage of soil water which, if it occurs at erodible sites, will result in mass movement of soil (Narayana, 1988; Howell *et al.,* 1989). But, use of bamboo and *nigalo* species for soil conservation work was almost nil in these regions.

The use of bamboo for house construction has considerably increased in recent years and its level of use varies with the availability and economic status of households (Das and Seeley, 1996). Bamboo-based furniture, which was rare, has increasingly become a common item, not only in rural areas but also in cities like Nepalganj, Dhangadhi, Surkhet, Mahendranagar and Ghorahi of these regions. As the urban centres are expanding in size with increased industrialisation and migration of people from rural areas, more and more houses are being constructed in urban areas. As such, demand of bamboo had increased significantly for scaffolding and construction purposes in urban areas.

Conclusion

The study suggested that there is a great potential for bamboo development in the mid-western and far-western regions of Nepal as there are large number of bamboo growers, and forests have rich bamboo diversity. There is an increased interest among people in the use of bamboo for income generation. The development of bamboo resources can help to reduce poverty, generate employment and sustain rural livelihood. Still, there are many unidentified species, which needs further study for their taxonomic identification.

Acknowledgement

We would like to thank International Plant Genetic Resources Institute (IPGRI) (now Bioversity International) for providing financial assistance to accomplish this study. We are also thankful to the District Forest Offices and their staff, local NGOs, political cadres, development agencies and the local people of the regions for their valuable support and information. Thanks also go to the field staff, study team, field guides and key informants for their assistance during the field work.

References

Carter, E. J. 1995. Tree cultivation by farmers in Dolakha district, Nepal. In *Farm Forestry in South Asia* (eds.) Saxena, N. C. and Ballabh, Sage Publications Pvt. Ltd, India, 104–143.

Das, A. N. 1988. Bamboo research in Nepal. In *Bamboos Current Research* (eds.) Rao, I. V. R., Dhanrajan, R. and Sastry, C. B. Proceedings of the International Bamboo Workshop, 14–18 November 1988, Cochin, India, 1–5.

Das, A. N. 1999 . Socioeconomics of Bamboos in Eastern Nepal. PhD Thesis, University of Aberdeen, Aberdeen, UK.

Das, A. N. 2000. Perception on fodder plants at eastern Terai and mid-hills of Nepal. Proceedings of Workshop on Agroforestry/Fodder Trees, 4 February 2000, Kathmandu, Nepal.

Das, A. N. 2001. "Bamboo craft making in the Terai and Mid-hills of Eastern Nepal", paper presented at the Training Workshop on Bamboo Handicraft Techniques and its Tools and Small Machines, 6–19 October, 2001, Zhejiang, Sichuan, China**.**

Das, A. N. 2002. Bamboo growing and its market development potential for sustaining rural livelihoods and poverty reduction in Eastern Nepal. *Banko Janakari* **12 (1):** 8–19.

Das, A. N. 2003. Bamboos in rural farming systems in the Terai and Mid hills of Nepal. *Banko Janakari* **13 (2):** 34–41.

Das, A. N. 2004. **Manual on Bamboos in Nepal.** TISC/NARMSAP/DANIDA, Kathmandu, Nepal.

Das, A. N. and Seeley, J. A. 1996. Bamboo use as the basis for wealth ranking in Eastern Nepal. *Banko Janakari* **6 (2):** 89-92.

Howell, J. H., Sunwar, I. and Clark, J. E. 1989. **Role of Vegetation in Slope Stabilisation on Highways**. Department of Roads, HMGN, Nepal.

Narayana, V. V. D. 1988. Watershed development and resource conservation for rangeland improvement. In *Rangelands Resource and Management* (ed.) Singh, P. Proceedings of the National Rangeland Symposium, November 9–12,1987, IGFRI, Jhansi, India, 229–237.

Seeland, K.T. 1980. The use of bamboo in Rai village in the upper Arun Valley: an example of traditional technology. *Journal of the Nepal Research Centre* **4**: 175-183.

Stapleton, C. 1994. **Bamboos of Nepal: An Illustrated Guide**. Royal Botanic Garden, Kew, London, UK.

