

## Conserving Human-Nature Nexuses: Biodiversity, Eco-Ethics and Sacred Forests of Assam

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### Abstract

*The Dimasas, an ethnic group of Northeast India ritualize sacred patches of land, also referred to as Daikhos, which are considered to be the abodes of various local or clan deities. Scholars have identified these sacred grounds as sacred groves due to their forest cover and rich biodiversity. Sacred forests or groves provide an interesting case of intimate human and nature relations. This essay is an attempt to understand man-environment interaction through an in-depth and extensive study of the Daikho institution, which has, incidentally, escaped scholarly attention in South Asian research traditions till now. Assam (in north-east India) has seen an increasing rate of depleting forest in recent times (almost over 5 percent of the forest cover has been cleared in the last two decades), yet, the community-driven conservation practices entangled with the Dimasa's socio-religious life can be seen as safeguarding the forests and provides one among many ways to help maintain and restore forest ecosystems in the region. This essay is an attempt to decipher the local understanding of conserving biodiversity through the worldview of the ethnic group.*

### Introduction

The association of worshipping nature is found in several communities where the river, trees, and animals are sacralised and are believed to be the abode of one or many deities or spirits. Nature worship can likewise be regarded as a component of ancient or earliest religion nonetheless, such worship does not primarily translate to the preservation of nature (Nag, 2014; Anthwal, Gupta, Sharma, Anthwal, & Kim, 2010). However, in recent times the degradation of nature has increased manifold and there is a shift of focus towards the communities who still practice their ancient eco-ethics which in many cases translate to mean sacred forests or groves (Nag, 2014; Anthwal, Gupta,

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Sharma, Anthwal, & Kim 2010; Kent, 2013). While other scholars have noted that indigenous religion has always been a part of indigenous culture which is supposed to be the product of interaction between man and the environment (Boedhihartono 1998; Sanga & Haulle, 2022). One such interaction gets reflected in the sacred forest and sacred groves which provide a niche for numerous plants and animal varieties and thus present a cultural conservationist outlook of such religiously important space (Gadgil & Chandran 1992; Malhotra, Gokhale, Chatterjee & Srivastava, 2001; Vasan & Kumar, 2006; Kent, 2013; Singh, Youssof, Malim & Bussmann, 2017; Dutta, 2019; Devi, Baidya & Thakur, 2020; Sanga & Haulle, 2022).

Sacred groves are regarded as one of the oldest forms of conservation and the finest instances that connect faith with nature (ibid.). The presence of such groves in India was first reported by Dietrich Brandis, a German Forester and the first General Inspector of Forests under the colonial regime (Gadgil & Chandran 1992; Saikia 2011; Kent, 2013). He is credited to identify the phenomenon of forest conservation closely knitted with religious motivation in India with the term, sacred groves (Gadgil & Chandran, 1992; Kent, 2013). There is huge scholarship on sacred groves in India, (Gadgil & Chandran, 1992; Malhotra, Gokhale, Chatterjee & Srivastava, 2001; Khan, Khumbongmayum & Tripathi, 2008; Borthakur, 2013; Kent, 2013); and the works in the Northeast (Chatterjee, 2008; Medhi & Borthakur, 2013; Langthasa, Sharma & Barman, 2018; Upadhyay, Japang, Singh & Tripathi, 2019; Devi, Baidya & Thakur, 2020). Kent pointed out that ‘sacred groves’ are small forests or stands of trees whose produce is set aside for the exclusive use of a deity, which is a Pan-India phenomenon. The local terminology of such forests or trees associated with one or more deities or spirits are different across cultures and different dialects. Kent’s work which was based in south India highlighted that the Tamil terms, whose literal translation of such community-based conserve patches of trees are termed as ‘temple-forest’ or the ‘temple that is in the forest’ (Kent, 2013). Many Indians claim sacred groves of India as an ancient indigenous ecological tradition. Madhav Gadgil, a prominent environmental historian was one of them who regarded the sacred groves as in situ seed bank conserves managed by various communities across the country (Gadgil & Chandran, 1992; Kent, 2013).

Northeast India, which is known for mosaic topography and varied indigenous communities, protects patches of forests based on their spiritual beliefs (Chatterjee, 2008; Khan, Khumbongmayum & Tripathi, 2008; Devi, Baidya & Thakur, 2020). Various scholars have reported the presence of sacred forests in all the north-eastern states of Meghalaya (Malhotra, Gokhale, Chatterjee & Srivastava, 2001; Nag, 2014), Manipur (Khumbongmayum, Khan & Triparthi, 2004), Assam (Maedhi & Borthakur, 2013; Devi, Baidya & Thakur, 2020), Nagaland (Souza, 2001); Arunachal Pradesh and Sikkim have sacred forests (Khan, Khumbongmayum & Tripathi, 2008).

