

SACRED GROVES AS REPOSITORIES OF GENETIC DIVERSITY – A CASE STUDY FROM KABI-LONGCHUK, NORTH SIKKIM

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INTRODUCTION

Assessment of biodiversity as well as its subsequent conservation remains a key issue in the environmental conservation programme in the present times. The total botanical appreciation of biota for a region is a basic requirement to inventorize, classify and evaluate the germplasm of any area (Rai, 1996). Gene pools have co-existed with humankind for centuries in different dimensions and entities. *In situ* conservation of biodiversity has been possible in many ways and has withstood the test of time. “Sacred groves” can be placed in this category. The “sacred groves” are in fact the “reserve forests” of the local tribes/communities who maintain/conserves these patches of woodlands in a religious faith. These act as natural gene pool preserve and serve as an example of habitat preservation through community participation (Gadgil and Vartak, 1975).

Sikkim, the smallest state of the country with a total geographical area of 7096 km² also harbours some such sacred/reverent areas with religious (mostly monasteries or *Gombas*, vernacular) and/or historical background. However, these religiously protected repositories of biodiversity have thus far received scant attention of explorers, botanists and foresters. Kabi-Longchuk sacred grove in North Sikkim is one of the many. The people residing in the immediate proximity indeed have strong conviction on its sanctity and relevance. Situated at an altitude of 1680 m amsl, Kabi grove encompasses an approximate area of 140 ha and lies between 88° 36' N latitude and 27° 24'E longitude. It is located at about 16 km north of Gangtok.

HISTORICAL/RELIGIOUS BACKGROUND

Against an interesting Lepcha religious folklore and a historical backdrop the Kabi area was declared and revered as a sacred patch. The folklore dates back to time immemorial when the river Teesta and Rangeet supposedly originated following a severe earthquake. Many lives were lost in the floods that ensued and forced the Lepchas to seek refuge on the higher reaches of the mountains. Those who survived the devastation initiated the tradition of worshipping each of the mountaintops where they had sought refuge. These peaks were worshipped as “Saviour Mountains” and Kabi is one among them. The prayers are to this date held on the full moon night in the 9th month of the Lepcha Lunar calendar. Lepchas still continue to pray their “Saviour Mountains” wherever they reside.

The historical part of the folklore is that in the year 1268 AD Punu Habum was the Lepcha King and Thiekum Chek, an enlightened individual his patron, when Sikkim (*Sukhim*) was attacked through the Chumbi valley on the Tibet border by Khebrumsha. Punu Habum forced an accord with the invaders but Khebrumsha killed him deceit. His claim to be the ruler of Sikkim raised suspicion and Thiekum Chek through tantrism discovered this deceit. Khebrumsha confessed and was made to swear that he would follow the Lepcha tradition as the ruler. Thus was signed the “Blood-Brotherhood Treaty” at Kabi between the Lepchas and Bhutias (then Tibetans) in 1268 AD and the patch of forest was declared as “sacred”. Large stones as natural witnesses were placed (vernacularly known as *Longchuk*) in Kabi sacred grove during this celebration, which was known as *Chyu-Slo-Nyeso*. This tradition was suddenly discontinued during 1969-70 following some unpleasant happenings but was revived by the people after a short gap and is presently celebrated as “*Pang Labhsol*” throughout the state annually. All the ethnic communities including Nepalese join the celebrations while the entire Kabi-Longchuk sacred grove is worshipped/revered till date (*Late Shri La Tshering Lepcha, 1997. Pers. Commun.*).

IDEA BEHIND INFORMAL APPROVAL OF “SACRED GROVE”

It is obvious that the ancient idea behind protecting a particular area/forest patch by declaring it as sacred is unarguably based on the cultural, social, spiritual and religious factors. Such a place was considered sacred because Gods/Goddesses and/or other forces (good or evil) were believed to dwell there, and any kind of interference within its premise could cause devastation of the community.

THREATS TO THE GROVE

The levels of biotic interference in Kabi-Longchuk were not alarming enough to be labeled as major threats. Yet, a slow and gradual exploitation of the forest resources in this gene pool reserve was noticed during the study. The following processes emerged as possible threats.