Table 1: Distribution and utilization of bamboos in Mid Western and Far Western regior

A. Mid Western Region

1. Dailekh-Mid hills

SN	Local name	Latin name	Bamboo size	Utilization Code*	Type of land+			
					NF	CF	FL	H
1	Ban/Tama/Khasre Bans	*Bambusa nepalensis*	Large	1, 3, 4, 5, 14	*	*	*	
2	Ghar/Chille Bans/Taru bans	*Bambusa nutans* subsp. *nutans*	Large	1, 4, 5, 6, 7, 15		*	*	*
3	Kande/Hade Bans	*Bambusa bambos*	Large	9, 12			*	*
4	Dhanu Bans	*Bambusa balcooa*	Large	1, 4			*	*
5	Dhungre/Gaun Bans	*Dendrocalamus* sp.	Large	5, 6			*	*
6	Gopi Bans	*Cephalostachyum latifolium*	Large	14			*	*
7	Nigalo/Lebans	*Ampelocalamus patellaris*	Small	1, 4, 5			*	
8	Tite Nigalo	*Drepanostachyum falcatum*	Small	1, 12	*		*	
9	Deu Nigalo**	*Yushania/Chimnobambusa* sp.	Small	1	*			
10	Malingo/Malinge	*Himalayacalamus* sp.	Small	1	*			
11	Ghar Nigalo	*Drepanostachyum* sp.	Small	1			*	
12	Bhir Nigalo	-	Small	1			*	*
13	Patane/Dum Nigalo	*Drepanostachyum* sp.	Small	1	*			

2. Surkhet-Mid hills

1	Chille Bans/Sata Bans	*Bambusa nutans* subsp. *nutans*	Large	1, 4, 16	*		*	*
2	Tama/Khasre/Ban Bans	*Bambusa nepalensis*	Large	1, 3, 4, 16	*	*	*	*
3	Dhanu Bans	*Bambusa balcooa*	Large	1, 3, 4, 16			*	*
4	Dhungre Bans	*Dendrocalamus* sp.	Large	6, 7	*	*		
5	Munger/Kath Bans	*Dendrocalamus strictus*	Large	4,9				*
6	Kande Bans	*Bambusa bambos*	Large	4,9	*			*
7	Kath Bans	*Dendrocalamus strictus* var. *wild*	Large	2, 4, 12	*	*	*	*
8	Nigali Bans	*Bambusa alamii*	Large	1	*	*		*
9	Kali Bans	-	Large	1, 2, 4			*	*
10	Bangali Bans	-	Large	1, 4	*			
11	Pate Bans	-	Large	1				*
12	Ghusuwa/Lahure /Kalami Bans	*Melocanna baccifera*	Large	1	*			
13	Phalame Bans	-	Large	4				*
14	Tite Nigalo	*Drepanostachyum falcatum*	Small	1	*	*		*
15	Ankhe Nigalo	*Drepanostachyum* sp.	Small	1	*			*
16	Malinge/Malingo	*Himalayacalamus* sp.	Small	1	*			
17	Deu Nigalo**	*Yushania/Chimnobambusa* sp.	Small	1	*	*		*

3. Jumla-High Hill

1	Deu Nigalo**	*Yushania/Chimnobambusa* sp.	Small	1, 4, 5, 6, 7	*	*		
2	Ghode Nigalo	*Thamnocalamus* sp.	Small	1, 9, 10, 11	*			
3	Jhupre Nigalo	-	Small	10	*	*		
4	Dube Nigalo	-	Small	5,	*			
5	Sadha Nigalo	-	Small	1, 4, 5, 10	*			
6	Thane Nigalo	-	Small	1	*			
7	Edi Nigalo	-	Small	1	*	*	*	
8	Bede Nigalo	-	Small	5,	*			
9	Duse Nigalo	-	Small	1, 14	*			