The sacred groves are comprised of forest patches with religious or spiritual values requiring local people to protect trees, forests, and often other elements of biodiversity

within. They are conserved and protected by local communities because they hold cultural and traditional significance, thereby, forming an important aspect of their cultural identity and their spiritual-ecological values surviving through multiple generations (Gadgil & Chandran, 1992; Malhotra, Gokhale, Chatterjee & Srivastava, 2001; Borthakur, 2013; Sanga & Haulle, 2022). Medhi & Borthakur (2013) equated *Daikho* (spelled *Dikho* in their research work) as sacred groves of the Dimasas and mentions the presence of twelve (12) *Daikhos* which are strategically located in the newly formed district of Dima Hasao and they serve as an ecological niche for several varieties of plant species.

Assam has around 40 sacred groves in the district of Karbi Anglong (Malhotra, Gokhale, Chatterjee & Srivastava, 2001; Khan, Khumbongmayum & Tripathi, 2008; Borthakur, 2013). The term *madaico* (ma *Daikho* denotes space for God) was used by most of the previous researchers (ibid.). If we consider the factual data provided by scholars (Malhotra, Gokhale, Chatterjee & Srivastava, 2001), as the concrete number of sacred groves in Assam, then, the institution of *Daikho* among the Dimasas in the district of Dima Hasao are not included as sacred groves (Gogoi, 2020; 2022). While another group of researchers stated that *Daikhos* are the relic forest segments preserved in the name of culture and religion (Medhi & Borthakur, 2013; Thaosen 2018; Langthasa, Sharma & Barman, 2018; Gogoi, 2022).

This essay attempts to explore the institution of *Daikho*, a traditional institution of the Dimasas which invariably escaped the scholarly attention of South Asian research. There is a close-knit association of the community with its surrounding environment. Such associations are reflected in their worldview where around 34 plant varieties were identified as sacred in Dimasa social life, and among them, 13 species are related to worshipping while the remaining 21 species are involved in naming areas/villages or naming their clans (Medhi & Borthakur, 2013). The name of a female clan, *hamlai gibing* is named after the plant, *hamlaifang* or *hamlraithaifang* (Medhi & Borthakur, 2013). So, this essay is an attempt to highlight the close intertwined relationship of Dimasa society with their surrounding environment which is strengthened by oral tradition in the form of folklores and folktales. Further, this essay also discusses the ecological services of sacred forests to the community and its associated beliefs with it.

### **Enroute to the field: Methods employed**

The fieldwork for this essay is carried out in multiple phases from 2018 to 2020 at different sites from Haflong, a small hill station of Assam to Doyapur, a Dimasa village situated near the Assam- Nagaland border. The researcher has engaged in participant observation for data collection and an ethnographic approach has been employed to understand the field. The researcher stayed for an extended period of eighteen months with the local people engaging in their everyday life and social affairs. At the beginning of the research work, there was trouble conducting interviews as the researcher was not well-versed in the native tongue of the community i.e. Dimasa

language. However, this limitation was overcome by learning basic conversation skills to conduct short interviews to know the local terminology of plants and their local significance (Table 1), in addition to taking the help of field assistants at the field sites. The universe of the study was the institution of *Daikho*, which in the local language is translated, 'to the place of the omnipresent'. These forested areas are deemed sacred spaces which are located away from human habitation. These spaces are sacralised through rituals that are conducted annually or biennially making it a male-centric space where entry of women is prohibited (Gogoi, 2020; Gogoi, 2022). Such restrictions have been negotiated by employing local field assistants, who helped in the data collection process.

### The ecological services from the *Daikho*

In the forested area of the *Daikho*, the most commonly found plant species are bamboo (the north-eastern region is home to a variety of bamboo species)<sup>3</sup>, jackfruit, areca plant (ibid.), *thailuphang* (banana tree)<sup>4</sup>, Indian gooseberries (*hamlaiphang*), mango<sup>5</sup> tree (*thaijuphang*) and many others. Even Medhi & Borthakur (2013) reported a variety of bamboo such as *wathi*, *waphu*, *wagajao*, and in addition, they reported that a variety of bamboo names and other plant names are used in the naming of several Dimasa villages in the district of Dima Hasao. One of the informants pointed to the name of the village, *manderdisa*, which is named after the plant *mander*. This key informant asserted that most of the Dimasa villages are named after plants that are found in their surrounding areas. In the same village, the Chief Minister of Assam laid the foundation stone for Bamboo Industrial Park (*The Sentinel*, 2021).<sup>6</sup> If one has a closer look at the names of the *jaddi/jullu* name, almost all of them have a local derivation of some plants, mostly *mairong* meaning rice (Medhi & Borthakur, 2013). The usage of the names of rice varieties is significant among them.

