



Sacred groves and biodiversity: *The Traditional Ecological Knowledge and the conservation of biodiversity in Tawang.*

Ranju Panging,

Faculty

Department of History,

Dorjee Khandu Government College, Tawang, Arunachal Pradesh.

Abstract: This study has been done to understand the role of sacred groves in the conservation of biodiversity in the region Tawang, Arunachal Pradesh. The customary beliefs and indigenous practices among the Monpa community have resulted in not only nurturing the traditional knowledge system of the community but it has also aid in the conservation of the indigenous plants in the region.

INTRODUCTION

BIO- Derived from the Greek term 'bios', signifying 'life', while diversity denotes the characteristic or condition of possessing diverse form of types. Biodiversity is all the different kinds of life one will find in an area—the variety of animals, plants, fungi, and even microorganisms like bacteria that make up our natural world. Therefore it is a term used to describe the diversity of life on earth. Each of these species and organisms work together in ecosystems, like an intricate web, to maintain balance and support life. Everything in nature that we require for survival, including food, clean water, medicine and shelter is supported by biodiversity. Therefore, greater the biodiversity, the more secure life will be on earth. Greater biodiversity often leads to increased ecosystem stability and resilience. When a variety of species exist within an ecosystem, they provide a buffer against environmental changes, diseases, and other disturbances. This diversity ensures that if one species is negatively affected, others can compensate for the loss, maintaining the function of the ecosystem. Essentially, ecosystems with higher biodiversity tend to be more adaptable and resistant to disruptions, whether they are natural or human-induced. From microorganisms that improve the soil in which we grow our crops to pollinators that provide us with fruits, nuts, fish and meat-which provide about a billion people with animal protein to medicines derived from plants and fungi, biodiversity supports and safeguards us as well.

Why there is the need for conservation?

Biodiversity conservation is crucial for several reasons:

- 1. Ecosystem Stability:** Biodiversity helps maintain ecosystem functions like nutrient cycling, water purification, and pollination. A diverse range of species ensures that ecosystems remain resilient to environmental changes.
- 2. Human Well-being:** Many of the resources humans rely on, such as food, medicine, and clean air, come from diverse ecosystems. Biodiversity provides raw materials for industries, agriculture, and medicinal research.
- 3. Climate Regulation:** Diverse ecosystems like forests and wetlands play a key role in regulating the climate by storing carbon and mitigating the impacts of climate change.
- 4. Cultural and Aesthetic Value:** Biodiversity contributes to cultural identity and recreational activities. Nature has intrinsic value that enhances mental well-being and quality of life.

5. Prevention of Extinction: By conserving biodiversity, we prevent the extinction of species, some of which may have irreplaceable ecological roles or provide valuable scientific insights.

6. Economic Benefits: Healthy biodiversity supports industries like tourism, agriculture, and fisheries, which depend on stable ecosystems. Loss of biodiversity can lead to the collapse of these industries.

Biodiversity is supporting us not only by bringing food on our plate but also by providing us the basic material needs and support to shield ourselves from the natural forces. But due to the growing demand and needs of people, for the desire to be met both monetary and for sustenance, we are indiscriminately exploiting the Mother Earth. Manmade pollution deforestation, overconsumption, poaching, and invasive lifestyles are all contributing factors that have created a domino effect of soon-to-be irreversible changes. Human activity has altered 75 percent of the earth's surface squeezing plant and animal life into ever smaller corners of the Earth. We are at risk, upsetting the balance of ecosystems and losing biodiversity. *WWF's 2024 Living Planet Report found an average 73% decline in global populations of mammals, fish, birds, reptiles, and amphibians since 1970. The 2019 landmark Global Assessment Report by the Intergovernmental Platform on Biodiversity and Ecosystem Services reported 1 million animal and plant species are now threatened with extinction—the highest number in human history.* Three-quarters of the land-based environment and roughly 66% of the ocean environment have been significantly altered. Climate change worsens the impact of other stressors on nature and our well-being. Humans have overfished the oceans, cleared forests, polluted our water sources, and created a climate crisis. These actions are impacting biodiversity around the world, from the most remote locales to our own backyards. We have to STOP DAMAGE and START THE REPAIR. We need to reduce our carbon emission and draw then existing carbon out of the atmosphere. In addition to it, one must find ways to use land and water as such that it cause the least damage to the environment, leaving enough space for the natural habitats to thrive. FORESTS help in capturing the carbon from atmosphere and trapping those carbons beneath the surface. While one must be careful that the restoration doesn't start with just plantation of trees, the mono culture can ultimately damage the ecosystem; first one has to start with plantation according to the ecology and the environment. Restoration will work right if it is done right. Trees are the symbol for entire ecosystem restoration..