	4. Dolpa-High Hill							
	Bans	-	Large	5			*	*
2	Malingo	*Yushania maling*	Small	1	*			
3	Ghodaino Nigalo	*Thamnocalamus* sp.	Small	1	*			
4	God Nigalo	-	Small	1	*			
5	Jurmutho	*Thamnocalamus spathiflorus* subsp. *nepalensis*	Small	1	*			
6	Deu Nigalo**	*Yushania/Chimnobambusa* sp.	Small	1,	*			
7	Dum Nigalo	*Drepanostachyum* sp.	Small	1,9, 18	*			
8	Doko Bunne Nigalo	-	Small	1	*			
	5. Pyuthan-Mid hills							
1	Tama Bans	*Dendrocalamus hamiltonii* var. *hamiltonii*	Large	3, 4, 5		*	*	*
2	Kalame Bans	-	Large	1, 7		*	*	
3	Taru Bans	*Bambusa nutans* subsp. *nutans*	Large	1, 4		*	*	*
4	Dhanu Bans	*Bambusa balcooa*	Large	1,4, 6, 9		*	*	*
5	Linge Bans	-	Large	1, 11	*	*	*	*
6	Nigalo	-	Small	1, 11	*	*	*	*
	6. Salyan-Mid hills							
1	Tama Bans	*Dendrocalamus hamiltonii* var. *hamiltonii*	Large	3, 4, 6, 9	*	*	*	*
2	Dhanu Bans	*Bambusa balcooa*	Large	1, 4, 6, 7, 9	*	*	*	
3	Dhungre Bans	*Dendrocalamus* sp.	Large	6, 9	*	*	*	
4	Chille Bans	*Bambusa nutans* subsp. *nutans*	Large	1, 4		*	*	
5	Kath Bans	*Dendrocalamus strictus*	Large	12	*	*	*	
6	Ban Bans	*Dendrocalamus strictus* var. *wild*	Large	1, 4, 6	*		*	
7	Khasre Bans	*Bambusa nepalensis*	Large	1, 4, 6	*			
8	Nigalo	*Drepanostachyum* sp.	Small	1, 7, 6	*	*	*	
	7. Rolpa-Mid hills							
1	Dhanu Bans	*Bambusa balcooa*	Large	4, 6, 9		*	*	
2	Tama Bans	*Dendrocalamus hamiltonii* var. *hamiltonii*	Large	1, 3, 4		*	*	
3	Khasre Bans	*Bambusa nepalensis*	Large	4, 9, 14		*	*	*
4	Dhungre Bans	*Dendrocalamus* sp.	Large	1, 9		*	*	
5	Khakale Bans	-	Large	4, 14		*	*	
6	Nigale Bans/Mugi Bans	*Bambusa alamii*	Large	1		*	*	
7	Choya Bans	*Dendrocalamus hamiltonii* var. *undulatus*	Large	1	*	*	*	*
8	Tite Nigalo	*Drepanostachyum falcatum*	Small	1		*	*	
9	Nigalo	*Drepanostachyum* sp.	Small	1	*	*	*	*
	8. Jajarkot-Mid hills							
1	Ghar Bans	*Bambusa balcooa*	Large	1, 4	*	*	*	*
2	Ban Bans	*Dendrocalamus strictus* var. *wild*	Large	1, 4, 14	*	*		
3	Nigalo		Small	1	*	*	*	
4	Deu Nigalo**	*Yushania/Chimnobambusa* sp.	Small	1	*			
5	Malingo/Malinge	*Himalacalamus* sp.	Small	1	*			
6	Ghode/Ghodeno Nigalo	*Thamnocalamus* sp.	Small	1				*