India is home to almost 45 percent of the world's bamboo forests and two-thirds of the growing stock of bamboo in the country is available in the northeastern states (*The Assam Bamboo Cane Policy*, 2019; Tewari, Negi & Kaushal, 2019). The bamboo forests were identified by the Forest Department under British Government in the late nineteenth century in this part of the country (Saikia, 2011; Tewari, Negi & Kaushal, 2019).

<sup>3</sup> Source: (Assam State Biodiversity Board Official website, <http://asbb.gov.in/biodiversity.html>), (India State of Forest Report 2019, <https://fsi.nic.in/isfr19/vol11/chapter8.pdf>).

<sup>4</sup> Assam has around 13 varieties of bananas with unique tastes (Source: Booklet published by Assam State Biodiversity Board titled, Assam: Land of Red River & Blue Hills).

<sup>5</sup> The mango tree is of immense importance in the Hindu religion as it impersonates certain Hindu gods. The tree leaves are used in various rituals while the wood in some cases is used during funerals (Rana, Sharma & Paliwal, 2016 cited in Chauhan & Chauhan, 2019).

<sup>6</sup> Source: <https://www.sentinelassam.com/north-east-india-news/assam-news/assam-cm-lays-foundation-stone-of-bamboo-industrial-park-at-manderdisa-in-dima-hasao-548215>

Dimasas recognises a variety of bamboo (the common local name for bamboo is *wa*), and there was no definite number. But others mention more than 20 varieties of locally known bamboo, but very few recall all the names. Though many claimed that there are over 20 varieties of locally recognised *wa*, it was observed that the elderly members can recall over 10, while other younger informants managed to name around 4-5 varieties. It is observed that the local nomenclature of the plants is not used during conversations. In one of the interviews, the informant stated that three things are very crucial to Dimasa's social life such as a river, banana, and bamboo. The banana and bamboo are used in all the Dimasa rituals, and villages are named after bamboo such as *Boro Washiling*, and *Choto Washiling*. One cannot find any Dimasa settlement away from the river, since, Dimasas like to reside beside the river.<sup>7</sup> In this regard, Semkhor in Dima Hasao District is the only Dimasa village that is not situated beside or near a river or stream.

The local names of bamboo varieties are usually based on their specific usage such as *waphu* (the leaves and culms used in worshipping); *wathi* (this particular bamboo is lean and usually used to serve rice beer, *judima* in a social gathering and some purification rituals) (Medhi & Borthakur, 2013), *wayung* (the big bamboo which is considered strong, are generally used for constructing houses); *wajinsa*, *wayung*, *walongdi*, *wathi*, *washim*, *washi* (the leaves and culms used in worshipping), *walao*, *wadring*, *walaingsa*, *wabam*, *wadukha*, *walindrea*.<sup>8</sup> The three bamboo varieties *wathi*, *washi*, and *waphu* are considered sacred (Medhi & Borthakur, 2013). Bamboo groves are a common sight in all the *Daikhos*. In *Damadi Daikho*, almost a major percentage of the vegetation are bamboos (bamboo grows outside the site as well). In addition to it, Assam State Biodiversity Board reports the presence of 38 naturally occurring species of bamboo in Assam. It has also been noticed that exclusive bamboo forests are found in the two districts of North Cachar Hills (Dima Hasao) and Karbi Anglong, and few species of bamboo are specific to these areas.<sup>9</sup> The Dima Hasao District Census Handbook reported on rich bamboo resources in these districts, providing raw materials to Bengal Essay Mill and Hindustan Essay and Pulp Mill at Jagiroad.<sup>10</sup> A variety of bamboo species are also found in the neighbouring district of Karbi Anglong (Baidya, Thakur, Malunguja & Devi, 2020).

Along with bamboo, there are banana plantations farmed by the villagers beside the *Daikho* sites, which is a new phenomenon. One such farming is seen at the site of *Damadi Daikho*. Again, the *Longmailum Daikho*, which is just a few kilometers away has similar vegetation. But unlike the *Damadi*, *Longmaillum* lies on the other side of the small stream. There is no concrete boundary, but the former site had less vegetation compared to the latter.

<sup>7</sup> Interview taken in Karbi Anglong, 2020.

<sup>8</sup> Field Notes, Dimapur, 2020.

