

Complexity in conserving bioresources of Koubru Hill range of Manipur, India

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ABSTRACT

Koubru Hill range in the state of Manipur, India is a biodiversity rich region where a number of endangered and endemic species are found. The Koubru Peak in the hill range is of religious and culture significance to the people of the state, especially to the Meitei, an ethnic group of the state. Several tribes inhabit the hill range. These tribes depend on the natural resources of the hill range for their sustenance. Since the time immemorial, these tribes have been hunting wild animals and practising shifting cultivation. These practises have led to disappearance and reduction of many wild animals and plants from the hill range. The tribes are still following primitive practise of shifting cultivation locally called *Pamlou* leading to soil erosion and landslides in large scale. Understanding the present complicated forest ownership of the hill range and poor protection and management of the natural resources, the tribal communities need to adopt preservation approach based on a modern scientific understanding of ecology and ecosystems with the support of the forest department.

Keywords: Koubru, flora and fauna, hunting, shifting cultivation, management, conservation, tribes, Manipur

INTRODUCTION

The North-eastern region of India covering an area of 263,379 km² is one of the most biodiversity rich regions of the world. The region comprises the states of Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Sikkim and Darjeeling district of West Bengal and lies at the junction of the Indo-Burma and Himalaya global biodiversity hotspots (Mittermeier *et al.*, 2004). Located at the confluence of the Indo-Malayan, Indo-Chinese and Indian biogeographical realms, the region is unique in providing a profusion of habitats, which features diverse biota with a high level of endemism (Das & Kalita, 2016).

Manipur with rich biodiversity, culture and traditions, is an important biocultural centre of Northeast India. It has geographical area of 22,327 km² and lies between 23°80 N to 25°70 N latitude and 93°50 E to 94°80 E longitude. The state is bounded by Nagaland in the north, Assam in the west, Mizoram in the south and shares international border land with Myanmar in the east and southeast. Many of the floral and faunal diversity of the state show affinities with surroundings biogeographical zones along with a large diversity of endemic species. As per the State Forest Report 2015, the total forest and tree cover of the State is 17,233 km². which is 77.20 % of the total geographical area of the State. More than 4000 vascular plant species, 430 medicinal plants species, 34 edible fungi species, 500 orchid species and 55 species of bamboo, 40 endemic rice cultivars, 160 fish species are reported from the state

(Singh, 2016). The state is also located at an anthropologically significant region where many cultures meet and different ethnic group live together for centuries. Three important ethnic groups Meitei, Naga and Kuki live in this tiny sub-Himalayan state (Devi & Suresh, 2012; Sitlhou, 2015). In spite of the influences of other civilisations, the ethnic groups are able to maintain their rich culture and traditions. Manipur may be characterized in two distinct regions – a) the rugged hills with narrow valleys (altitude range?? and b) the central valley (altitude range?). These two regions are not only distinct in respect of physical features but are also conspicuous with regard to various floras and fauna. Due to continuous human pressure on the natural wealth of the state, the forest cover has reduced so much in the past few decades (Sharma, 2001; Ranjan & Upadhyay, 1999; Yuhlung, 2014). Natural ecosystems have become fragile mainly due to shifting cultivation, forest fire, encroachments, agriculture and urbanisations (Feroze, 2014; Sharma, 1997). Moreover, the natural resource conservation activities in the state are almost negligible and the rules such as Manipur Forest Rules, 1971, The Wildlife (Protection) Manipur Rules, 1974 are not able to implement properly. Unlike Assam and Meghalaya, which have several forest acts and regulations to govern their forests, Manipur has no forest act or policy save the Manipur Forest Rules, 1971, and the Games Regulation Act, 1973, which have been formulated to implement the provisions of the Indian Forest Act, 1927, and the Wildlife Protection Act, 1972 in the state. The policies and the rules of the State Forest Department are

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guided by the Indian Forest Act, 1927, and Forest (Conservation) Act 1980, which are in force in the rest of the country. However, the Manipur Land Revenue Act (1960) does make some mention of forest and land rights in forestlands and on all lands not in private hands. It states that the right to all trees, jungles and natural produce on such land shall be vested with the government.

In Manipur, the genesis of land ownership system in tribal inhabited areas is very complicated. There is a marked difference in land holding and ownership system between the tribals and non-tribals in the State (Binodini, 2006). The existence of both customary laws and government's laws create complexities in land relations in Manipur (Sitlhou, 2015). In the non-tribals areas, the forest are owned by the state, whereas, in tribal areas the forest are under Chieftainship. In the hill districts of the state, the forests are owned by Chief of the villages (Sitlhou, 2015). The age old practices of hunting and shifting cultivation in this system have put tremendous pressure on the bioresources leading to loss of many endangered wildlife. The present conservation strategies to cope with the loss of wildlife are insufficient and need urgent amendment in the state forest and wildlife conservation acts.