	9. Bardiya-Terai/Inner Terai							
1	Khasre Bans	*Bambusa nepalensis*	Large	1, 3, 4, 5	*			
2	Jabarjoto/Jarbuto Bans	*Thamnocalamus spathiflorus*	Large	4, 1, 3	*			
3	Chille Bans	*Bambusa nutans* subsp. *nutans*	Large	1, 3, 5	*	*		
4	Dhanu/Bhalu Bans	*Bambusa balcooa*	Large	4,				*
5	Kath Bans	*Dendrocalamus strictus*	Large	1, 4, 12				*
6	Panhelo Bans	*Bambusa vulgaris*	Large	12				*
7	Kaante/Kaand bans	*Bambusa bambos*	Large	4, 9, 12			*	
	10. Dang-Terai/Inner Terai							
1	Munger Bans/Lathi Bans/ Lath Bans	*Dendrocalamus strictus*	Large	1, 3, 4, 5, 6, 9, 12, 13,16, 18	*	*		*
2	Khasre/Tama Bans	*Bambusa nepalensis*	Large	1, 3, 4, 5, 13, 18		*	*	*
3	Chille Bans	*Bambusa nutans* subsp. *nutans*	Large	1, 4, 13				*
4	Dhanu Bans	*Bambusa balcooa*	Large	1, 4, 5, 6, 9, 13, 16, 18			*	*
5	Chav Bans	*Bambusa tulda*	Large	1, 4, 5, 6, 9, 13, 16, 18				*
7	Kath Bans	*Dendrocalamus strictu* var. *wild*	Large	1, 3, 5, 12	*			*
8	Lyas/Liyo Bans	*Ampelocalamus patellaris*	Large	1, 7	*		*	*
9	Khasro Nigalo	-	Small	1	*	*		*
10	Nigalo	*Drepanostachyum* sp.	Small	1	*			
11	Tite Nigalo	*Drepanostachyum falcatum*	Small	1, 7	*			
	11. Banke-Terai/Inner Terai							
1	Ban/Kath Bans	*Dendrocalamus strictus*	Large	1, 3, 5, 12	*			*
2	Murali bans	*Cephalostachyum latifolium*	Large	5, 14	*			
3	Dhanu Bans/Harauti Bans	*Bambusa balcooa*	Large	1, 3, 4, 5, 13			*	*
4	Tama/Khasre Bans	*Bambusa nepalensis*	Large	1, 3, 5				*
5	Chille Bans	*Bambusa nutans* subsp. *nutans*	Large	1, 4	*		*	*
6	Dhungre Bans	*Dendrocalamus* sp.	Large	1, 4			*	*
7	Mal Bans	*Bambusa nutans* subsp. *cupulata*	Large	1, 4, 5, 6, 9, 13			*	*
8	Kaante/Kaand bans	*Bambusa bambos*	Large	4, 9, 12			*	*
9	Kathe/Sano nigalo	-	Small	1	*			*

B. Far Western Region

1. Doti –Mid hills

1	Bans	-	Large	1, 4, 7, 9, 16	*	*	*	*
2	Ghar Bans	*Bambusa balcooa*	Large	1, 4, 6			*	*
3	Ban Bans	*Dendrocalamus strictus* var. *wild*	Large	1, 4, 6			*	
4	Bikase Bans	*Dendrocalamus* sp.	Large	1, 4, 6			*	
5	Kath Bans	*Dendrocalamus strictus*	Large	1,12	*			
6	Nigalo	-	Small	1, 4	*	*		
7	Deule/Baghbutte Nigalo**	*Yushania/Chimnobambusa* sp.	Small	1, 3, 4, 17	*			
8	Kathino/Putro Nigalo	*Drepanostachyum* spp.	Small	1, 4	*	*		
9	Malingo	*Yushania maling*	Small	1, 4	*	*		
10	Dume/Ghordo/Bhunnur	*Drepanostachyum* sp.	Small	12	*	*		
11	Ghanse Nigalo	*Arundinaria* sp.	Small	5	*			
12	Kuche Nigalo	*Yushania* sp.	Small	10	*	*		