<sup>9</sup> Source: Assam State Biodiversity Board Official website, <http://asbb.gov.in/biodiversity.html>

<sup>10</sup> Source: [https://censusindia.gov.in/2011census/dchb/DCHB\\_A/18/1816\\_PART\\_A\\_DCHB\\_DIMA%20HASAO.pdf](https://censusindia.gov.in/2011census/dchb/DCHB_A/18/1816_PART_A_DCHB_DIMA%20HASAO.pdf)

**Table 1: Showing a few locally recognised plants and their usage by the Dimasas**

Sl. No.	Common Name of the Plant	Scientific Name	Local Name	Significance
1	Bamboo	Bambusoideae	wajinsa, wayung, walongdi, wathi, washim, washi, walao, wadring, walaingsa, wabam, wadukha, walindrea	(a) The culms of some are used for offering judima, rice beer, during any rituals and so are considered sacred. (b) While some are specifically used for making houses, fences, to name a few. (c) The bamboo shoots are a local delicacy and a prominent aspect of Dimasa cuisine. (d) Villages are named after bamboo.
2	Indian gooseberries	Emblica Officinalis	Hamlaiphang	(a) This particular tree is worshiped when a child is sick. (b) One matri-clan (hamlaigimindzi) is named after the tree.
3	Toothbrush tree	Streblus asper	Khandephang	Offer prayers to the spirit residing in the tree for the quick recovery of the sick child.
4	NA*	NA*	Muliphang	(a) Offer prayers to the spirit residing in the tree for the quick recovery of the sick child. (b) The spirit residing in this tree is considered less potent compared to the other spirits in Khandephang and Hamlaiphang.
5	Holy Basil	Ocimumsanctum/ tenuiflorum	Tulsi (no local terminology)	Used to make dther, the holy water.
6	Bottle gourd	Lagenariasiceraria	Laothai	(a) This dried bottle gourd is considered sacred. (b) Serve as a utensil to store judima and require in various rituals to offer to deities. (c) At the event of semju (the day when the wedding date is fixed), the bride-groom party and the groom party exchange rice beer in laothai.
7	Mango	Mangniferaindica	Thaijuphang	The leaves of this plant are used in various marriages and religious rituals.
8	Banana	Musaceae	Thailuphang	(a) The whole plant has immense utility in day-to-day life. (b) The leaves and even the trunk serves as utensils to offer prayers to various deities. (c) The trunk of the plant is a local delicacy.
9	Indian Bael plant	Aegle marmelos	Bilthaiphang	(a) Leaves of this plant are used to sprinkle dther before or after any ritual. (b) The ripe fruit is used in traditional medicine to cure diarrhoea (Rout, Sajem&Nath, 2012).
10	Betelnut	Areca catechu	Kuwai/ Guwai	(a) The betel nut along with betel leaf is offered during various rituals. (b) A matri-clan is named after it, e.g. Guwaibar Jilik.
11	Betel leaf	Piper betel	Mithi	Along with areca nut, it is offered during rituals.
12	Rice	Orza sativa	Mairong	(a) A variety of rice is recognised and all of them are considered sacred. (b) Few of the matri-clans are named after rice. (c) Rice powder is used to cook meals to offer to gods/goddesses which is locally known as hon. This particular dish is a local delicacy.

*\*Not Available. Source: Fieldnotes*

There is a prohibition on cutting down certain trees and tree-bearing fruits. Such prohibitions are strictly followed and cannot be breached. These taboos and restrictions in any sacralised forested areas help in preserving the surrounding ecosystem (Sanga & Haulle, 2022). People believe that not following the prohibitions might bring bad omens and invoke the malicious spirits of the forests. Other plants are considered ritualistically sacred and among them, the prominent ones are *khande* (the local term for a tree whose flowers are eaten by birds like bulbul) and *hamlaihphang* (the Indian gooseberry or commonly referred to as *amla*), and these particular plants are forbidden to cut by individuals who has performed *khandehuma* or *hamlaihuma* when they were young. In one of the marriage preparations attended by the researcher in Dimapur, one individual was given the task to cut the *khandai* tree to clear the ground for the event. But the person contended that he has done *khandehuma*, so he would be unable to cut the tree. In Maibang, a similar story was narrated by an aged man who stated that he used to be very sick when he was young. After consulting with a Dimasa fortune teller, who subsequently asked his parents to appease the spirit and perform the ritual of *khandehuma*. His parents followed the instructions and offered prayers for the faster recovery of their son. After performing the ritual, he was healthy again but then onwards he was barred to cut the same tree, as that particular tree became a guardian of his health.<sup>11</sup> Another aged villager echoed in similar lines, “*Hamlaihuyakhade, hamlaijithoudu*” (if you have not done that ritual, then you can eat *hamlaih*, Indian gooseberry<sup>12</sup>).