Study Area

Koubru Hill Range

Koubru Hill range is one of the most important places in the state considering its richness in bioresources, fossils and sacredness. The hill range is situated about 35 km north-west from Imphal, the capital of Manipur state. The highest peak of the hill range, the Koubru Peak (8404 feet above sea level) is the most sacred place for Meitei, the ethnic group of the state. The Meiteis consider the hill range as their place of origin before descending to valley thousands years back. The peak is located at 25°40" N latitude and 93°52'60" E longitude. Koubru Hill Range is located in the district of Kangpokpi. The hill range has semi-tropical evergreen forest with average rainfall of 1435 mm. The temperature ranges from 4°C-29°C. The average heights of the peaks are from 2000-2500 meters above sea level with steep terrains which are drained by many streams and brooks (Fig. 1). The hill range is inhabited by different sub-tribes of Kuki and Naga. The hill range is endowed with rich biodiversity and good populations of rare and endangered flora and fauna. The hill range is rich in wildlife with different species of mammals, amphibians, reptiles, fishes, bird, pteridophytes and flowering plants. *Balanophora diocia*, a parasitic plant is also found in the hill range (Kipgen and Singh, 2010). Though Koubru hill range is endowed with critically endangered species like *Syrmaticus humiae* (Mrs. Hume's Bar Pheasant), the hill range is yet to be explored taxonomically.

Ethnic people of Koubru Hill Range

The hill range has been inhabited by many ethnic groups since thousands of years. Meitei, the ethnic group used to inhabit the hill range before descending down to the Imphal valley thousands of years back (Devi, 2002; Muthukumaraswamy & Kaushal, 2004). Several artefacts of

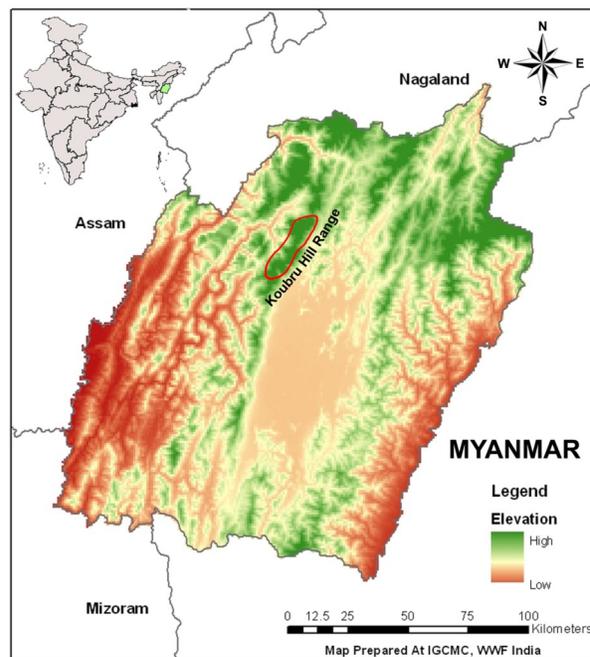


Figure 1. Map of Manipur showing Koubru Hill Range.

previous Meitei civilisations were excavated by Archaeological Survey of India. Several sub-tribes of Naga and Kuki live in the hill range. Besides the ethnic communities of Manipur, Nepalese also resides in the peripheral areas of hill range.

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Bioresources

Koubru Hill range supports a large number of plant and animal species. Some of the important mammals found in the range are Stump Tailed Macaque (*Macaca arctoides*), Assam Macaque (*Macaca assamensis*), Clouded Leopard (*Neofelis nebulosa*), Golden Cat (*Catopuma temminckii*), Leopard (*Panthera pardus*), Himalayan Black Bear (*Selenarctos thibetanus*), Barking Deer (*Muntiacus vaginalis*), Serow (*Capricornis sumatraensis*), Fox (*Vulpes vulpes*), Wild boar (*Sus scrofa*), Pangolin (*Manis pentadactyla*), Porcupine (*Hystrix brachyuran*), Red Giant Flying squirrel (*Petaurista petaurista*), Smooth coated otter (*Lutrogale perspicillata*) etc. The hill range harbours botanical significant and rare plants like *Balanophora diocia*, *Cycas pectinata*, *Rhus semialata*, *Asplenium nidus*, *Arisaema erubescens* etc. Wild plants collected from the hill range are sold in the markets of Kangpokpi and Sekmai. Some of the wild plants which



Figure 2. Landslide triggered by shifting cultivation in the hill range.



Figure 3. a) Charcoal production site in deep forest, b) Indigenous process of transporting timber using buffalo, c) use of plant toxins for fishing resulted in death of amphibians and other aquatic animals, d) Hunting of wild birds.