2. Dadeldhura-Mid hills								
1	Bhalu Bans	*Dendrocalamus hookerii*	Large	4, 6, 9			*	*
2	Dhanu Bans	*Bambusa balcooa*	Large	4, 6, 9			*	
3	Kandash Bans	*Bambusa bambos*	Large	1, 5, 6			*	*
4	Ram Bans	-	Large	1, 6			*	*
5	Kath Bans	*Dendrocalamus strictus*	Large	1, 5, 6			*	*
6	Bikase Bans	*Dendrocalamus* sp.	Large	1, 5, 6			*	*
7	Bans		Large	1, 4, 6, 16		*	*	*
8	Kathe/Putro Nigalo	*Drepanostachyum* sp.	Small	1, 5, 6	*	*	*	
9	Deulo Nigalo**	*Yushania/Chimnobambusa* sp.	Small	1, 5, 6	*	*	*	
10	Malingo	*Yushania maling*	Small	1, 5, 6	*	*		
11	Kalame Nigalo	-	Small	1, 5, 6	*			
12	Nigalo	-	Small	1, 5, 6	*	*	*	*
3. Baitadi-Mid hills								
1	Bhalu Bans	*Dendrocalamus hookerii*	Large	1,2, 4, 5, 6, 7, 8			*	*
2	Kath Bans	*D. strictus*	Large	4, 6,			*	*
3	Mal/Thulo Bans	*Bambusa nutans* subsp. *cupulata*	Large	4, 6			*	*
4	Ban Bans	*D. strictus* var. *wild*	Large	4, 6			*	*
5	Bans (Moto)	-	Large	6,			*	*
6	Kathe Nigalo	*Drepanostachyum* sp.	Small	1, 5	*		*	*
7	Kalame Nigalo	-	Small	7	*			
8	Deu Nigalo**	*Yushania/Chimnobambusa* sp.	Small	1, 7, 14, 17	*	*	*	
9	Malinge/Malingo	*Himalayacalamus* sp.	Small	1, 7, 14, 17	*			
10	Dum Nigalo	*Drepanostachyum* sp.	Small	1, 5, 6, 7			*	*
11	Putro Nigalo	*Drepanostachyum* sp.	Small	1				
12	Poshyar Nigalo	-	Small	1			*	*
4. Darchula-High Hill								
1	Ghar/Moto Bans	*Bambusa balcooa*	Large	4, 16			*	*
2	Kathe/Gathe Bans	*Dendrocalamus strictus*	Large	4, 5, 16			*	
3	Ban Bans	*Dendrocalamus hamiltonii* var. *wild*	Large	4, 6	*		*	
4	Bans	-	Large	1, 4, 5, 15, 16		*	*	*
5	Sano Bans	-	Large	4, 5			*	*
6	Nigalo	-	Small	1, 4, 11	*	*	*	
7	Malingo	*Yushania maling*	Small	1, 4	*		*	*
8	Deu Nigalo**	*Yushania/Chimnobambusa* sp.	Small	1, 4, 6	*	*	*	*
9	Putro Nigalo	*Drepanostachyum* sp.	Small	1, 4, 6, 18	*	*	*	*
10	Ghorado/Dum Nigalo	*Thamnocalamus* sp.	Small	1, 4	*	*	*	
11	Bhuno/Dum Nigalo	*Drepanostachyum* sp.	Small	1, 4	*		*	*
5. Achham-Mid hills								
1	Ghar/Moto Bans	*Bambusa balcooa*	Large	4, 16			*	*
2	Kathe/Gathe Bans	*Dendrocalamus strictus*	Large	4, 5, 16			*	
3	Ban Bans	*Dendrocalamus hamiltonii* var. *wild*	Large	4, 6	*		*	
4	Bans	-	Large	1, 4, 5, 15, 16		*	*	*
5	Sano Bans	-	Large	4, 5			*	*
6	Nigalo	-	Small	1, 4, 11	*	*	*	
7	Malingo	*Yushania maling*	Small	1, 4	*		*	*
8	Deu Nigalo**	*Yushania/Chimnobambusa* sp.	Small	1, 4, 6	*	*	*	*

6. Bajhang-Mid hills

1	Latthi Bans	*Dendrocalamus strictus*	Large	4, 12	*	*		*
2	Kathe Bans (Moto)	*Dendrocalamus* sp.	Large	1, 4, 12			*	*
3	Kathe Bans (Masino)**	*Phyllostachyus nigra/Borinda emeryi*	Large	1, 4, 12			*	*
4	Kalo Nigalo	*Borinda* sp.	Small	1, 4	*	*		
5	Deu Nigalo**	*Yushania/Chimnobambusa* sp.	Small	1, 4	*	*		
6	Dhanero	*Drepanostachyum* sp.	Small	1, 4	*	*		
7	Putro Nigalo	*Drepanostachyum* sp.	Small	1, 4	*	*		