One can only cut the tree if the individual has not done *khandaihuma*, and this ritual is usually done when the child is young. It is a ritual based on the fortune teller, *smanaiba*, who directs the parents to perform one of the rituals so that the child does not fall sick. In this ritual, parents seek the protection of the spirits of a particular tree.

There is a folklore that is associated with plants that are considered sacred. On encounter with the paternal grandfather of the field assistant; the researcher was told that his grandfather who is also the oldest member of the Jigdung family used to take an active part in many rituals before however due to his old age, he is unable to participate and mostly stays at home. He is over 90 years old and has attended rituals such as *hamlaihuma*, *khandehuma* and *mulilangraihuma*. He said, “*hamlai la bubu, khande la bhandao ode mulilangraikhasidaothoiyababhandao*” (*hamlai* is the eldest sister, *khande* is the younger sister and *mulilangrai* is the youngest of all).

The three above-mentioned plants which are considered sisters are worshipped and given sacrificial animals according to the direction of the local fortune teller. For *Hamlaihuma*, one female goat and 5 chickens need to be sacrificed in the name of a

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<sup>11</sup> Field Notes, Dimapur, 2020.

<sup>12</sup> The Indian gooseberry plant is regarded as sacred (Anthwal, Gupta, Sharma, Anthwal, & Kim, 2010) as it is believed to be an abode of Lord Vishnu. The plant is believed to have medicinal properties (Chauhan & Chauhan, 2019).

female deity. While for *Khandehuma*, 5 chickens are required to offer as sacrificial animals, and for the youngest deity among the three, the ritual is *Mulilangraihuma*, where no sacrificial animals are required. In all three rituals, either the child or the things belonging to the child is placed on the ground below the respective tree and the rituals are performed by an assigned *jonthai*. The cooked meat has refrained to be taken outside the forest, where the rituals are done, and need to be consumed by the attendees of the rituals. After the ritual is done, there are a few restrictions laid down for the child.

During the fieldwork, a young informant of Doyapur village, who was assisting the researcher in taking interviews told,

*“Ansahaangkhedekhandehumyanangya” (I did not do any khandehuma when I was young). As the ritual was not done, he does not have any restrictions regarding cutting the tree. On being asked whether the same ritual was done on his sisters. He replied, “I don’t specifically remember but this ritual is done for boys only. As you know, only boys go to forests”. In addition to it, this ritual is mandatory for the ones whose day of birth is seen as not auspicious.*<sup>13</sup>

One of the local youths of Doyapur village laments, before, when the vegetation was thick, these big trees were a common sight, but with deforestation, there are very few of these big trees in recent times. These trees were home to many birds and he remembers when he was young, he used to go hunting with his friends for birds using a locally made catapult.<sup>14</sup> On inquiry, one Mr. Hasnu told that it is difficult to see these plants in recent times.<sup>15</sup> While another informant stated that we would have to go deep into the jungles or forest to get these trees. Though trees are protected and conserved through religious taboos imposed on them (Pandey, 2003 cited in Anthwal, Gupta, Sharma, Anthwal, & Kim, 2010), recent deforestation is consuming them. Likewise, scholars across the globe have reported the decline of large old trees, mainly for various anthropogenic factors, which include rapid urbanization, land use intensification, human-population densification, habitat fragmentation, and various forms of human disturbance (Lindenmayer, Laurance & Franklin, 2012; Milberg, Bergman, Sancak & Jansson, 2016 cited in Huang, Tian, Zhou, Jin, Qian, Jim, Lin, Zhao, Minor, Coggins & Yang, 2020).

<sup>13</sup> These rituals are not gender specific but can be performed on both boys and girls when they are young. Mostly, the bereaved parents of the sick child offer prayers to the concerned trees which are believed to be an abode of deities for the quick recovery and protection of the young child (Field Notes, 2017-2020).

<sup>14</sup> Only a few of the young informants (below 25 years of age) can identify or name the plant. While individuals who are staying outside their hometowns find it hard to recall any of the names of the sacred plant.

<sup>15</sup> Field Notes, Dimapur 2020.