1. Medicinal plants collection

This was the only intact gene pool reserve in the immediate vicinity of Kabi. Kabi is a major large cardamom (*Amomum subulatum* Roxb.) growing belt. Most elderly people and local traditional medicine practitioners (*Lamas* and *Bungthings*) had easy access and collected many plant species with remedial potency. If the collection process continued to rise, it was ascertained to possess substantial threat of forcing the healing plants to the very brink here.

2. Firewood collection

Some of the families settled nearby were dependent on the forests for their energy requirement. A part of this was collected from this grove. Despite the high reverence for this forest and regulations attached, the firewood collectors, who were mostly identified as non-locals, did not spare the grove. This was another added challenge for the long-term survival of this natural repository.

3. Collection of wild edibles

A number of wild edibles as condiments, vegetables and fruits were in abundance in the grove. Locals were making collections even during this survey. This process could adversely impact the rates of natural regeneration of many species of plants that serve the double purpose of being useful to man and some faunal species.

4. Fodder collection

Continuous fodder collection was noticed as a prominent threat. Most rural populace owned some grazing animal for which large quantities of forage were harvested from this grove.

5. Ornaments

Very often various plant species like *Rhapidophora* sp., *Hymenophyllum* sp., *Hoya* sp., *Coelogyne* sp., *Cymbidium* sp., *Lycopodium* sp., *Michelia* sp., *Aeschynanthus* sp. were collected by visitors for ornamental use without the notice of the village elders. This could cause a drastic reduction in their density and natural regeneration threatening their existence in the area.

VEGETATION OF THE GROVE

The richness of this grove was evident from the large number of herb, shrub and tree species (Table 1). Luxuriant growth of some species of trees and shrubs adorned with dense epiphytic growth was also recorded, which included some very old trees. The forest of the grove was dominated by the tree species like *Michelia cathcartii*, *Daphniphyllum* sp., *Viburnum erubescens*, *Castanopsis hystrix*, *Quercus* sp., *Prunus nepalensis* and ranged from 16 to 40 m in height. Presence of a considerable number of shrub species also added to the diversity of forest composition of this grove. Predominant shrub species were *Ardisia* sp., *Dichroa febrifuga*, *Clerodendrum* sp., and *Smilax* sp. among others. Good natural regeneration was a noteworthy feature.

Ground cover herb species were equally rich. Many saprophytes, epiphytes and woody climbers further added to the species variation of the grove. Epiphytic orchids and lichens were also

observed during the survey. Faunal species in this patch of considerable density were not sighted but there was abundant avifauna. Indirect evidence of presence of the Barking deer (*Muntiacus muntjak*) was recorded.

Table 1. List of plant species recorded in the Kabi-Longchuk sacred grove, North Sikkim