7. Kanchanpur-Terai/Inner Terai

1	Kath Bans/Guniya Bans	*Dendrocalamus strictus*	Large	1, 3, 4, 5, 12	*			*
2	Dhanu Bans	*Bambusa balcooa*	Large	3, 4, 5, 6, 7			*	*
3	Tama/Khasre Bans	*Bambusa nepalensis*	Large	3, 4, 5, 6, 7			*	*
4	Kath bans	*Dendrocalamus strictus* var. *wild*	Large	1, 4, 6	*			
5	Chille Bans	*Bambusa nutans* subsp. *nutans*	Large	1, 4, 5, 6, 7, 16			*	*

8. Kailali-Terai/Inner Terai

1	Dhanu Bans	*Bambusa balcooa*	Large	4, 5, 13			*	*
2	Kath Bans	*Dendrocalamus strictus*	Large	4, 5	*			*
3	Ghar/Chille Bans	*Bambusa nutans* subsp. *nutans*	Large	1, 5			*	*
4	Khasre Bans	*Bambusa nepalensis*	Large	1, 4, 6			*	*
5	Gadaru Bans	-	Large	1, 4, 6			*	*
6	Ban Bans	*Dendrocalamus strictus* var. *wild*	Large	1, 3, 5				
7	Kaante/Kaand bans	*Bambusa bambos*	Large	4,9,12			*	
8	Nigalo	*Drepanostachyum* sp.	Small	1,4,5	*			
9	Mal Bans	*Bambusa nutans* subsp. *cupulata*	Large	1, 4,5,7, 9			*	
10	Kalo/Bhalu Bans	*Dendrocalamus hookerii*	Large	4, 6, 9			*	

*1: Woven-products 2: Soil conservation 3: Shoots as vegetables 4: Construction 5: Fodder 6: Furniture 7: Handicrafts 8: Ornamental 9: Fencing 10: Broom 11: Rope 12: Stick 13: Scaffolding 14: Flutes 15: Fuelwood 16: Dead body carrier 17: Tobacco pipe and 18: Support for vegetables
+NF-National forest, CF-Community forest, FL- Farmland and H-Homestead; ** further investigation is needed to identify genus (*Yushania* or *Chimnobambusa*) for Deu nigalo and *Phyllostachys nigra* or *Borinda emeryi* for Kathe Bans (masino)

Table 2: List of bamboo species recorded in Mid Western and Far Western regions of Nepal

Local name	Scientific name	Location	Local name	Scientific name	Location
Nibha/Gopi /Le / Lyas Bans/ Leyas Bans	*Ampelocalamus patellaris*	Mid Western and Far Western Mid hills, mostly cultivated.	Dum Nigalo	*Drepanostachyum sp.*	Found in both dry and mo forest sites, and on farm la in Far Western Mid hills.
Nigale/Mugi Bans	*Bambusa alamii*	Cultivated in Mid Western Terai and lower Mid hills.	Putru /Putre/Suruwal Nigalo	*Drepanostachyum* sp.	Clump forming small diam bamboo species found in I Dadeldhura, Baitadi, Darcl and Bajhang districts
Kaante Bans/Hade Bans/Kande Bans/Kandash Bans	*Bambusa bambos*	Thorny bamboos cultivated in farm land of Mid Western and Far Western Nepal.	Malinge Nigalo	*Himalayacalamus* sp.	Found in cool/temperate broadleaved forests and als cultivated on farm land
Dhanu/ Bholka/ Harouti/	*Bambusa balcooa*	Cultivated all over the Terai region (flat plains) of Nepal and in the lower Mid hills.	Malinge Nigalo	*H. cupresus*	Found in temperate broadleaved forests of Mid Western Nepal in Dolpa ar