INDIA and BIODIVERSITY: - In India, biodiversity outside protected areas is rich because of the close relationships between religious, socio-cultural beliefs and conservation. Rapid decline in biological diversity is one of the critical challenges of the 21st century. There are many practical reasons for conserving biodiversity, not to mention benefits related to food, medicine, and other materials as well as the environmental services supplied by natural ecosystems. However, the driving force behind biodiversity conservation remains and will primarily remain ethical. According to surveys, most people believe that we have an obligation to avoid the extinction of species and the destruction of ecosystems caused by our own actions (WWF, 2005). A symbiotic relationship exists between biological and cultural diversity. This relationship is an important factor for ensuring sustainable human development. Nature provides light, air, food, and water through living process of creative renewal. This awareness of life in nature as a precondition for human survival led to the worship of light, air, food, and water. Indian culture evolved in the forest, first during the Vedic period and later during the times of Buddha and Mahavira. Religious beliefs and rituals (invariable parts of the cultural milieu) are very much inter-linked and intimately related to the management of ecosystems. Religion aids the conservation of natural biodiversity in several different ways. The first is by providing ethical and social models for living respectfully with nature. For most cultures, religion is a primary means of judging right and wrong. Despite certain differences, nature is included in the religious code of morality and etiquette in all religions. These ethical beliefs and religious values influence our behavior towards other, including our relationship with all creatures and plant life. Forests in India remain central to its civilization evolution. In India, 'Aranya Sanskriti' or a forest culture evolved during the ancient times as education was primarily given in the forest called 'ashramas'. In the Rig Veda, forests are described as Aranyani or mother goddess, who ensures the availability of food to humankind and takes care of wildlife. Ancient test, ATHARVAVEDA hymns shed light on environmental protection. The 63-verse hymn Bhumisukta or Prithivisukta explains the earth and human obligations to preserve it. One of the first manifestations of environmental consciousness is often cited in the Bhumisukta. It calls upon people to have a balanced relationship with nature and to treat Earth with respect. The hymn emphasizes the preservation of natural resources; land, water, and plants, for the benefit of future generations, emphasizing their sanctity. Its reverence and the sanctity of being the mother who nurtures all beings were closely associated-with the idea of conservation. This deification of nature; for example, Earth as Prithvi, mother-goddess commenced. Similarly, forest land is also considered sanctity considering a deity or oracle residing and guarding the forest giving it a divine nature. Socio-cultural development evolved with the interaction of mankind and nature. Environmentally friendly habits arose as a result of this interaction and the reciprocation of nature's kindness. One notable innovation was the ceremonial daily food offerings made to animals, birds, and other living things in an effort to return nature's kindness. This practice of veneration is being done in the Hindu household sacrificial tradition of BHUTAYAJNA.

Indigenous communities and group also exercised similar practices in their day-to-day lives. Some researchers believe that there may be as many sacred sites as protected areas (WWF, 2005). Sacred sites are probably the oldest method of habitat protection on the planet and still form a large and mainly unrecognized network of sanctuaries around the world. However; many of them are threatened due to fragmentation, habitat degradation, infrastructure development, disputes over land, and a general lack of respect for their intangible value (Khumbongmayum et al., 2004). The combined effects of such activities have led to the degradation of areas that have been held sacred by particular cultures for hundreds or even thousands of years. Links between sacred land (and water) and conservation are not confined to minority faiths, as they exist virtually in all faiths around the world. The mainstream faiths, with many millions of followers, have a huge influence on the way in which we view and interact with the natural world. This influence is reflected in large part by shaping people's philosophy and ethics. However, this is linked to the ownership of land, investment, and political and social factor. The practice of biodiversity conservation is deeply rooted in science along with the associated secular and materialistic worldview. This can pose a threat to sacred spaces, if spiritual, cultural, and religious values are not included in the planning stage of conservation management. Although protecting a sacred site officially or through legislation prevents its traditional use, it is likely to cause a cultural split and indignation by degrading the well preserved sacred nature **India has protected nature by giving it sanctity.** The Traditional Knowledge System has added to the conservation of the biodiversity.