Botanical name	Family	Local name	Use / value
Tree species			
<i>Michelia cathcartii</i>	Magnoliaceae	Titey champ (N)	Timber
<i>Nyssa javanica</i>	Cornaceae	Lekh chilauney (N)	Timber
<i>Daphniphyllum himalense</i>	Daphniphyllaceae	Chandan (N)	Aesthetic, religious
<i>Quercus</i> sp.	Fagaceae	Bantey (N)	Timber
<i>Castanopsis hystrix</i>	-do-	Katus (N)	Timber, edible seed
<i>Viburnum erubescens</i>	Caprifoliaceae	Asaray (N)	Edible fruits
<i>Prunus nepalensis</i>	Rosaceae	Arupatay (N), Sado (B)	Crude timber
<i>Betula cylindrostachys</i>	Betulaceae	Saur (N), Taghyam (B)	Leaf buds substitute tea leaves
<i>Machilus</i> sp.	Lauraceae	Lali kawlo (N)	Timber
<i>Cinnamomum impressinervium</i>	-do-	Sisi (N)	Leaves substitute Bay leaf
<i>C. obtusifolium</i>	-do-	Bhalay linkauli (N)	Bark used as condiment
<i>Spondias axillaris</i>	Anacardiaceae	Lapsi (N)	Edible fruits
<i>Eryua</i> sp.	Theaceae	Bilauney (N), Signam (B)	
Shrub species			
<i>Daphne cannabina</i>	Thymeliaceae	Argeli, kagatey (N)	Hand made paper, and rope from bark
<i>Ardisia</i> sp.	Myrsinaceae	Damai phal (N)	Edible fruits
<i>Clerodendron</i> sp.	Verbenaceae		
<i>Smilax</i> sp.	Smilacaceae	Kukurdaaney (N)	
<i>Dichroa febrifuga</i>	Hydrangeaceae	Basak (N)	
<i>Agapetes</i> sp.	Ericaceae		
Ground cover herb species			
<i>Urtica</i> sp.	Urticaceae	Sisnu (N)	Young foliage edible
<i>Elatostema obtusum</i>	-do-	Gagletto (N), Kenchelbee (B)	Young shoots edible
<i>Pouzolzia</i> sp.	-do-	Chipleay (N)	Terminal shoots edible
<i>Sacrophyramis</i> sp.	Melastomaceae		
<i>Calanthe</i> sp.	Orchidaceae	Sunakhari (N)	Prized ornamental
<i>Asplenium</i> sp.	Aspleniaceae	Ooniewn (N)	
<i>Athyrium</i> sp.	Athyriaceae		
<i>Seleginella</i> sp.	Selaginellaceae		
<i>Hydrocotyl nepalensis</i>	Umbelliferae	Golpatay (N)	Medicinal
<i>Impatiens</i> sp.	Balsaminaceae		
<i>Curculigo capitulata</i>	Hypoxidaceae	Dhotisaro (N)	Fodder
<i>Eupatorium</i> sp.	Compositae	Banmara (N)	Medicinal
<i>Chlorophytum</i> sp.	Liliaceae		
<i>Hymenophyllum</i> sp.	Hymenophyllaceae		
Epiphytes			
<i>Rhapidophora</i> sp.	Araceae	Kanchirna (N)	Ornamental
<i>Hymenophyllum</i> sp.	Hymenophyllaceae		
<i>Dendrobium</i> sp.	Orchidaceae	Sunakhari (N)	Ornamental
<i>Coelogyne cristata</i>	Orchidaceae	Sunakhari (N)	Ornamental
<i>Hoya</i> sp.	Asclepiadaceae		

<i>Asplenium</i> sp.	Aspleniaceae	Ooniewn (N)	
<i>Piper</i> sp.	Piperaceae		Medicinal
<i>Didymocarpus</i> sp.	Gesneriaceae		
Climbers			
<i>Holboellia latifolia</i>	Lardizabalaceae	Golta (N)	Edible fruit
<i>Piper</i> sp.	Piperaceae	Paan patey (N)	Ornamental, edible
<i>Vitis</i> sp.	Vitaceae		
<i>Rubia cordifolia</i>	Rubiaceae	Majito (N)	Dye, aesthetic
<i>Rhapidophora</i> sp.	Araceae	Kanchirna (N)	Ornamental
<i>Smilax</i> sp.	Smilacaceae	Kukurdaaney (N)	

N = Nepali; B = Bhutia

EDUCATION AND AWARENESS

This reverent patch of forestland formed a unique example of *in situ* conservation of genetic resources with its own distinct floral and faunal strengths. Besides, such groves in the high altitude areas are significantly important as they sustain the natural streams as permanent/temporary irrigation and domestic consumption water sources. This is apart from the immense ethno-scientific relevance.

However, the key for further success aimed towards future conservation of religiously preserved patches under the present threats and circumstances lies in educating the locals, planners and the political managers on the significance of such sacred areas. Values and benefits of such reserves should be the crux of a campaign that would develop a favourable perception and create newer attitude towards conservation. Mass awareness programmes should, therefore, be a priority focusing on the cultural and ethical practices vital for their livelihood.

CONCLUSION

Such religiously protected areas provide a comprehensive and rich ecological niche as repositories of genetic diversity. Moreover, it is felt that there are tremendous direct and indirect pressures at work on the groves threatening their existence. These threats can be related to increasing prospects of tourism (tourism that lacks an in-built conservation effort), higher demands for NTFPs, fuel wood collection, decrease in the religious faiths along with fall in the commitment of the present generation towards such natural sacred places, and lastly, the heavy burden of developmental interventions that small states like Sikkim are prepared to undertake. Little attention or apathy of administrators towards the deteriorating condition of holy places and the groves add another dimension. But do these groves provide an opportunity for joint management on experimental basis? Further detailed exploration of sacred groves in Sikkim is an immediate requirement to assess their composition, various threat factors and conservation potential for their existence. Such genepool reserves can definitely serve as icons of *in situ* conservation under the prevailing times through a good mix of scientific measures and awareness building efforts with the active involvement of the local community and the government.

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