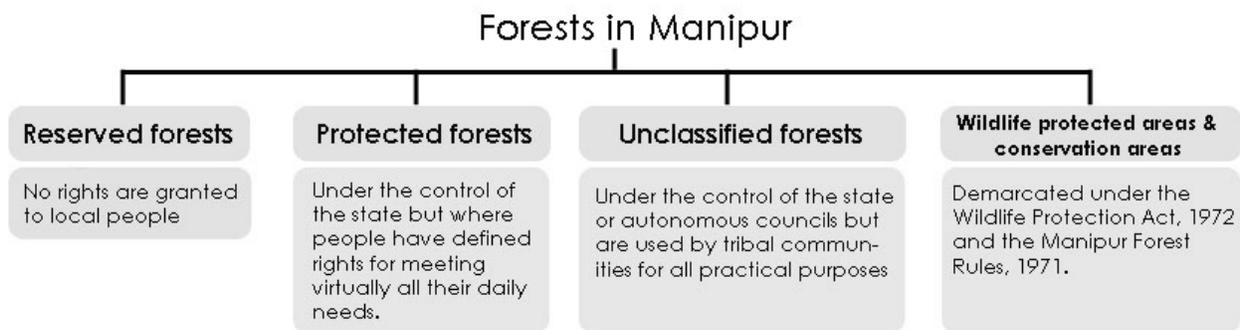


Figure 4. Types of forests in Manipur based on the local people's rights. (Based on MSDP, 2009).

are used as food are *Zanthoxylum acanthopodium*, *Rhus semialata*, *Auricularia delicate*, *Schizophyllum commune*, *Cycas pectinata*, etc. Even though the hill range is gifted with rich floral and faunal diversity, extensive explorations are yet to be taken up.

Degradation of forest

Koubru Hill Range is highly disturbed through anthropogenic disturbance like logging, agriculture, wildfire for the cultivation of crops by nearby local tribal communities (Soibam, 2016). The forest use by the villages is unsustainable. Reckless shifting cultivation in steep hill slopes has resulted in landslides and soil erosion (Fig. 2). In 2004, massive landslide resulting to mudflow with heavy deposition occurred in the hill range (Garita, 2008). Timber production has led to the felling of tall ancient trees whose thick canopies provide dwelling to a number of fauna species. Charcoal and firewood production have led to deforestation. Indiscriminate hunting and trapping have led to the disappearance of many animal species even before they can be studied and recorded. For example, these mountains once resounded with the calls of Hoolock gibbons but the animals have since disappeared. The use of plant toxins in fishing has diminished fish populations in the streams and rivers (Fig. 3).

The agriculture potential in the foot of the Koubru range is still underdeveloped. Farmers plant only once a year using largely primitive labour intensive methods. Increase use of modern farming technologies and introduction of sustainable agriculture practises such as multiple cropping, crop rotation and organic farming would go a long way in mitigating the overexploitation of forest resources by an ever increasing populace.

Forest management and recommendations

Forests in Manipur are classified into four categories based on the local people's rights (Fig.4). Forests in the hill districts of the state are unclassified and are unofficially controlled by the traditional tribal Chiefs. The state has no actual control over these forests, and this is also reflect in the manner in which the forests are managed and the produce extracted from them (MSDP, 2009). These forests are controlled by tribal Chiefs and the forests produce are extracted through two major systems a) Lump sum sale system and b) Licence and Permit system. Effective management of forests and its resources depends on the credibility of the Chiefs.

The management of the Koubru hill range is complicated because the tribal chieftains retain rights to ownership of the forests as their ancestral heritage. And as such they contest any governmental intervention as a violation of their rights. The forest department of the state as a result have very limited reach and are restricted to forest produce check posts to exercise control. However, some enlightened villages have managed their forests reasonably well; they understand that the mountain forests are crucial to feed springs, streams and rivers that irrigate the fields in the terraced rice fields in the foothills and valley below, besides preventing landslides. The catastrophic landslide in this range at Gopibung village, back in 2004, has reinforced the necessity for forest conservation (Bhatt *et al.*, 2009). But even villagers intent on preservation face problems of encroachment from less enlightened neighbours. There are no formal demarcations of the forests and this loophole is exploited for illegal activities. Poachers can hunt unrestricted or lay traps on animal trails leading into and out of preserved areas. The tribal hamlets need to come to an agreement on a common preservation approach based on a modern scientific understanding of ecology and ecosystems. This is where the forest department can play a constructive role in educating and outlining the conservation approach keeping tribal rights and customs in mind. Again, any conservation approach is doomed to fail if provisions for an alternative means of livelihood are not provided to people overly dependent on the forest for all their needs.

It is difficult to abolish the unsustainable practise of shifting cultivation, hunting and trapping as these had been practised since time immemorial and is woven into the tribal way of life or culture. But the reduction of forest cover, soil erosions, disappearance of flora and fauna calls for an urgent conservation intervention. This calls for unique solutions, one in which the hill tribes can maintain their heritage and culture sustainably. Since hunting and shifting cultivation cannot be abolish because the tribes relate it to their way of life, they should be intelligently managed. Hunting should be restricted to very short seasons and a limit on the number of animals that can be harvested should be set. Unsustainable hunting and fishing practices such as indiscriminate use of traps and poisoning streams with plant toxins should be abolished. No new forest area should be cleared for shifting cultivation; instead existing degraded fields should be restored and made productive by implementing organic farming practises. Also, shifting cultivators and hunters

should be weaned away with alternative means of survival such as horticulture, animal husbandry, social forestry and agroforestry. Since the tribal way of life is integrated with the forests, it is imperative that they conserve the forests to conserve their very own cultural identity.

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