Sacred Groves: Sacred implies some extra ordinary attributes which stimulates feelings of power, mystery, awe, transcendence, peace and healing. Hence Sacred Groves (SG) refers to the land and bodies that have a special spiritual significance to people and communities. It includes individual trees, forests, rivers, waterfalls, meadows, wildlife, caves, lakes and hills. SGs are certain areas of forests or natural vegetation that are dedicated to local folk deities or ancestral and tree spirits. These are the forest patches of varying sizes protected by local communities, and which typically have a noteworthy religious connotation for safeguarding the community. (Hughes and Chandran, 1998), defined SGs as “segments of land, containing vegetation, life forms and geographical features, delimited and protected by human societies under the belief that to keep them in a relatively undisturbed state is an expression of an important relationship of humans with the divine or with nature”. The SGs differ greatly in size; some may comprise only a few plants with smaller land area, while others may have size of hundreds of acres. In India the SGs have been in existence since time immemorial and at present are being considered to be the relics of the original forest vegetation in the region. In India, SGs have been recorded from North-east Himalayan region, Western and Eastern Ghats, Coastal regions, Central Indian Plateau and Western desert, Vegetation in the SGs is supposed to be under the protection of the ruling deity of that particular grove, and the collection or use of plant resources or even a small twig is a taboo (Vartak and Gadgil, 1973). In other words, SGs can be considered as the *in-situ* conservation practice of the local communities as it is their traditional ecological heritage, which includes and conserves the diverse species in their natural habitat. These sacred groves are also considered as a rich and vibrant source of ecological, holistic treatments for illnesses, social in terms of reservoir for endemic and threatened species of plants and Sacred Groves may provide emergency foods during periods of drought, crop failure, and food crisis. (Asokan *et al*, 2015) However, local people perceive relationship with SGs in different ways, and follow various rules of conduct (taboos) with respect to the sacred space and its components. SGs hold strong, cultural and religious importance to local people are increasingly recognized as a traditional form of community based convention. Although SGs were not primarily created for biodiversity conservation but they are often the only remaining patches of natural or semi natural habitats in several landscapes. The concept behind the SGs as said was started with the shifting cultivation when settlement started and certain patches were left as the personification of what was and this lead to the conservation of the certain patch in its original vegetation. Contemporary, SGs are literally translated as trees being holy, blessed and sacred. **Holy;** as where the whole of the tree is worshipped. **BLESSED;** as an abode of angel or a deity who protects it and is revered due to the religious dedication of people who worship it with an intention to please the deity within. **SACRED;** subjected to practical manifestation of worship, adoration and profound veneration to honor a deity or to please any ghostly creature, to remind present generation of the ancestors or to protect a sanctified place from will full damage and exploitation. The term Sacred is strongly upheld by reverence or fear.

Sacred Groves has its own characteristic; it's an abode of supernatural power where the deities which are abstract from nature are believed to permeate throughout the entire groves. It can be multi tiered virgin forest or a set of trees or even one single tree. They are basically well delineated and are sustained in anthropogenic undisturbed conditions not merging with the physically architecture plantation and hence are the original vegetation. SGs also depict the intrinsic, spiritual perception, memories and values which local people attach to them and the entire grove for which they are enshrined in the natural environment. Therefore associated taboos are there when hampered its original state or if disturbed the ecology - plucking or even picking up dead wood and fallen leaves is considered as taboo. With these precincts, SGs are impermeable to even the slightest human interference, fearing it may disturb the gods and spirit and attract retribution. There is the communal sanctity and ceremonial procedures specific to the clan.

TAWANG: Tawang is a town and the administrative centre of Tawang district in the Indian state of Arunachal Pradesh, which is tucked away along the Indo-Chinese border. It is located about 16 km south of the Line of Actual Control with China, to the north of the Tawang Chu river valley and about about 3,048 meters (10,000 ft) northwest of the state capital, 448 km away. The name Tawang has a legend surrounding its name, *Ta* means “horse” and *wang* means “chosen”. So, the word Tawang means “chosen by horse” and according to legend, the horse of Merak Lama Lodre Gyamtso who founded the monastery in 1681 at the request of His Holiness the 5th Dalai Lama, Ngawang Lobsang Gyatso, selected the present-day site for the Tawang Monastery, also known as Ganden Namgyal Lhatse Monastery.

Tawang is inhabited by the Monpa people, an indigenous community. Their culture is highly influence by the Tibetans and Buddhist way of life. Tawang Monastery serves as the foundation of the Monpa community’s identity, and Buddhism is the predominant religion among them. Through their religious pursuits, the Monpa people have also developed their own indigenous customs that have been passed down from generation to generation. Their belief in the sanctity of the forest, bamboo groves, lakes, mountains, stones and even shrubs has led to the protection and preservation of the area from human activity. Thus, the abode of Sacred Groves is the consequence of this indigenous group’s tradition in Arunachal Pradesh.