Ghar Bans/Moto Bans/Bhalu Bans					Jumla districts
Khosre/Seto / Phusre/ Tama Bans/Ban Bans	*Bambusa nepalensis*	Mid Western Mid hills and Surkhet valley, found in both farm land and natural forest.	Tite Nigalo	*Himalayacalamus fimbriatus*	Commonly cultivated species in Mid Western Mid hills and also occasionally found in the broadleaved forest.
Mal/ Ghanse Bans	*Bambusa nutans* subsp. *cupulata*	Less commonly cultivated in Mid Western and Far Western districts.	Seto Nigalo	*Himalayacalamus porcatus*	Found in cool broadleaved forest
Tharu/ Ghar/Taru/ Chille/Sate Bans	*Bambusa nutans* subsp. *nutans*	Commonly cultivated and also occurs in the lower hills and foothill forests including Bardiya National Park.	Malingo Nigalo	*Himalayacalamus* sp.	Broadleaved forests (oaks and rhododendrons) of Khaptad National Park in Doti, Dadeldhura, and Baitadi districts.
Chav/ Japhta/ Ghar Bans	*Bambusa tulda*	One of the most commonly cultivated species all over the Terai regions of Nepal	Kalami/ Ghusuiwa/ Lahure/ Nigale Bans	*Melocanna baccifera*	Cultivated in Dang and lower hills of Mid Western Nepal
Pahenlo/Butte Bans	*Bambusa vulgaris*	Occasionally cultivated on farm land and private gardens	Ghoredo/ Bhodar Nigalo	*Thamnocalamus* sp.	High Mountain Forests of Far Western Nepal
Kalo Nigalo	*Borinda emeryi*	Commonly found bamboo in the high mountain forests.	Jarbuto	*Thamnocalamus spathiflorus* subsp. *nepalensis*	Commonly found bamboo in the high mountain forests in Mid Western, Nepal.
Gopi/ Murali Bans	*Cephalostachyum latifolium*	Farm land of Mid Western Nepal	Kucho Nigalo	*Yushania* sp.	Spreading bamboo found in temperate forests and open grazing lands, north of Dhaulagiri in Jumla, Dailekh and Kalikot districts.
Ban/Choya/ Tama Bans	*Dendrocalamus hamiltonii* var. *hamiltonii*	Cultivated all over hills of Nepal but also found in natural forests.	Deo/Deo Ringal/ Baghbutte Nigalo	*Yushania*/ *Chimnobambusa* sp.	Khaptad National Park and also found in natural forests of Dadeldhura, Doti and Baitadi districts.
Choya Bans	*Dendrocalamus hamiltonii* var. *undulatus*	Cultivated all over hills of Mid and Far Western regions but also found in natural forests.	Sano Maling	*Arundinaria* sp.	Spreading bamboo rarely found in temperate forests and open grazing lands of Mid and Far Western regions.
Kalo Bans/ Bhalu Bans	*Dendrocalamus hookerii*	Cultivated sparsely in Baitadi and Surkhe districts	Ghanse Nigalo	*Arundinaria* sp.	Reported to be found in of Dolpa, Humla, Mugu, and Darchula districts
Kath/Guniya/ Laathi Bans/Munger/Lath Bans	*Dendrocalamus strictus*	Cultivated all over in the Terai.	Nigalo/Malingo	*Yushania maling*	Doti, Dadeldhura, Darchula, Dolpa and Achham districts
Kath/Ban Bans	*Dendrocalamus strictus* var. *wild*	Dry Siwalik forests, mainly in Banke, Bardiya, Surkhet, Kailali and Kanchanpur districts.	Nigalo	*Drepanostachyum* sp.	Kailali, Doti, Dadeldhura, Darchula, Salyan, Rolpa, Pyuthan, Jajarkot and Achham districts
Bikase Bans	*Dendrocalamus* sp.	Distributed in Doti and Dadeldhura districts	Ankhe nigalo	*Drepanostachyum* sp.	Distributed in Surkhet district
Mal/Thulo Bans	*Bambusa nutans* subsp. *cupulata*	Baitadi and Kailali districts			
Ghar nigalo	*Drepanostachyum* sp.	Distributed in Dailekh district			

Jurmutho/Jarbuto	*Thamnocalamus spathiflorus* subsp. *nepalensis*	Bardiya and Dolpa districts
Dhungre Bans	*Dendrocalamus* sp.	Cultivated species in both Mid Western and Far Western Mid hills
Tite Nigalo	*Drepanostachyum falcatum*	Drier sub-tropical forest and on farm land