While one of the newly appointed *Goanburha* of the Doyapur village<sup>16</sup> told in more recent times, very few people do *mulihuma*. It is a rare event in the village. The most common rituals which are done regularly are *hamlaihuma* and *khandehuma*. Danda (1978) sighted the ritualistic significance of the trees as she presented a case study of the worship of *khandisa*, which is associated with *the khandetree*, where an elaborate ritual was performed ‘to cure a baby’ in the forest by a priest.<sup>17</sup> While due to its rare occurrence, *muliphang* is rarely reported. Medhi & Borthakur (2013) made a similar observation that the *khande* and *hamlaiphang* are considered sacred plants which are worshipped, and these plants are reported from various *Daikho* sites in Dima Hasao as well. According to Medhi & Borthakur (2013), *hamlaiphang* is worshipped by the father of a sick child for a speedy recovery and the concerned parent had to take an oath to never cut the plant in his life. While for *khande*, it is considered an abode of evil spirits and this particular plant is worshipped for the same reason as the former plant, and similar restrictions are laid down. They do not mention the *mulilangrai*, which is a sacred plant for the Dimasas. In the *Daikhos* of the *Dizuwa* area, the *khande*, *hamlaiphang*, cotton tree (*bombaxceiba*)<sup>18</sup> are observed during the field visits. The tree-worshipping culture is quite common across cultures (Huang, Tian, Zhou, Jin, Qian, Jim, Lin, Zhao, Minor, Coggins & Yang, 2020).<sup>19</sup> The banyan tree belonging to the genus *Ficus* which is worshipped and protected is a pan-Indian phenomenon dating back to Indus Valley culture (Gadgil & Chandran, 1992). However, there is no local sacred association of this tree among the Dimasas.

Apart from this, there are various herbs and scrubs which are sacred and medicinally significant among the general people. Dimasas believe that some of the diseases and ailments are caused by supernatural beings and such ailments are cured by bringing in a religious specialist who performs rituals and give sacrifices to cure common ailments. But in some cases, they rely on herbal medicines (Medhi & Borthakur, 2013; Bodo & Bodo, 2015). A study conducted by Bodo & Bodo (2015) in the Diyunbra Block of the northern part of the Dima Hasao district showed that a significant (24 percent of people under study) still rely on the traditional use of ethnomedicinal plants. There are a few medicine specialists who have indigenous knowledge regarding ethnobotanical important plants. The demand for this is gradually decreasing and a few are involved with making traditional medicines. Mrs. Haflongbar, an aged widow in her early seventies, gives out traditional medicines to the ones who come

<sup>16</sup> There are 3 assigned Gaonburha in the Doyapur village. One is regarded as the head Gaonburha, while the others are assigned as second and third, according to their relative position in the village (Field Notes, 2020).

<sup>17</sup> The priest associated with the ritual was the village headman. The parents of an eight-month-old baby suffering from swelling limbs offered their prayers to *khande* for the quick recovery of their daughter (Danda, 1978).

<sup>18</sup> This tree is considered sacred in other parts of the country and various myths are related to it being a hellish tree due to the presence of thorns (Chauhan & Chauhan, 2019).

<sup>19</sup> Here, the researchers examined the large old trees of Wuchuan in Guizhou Province of southwest China for their biodiversity importance and uptake of policies and steps to safeguard and conserve them.

for mild diseases such as cold and cough, pain during menstruation, and stomach pain, to name a few, and do not charge anything for her service. She learned the skill to make traditional medicine from her mother. The trend to pass on the skills from generation to generation is declining, as (in this case too) none of her daughters practices the preparation of traditional medicines. When asked which plants she use to make medicines, she was unable to recall the names and insisted that she can show the plants and leaves which were being used in preparing the medicines. She added that nowadays, most of the plants are rarely sighted in her neighbourhood. The local knowledge of medicinal plants is losing its significance as the local terms for those plants are also becoming obsolete in day-to-day vocabulary (*The Swaddle*, 2021)<sup>20</sup>.

The Dimasas are not the only ethnic group in northeast India to protect the forest areas. The neighbouring Karbi group also has associated religious beliefs and taboos with the trees and has the tradition of protecting sacred groves/forests (Devi, Baidya & Thakur, 2020; Baidya, Thakur, Malunguja & Devi, 2020). Devi, Baidya & Thakur (2020) in their study highlighted the significance of various medicinal plants (some sacred plants) used by the Karbis which are found in the two sacred groves in the district of West Karbi Anglong. These groves are under-reported and losing their biodiversity at an alarming rate due to encroachment. The groves are mainly maintained by the Karbi community, by imposing taboos and restrictions to protect the groves from intruders (Devi, Baidya & Thakur, 2020). While another research was undertaken in the two sacred forests, *Bichikri* and *Harlong*, situated in the same district, including the distribution of varied plant species (116 plant species). The scholar reported low biodiversity in these sites, due to the exploitation of various forest resources (Baidya, Thakur, Malunguja & Devi, 2020). The geographical area of the district has almost 70 percent forest cover, including 7 sacred groves (*Karbi Anglong Booklet*) and many undocumented SGs (Saikia, 2006; Devi, Baidya & Thakur, 2020). Many scholars reported 40 sacred groves in Karbi Anglong (Khan, 2007; Borthakur, 2013). According to the Assam State Biodiversity Board website, the *Daikhos* in Karbi Anglong are not considered sacred groves.

### **The significance of forests and their associated rituals**

Dimasas believe that their surroundings like *hagra*, forest, hills, and streams are an abode of both malicious and benevolent spirits (Roy, 1998, 2002; Thaosen, 2015). So before any hunting expedition, a ritual has to be done which involves giving sacrificial animals to seek permission from the spirits of the forest to enter. In addition to it, this is a way to seek blessings and protection. Among the neighbouring tribe, Karbis too offer prayers to their local deities and seek permission for collecting parts of the medicinal plants from the groves by offering betel leaf (*Piper betel*) and areca nut (*Areca catechu*) (Devi, Baidya & Thakur, 2020).

<sup>20</sup> Source: [https://theswaddle.com/as-indigenous-languages-die-india-loses-vital-means-of-preserving-biodiversity/?fbclid=IwAR35MOlpaE58EU5eYPyoMGUuo\\_G127Z9HEVTHU6a9wgewEIIKr0iD5GGFkWo](https://theswaddle.com/as-indigenous-languages-die-india-loses-vital-means-of-preserving-biodiversity/?fbclid=IwAR35MOlpaE58EU5eYPyoMGUuo_G127Z9HEVTHU6a9wgewEIIKr0iD5GGFkWo)

In most of the forest-related rituals, a small fowl need to be sacrificed to appease the *deo*, spirits of the forest. The *deo*, forest spirits inhabit the forest, jhum, (*khernai*) lakes (Roy, 1998, 2002). Dimasas believe that different kinds of spirit reside in the forest. One may mislead your way by calling out your name. While some may create a false illusion of the prey. During the fieldwork, the researcher was told of an incident where a person was killed in a hunting expedition in the forest. Later, it was disclosed that the members of the hunting expedition mistook their member of the group for a *misai*, a deer, and shot him. The person was killed on the spot. Some of the people in the village pointed to the fact that as they did not perform any ritual before their expedition, this made the forest spirits angry because of which, they met the illusion of a deer. After the incident, the remaining members had to perform a ritual seeking their forgiveness and to appease the forest spirits for their misconduct. Though the hunting practice is not so common these days as there are restrictions on hunting. But usually, people still go hunting in privately owned forests (teak plantations) or in some cases, in the wild forest however, the practice associated with forest worship is still prevalent.

One of the owners of a small sawmill who is a regular visitor to the forest said that there is a belief of a forest or any water body (*khernai* meaning pond or lake) is an abode of various spirits. So to go or enter such places, prior permission is sought through sacrifices of small fowls or animals.<sup>21</sup>

Apart from *Daikho*, there is *gerkho* which is a ritualised geography situated within the village area. Every village has its *gerkho*. This particular place is of immense importance as people are barred to cut down trees. Similar restrictions of *Daikho* are laid on the site of the *gerkho*.<sup>22</sup> The ritual *germa* is conducted in this community-owned place. On the auspicious day of the *germa*, villagers refrain from any work even household work is kept at a minimum, no clothes are dried outside. On the day of the ritual, the movement of the people is regulated and restricted. Villagers do not venture out of their houses on this day. The village youths are assigned the task of putting white flags in every Dimasa household in the colony which is symbolic to ward off evil spirits from the village.

*Aju*<sup>23</sup> said, “*madai* and *deo* should not be disturbed, and we should stay in harmony with them. Any disturbances will harm the harmony resulting in bad things happening to the individuals or the village involved”.

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<sup>21</sup> The individual along with his fellow workers frequently goes to forest or teak plantation areas to procure wood for his sawmills (Fieldwork, 2018-2020).

<sup>22</sup> One local youth of Doyapur village narrated an incident of a woman who happen to defile the sacred site of *gerkho* by urinating at the site. This act of hers had severe consequences as she falls severely sick and eventually died (Fieldwork 2018-2020, Dimapur).

<sup>23</sup> *Aju* means grandfather in Dimasa. This is a classificatory kinship terminology to designate either paternal or maternal grandfathers.

Similarly, the *khandaihuma*, and *hamlaihuma* rituals discussed in the previous section, are done in forest areas. The worship of the *thaibar* deity is done in the forest to cure any ailing baby (Danda, 1978). The rituals associated to cure any ailing baby or a small child are done in the forest.

In brewing the *judima*, the local rice beer, a particular kind of plant (local terminology of the plant, *themra*) is needed which gives the unique taste. The plant's bark gives the drink a sweet taste. The plant (scientific name, *Acacia pennata*) is found in forests, and domestication of it is difficult. One informant who is a resident of Thungri Gro village stated that sometimes this plant can be purchased from the weekly marketplaces in Diphu town. The seller gets the plant from wild forests. He has even noticed that in the Diphu area, people are planting this particular creeper at home. He added it is a tedious job to look after the plant as the whole plant is not used but rather the bark of the plant. If the bark of the plant is removed, then the plant dies off. So to avoid such incidents, only a portion of the bark is extracted and then the plant is left for regeneration. The informant narrated a story behind the discovery of this plant by Dimasas. A man on his way to work, left his rice wrapped in the leaves of the plant. Later, when he had the rice after his work was over, the rice tasted sweet and he got high. Then he got to know how to brew the rice beer with cooked rice. The same story had been quoted by others as well. Such folklores are common which highlights the close-knit association of the plants and their importance in their socio-cultural life.

## Conclusion

Various aspects of the *Daikho* need further exploration and among them, is the rich biodiversity that is depleting in recent times. With a conservationist outlook, this institution provides an alternative to depleting forest cover. This essay insightfully looks into the close interwoven dimension of man-environment interaction.

The depleting forest cover and increase of forest encroachment both by the state and anthropogenic activities have added to the changing cultural landscape and also the outlook of the *Daikho* institution. India's northeast which accounts for one-fourth of the forest cover in the country is losing its wildlife biodiversity as a result of rampant deforestation in the last two decades (Dhar, 2021; Shree&Karmakar, 2019)<sup>24</sup>. And the state of Assam witnessed the worst deforestation rates during this period, with 2388 sq. km. of tree cover loss (Shree & Karmakar, 2019; Dhar, 2021). As of 2000, 33 percent of Assam has natural forest cover and by 2019, there is a decrease of almost 7 percent (*Global Forest*).<sup>25</sup> According to the India State of Forest Report 2017, the reasons behind the decrease in the forest cover are reported to be the rotational felling in tea gardens, shifting cultivation, and developmental activities<sup>26</sup>. The State

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<sup>24</sup> Source: <https://climatetracker.org/deforestation-india-climate-rainforest/>

<sup>25</sup> Source: <https://www.globalforestwatch.org/>

<sup>26</sup> Source: <https://fsi.nic.in/isfr2017/assam-isfr-2017.pdf>

supported clearance of the unclassified forest into tea gardens and conversion of *jhum* lands to palm oil cultivation are adding to the depletion of the forest especially in northeast India (Dhar, 2021).<sup>27</sup>In recent years, the two hill districts of Assam, namely, Karbi Anglong and Dima Hasao, which have the maximum percentage of forest cover are rapidly losing their forest cover as reported by Global Forest Watch<sup>28</sup>. While the Indian State of Forest Report 2019, stated that the forest cover in Assam has increased by 222 sq. km. as compared to the previous assessment report of 2017 (Samom, 2020)<sup>29</sup>. Baidya and others stated that the reason behind the increase in dense forest cover in the year 2018 is mainly due to the increase in rubber plantations. The local people are shifting their dependency to such plantations compared to traditional *jhum* cultivation as the rubber cultivations yield higher income (Baidya, Thakur, Malunguja & Devi, 2020). Apart from increasing rubber plantation, there is a surge of another cash crop production i.e. broom grass plantation and the Karbi Anglong district of Assam holds the tag of being the largest producer of it (Kakati, 2017, cited in Baidya, Thakur, Malunguja & Devi, 2020). Upholding the conservationist outlook, this institution, *Daikho* provides a sustainable and community-driven alternative to protect the depleting forest cover. Furthermore, the traditional beliefs surrounding the forest cover provide one among many ways to help maintain and restore forest ecosystems in the region (Sanga & Haulle, 2022).

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<sup>27</sup> Source: <https://climatetracker.org/deforestation-india-climate-rainforest/>

<sup>28</sup> Global Forest Watch is an online repository of data on forests all over the world and this open-source web application monitors on illegal deforestation of forests in real-time (Source: <https://www.globalforestwatch.org>)

<sup>29</sup> Source: <https://www.hindustantimes.com/india-news/forest-cover-in-northeastern-states-decrease-says-government-report/story-KMnTVeizRFRqZD7sIgWxsN.html>

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