Some of the SGs are designated Gompa Forest Areas (GFA) and are tended by Lamas (monks) and the Monpa tribe, and are affiliated with Buddhist monasteries. These monasteries are primarily located in the districts of Tawang and West Kameng district. Arunachal Pradesh has a total of 110 holy groves and 58 GFA reported from these two districts. There are 36 GFA in Tawang as per the CPREEC-EIACP Programme Centre, Resource Partner on Ecological Heritage and Sacred Sites of India, however the numbers are more as many of the SGs are not recorded and documented.

<i>Sl.no</i>	<i>Name of Sacred Groves</i>	<i>Location</i>
1	Regyelling Gompa Forest	Tawang
2	Nehru Gompa Forest	Nehru Colony
3	Changbu Gompa Forest	Changbu village
4	Youngmang Sacred Forest	Changbu village
5	Yang Sacred Groves	Changbu village
6	Parnkhats New Lebranf Gompa Forest	New Lebrang Basti
7	Yidgachoszin Gompa Forest	Lebrang Basti
8	Lebrang Gompa Forest	Lebrang
9	Ganden Namgyal Lhatse Gompa forest	Shyo Basti
10	Shevo sacred forest	Shyo Basti
11	Khinmey Village	Khinmey Gompa forest
12	Kakaling Gompa forest	Tawang
13	Khartung Gompa forest	Khrimu Village
14	Khrimu sacred forest	Khrimu Village
15	Namet sacred forest	Namet Basti
16	Singsur Ani Gompa forest	Namet Basti
17	Sharmang Gompa forest	Namet Basti
18	Thespa Gompa forest	Namet Basti
19	Thongmeen Gompa forest	Khrimu Village
20	Brakar Gompa forest	Lhou Village
21	Arkidung Gompa forest	Lhou Village
22	Sangdok Palri Gompa forest	Sangdok Palri Basti
23	Dungarmani Gompa forest	Namazing Basti
24	Dungarmani Gumpa forest	New Kharsa Basti
25	Jung Zero Point Gompa forest	Jung Zero Point
26	Khartung Basti Dudstang forest	Khartung Basti
27	Kulangaus Basti Dudstang forest	Kulangaus Basti
28	Namazing Basti Dudstang forest	Namazing Basti
29	Kharsa Basti Dudstang forest	Kharsa Basti
30	New Kharsa Basti Dudstang forest	New Kharsa

31	Khraling Basti Dudstang Forest	Khraling Basti
32	Jung Bara Basti Dudstang forest	Jung Bara Basti
33	Nuranang Dudstang Forest	Jung Bara Basti
34	Jung Bara Basti Pharmang Forest	Jung Bara Basti
35	Kharsa Basti Pharmang Forest	Kharsa Basti
36	Khartang Pharmang Forest	Khartang Basti

The Gopa Forest Area functioned as a conserving body of nature because it prohibits unlawful tree-cutting and wildlife hunting. The GFA as the name indicates is the forested lands which are given the designation to cease any illegal felling of trees. Talking to two respective Lamas hailing from Changprong village and Seru Village, Tawang, they reaffirmed that the reasons behind the plantation of the trees and given the GFA classification was to preserve them and prevent any unlawful destruction by giving them a sacred meaning.

In addition to the GFA, there is the *Mountain Forest Area*, known locally as “*Phu*”. The *Phu* has spiritual importance and is devoted to a specific supreme being, who is believed to have authority and control over the inhabitants of the area, flora and wildlife, vegetation, climate, and environment. In local beliefs, *Phu* is associated to Mountain God. *Phu* range in size from a few hectares to several kilometers; because they are larger than the GFA, a higher degree of biodiversity is preserved with less impact on the flora and animals. Important medicinal plants and species were found in some *Phu*. Therefore *Phu* is crucial for the ecology's and the species preservation. Tawang is home to 13 *Phu*, each of which is associated with each individual being based on the area and place they are born. The number of the *Phu* varied since many are not being officially documented yet.

<i>Sl.no</i>	<i>Name of the Phu</i>	<i>Name of controlling Village</i>
1	Geshe-Phu	Kharsanang region (Batung, khordhung, Kitpi, soma etc)
2	Ningmae Phu	Tawang region (Lebrang, Shyo,Tsangpu, Urgelling, etc)
3	Sho-wang Phu	Gyamdong
4	Tsoi-Phu	Lumla, Kharteng
5	Dung-Phu	Bongleng
6	Got-Phu (JaGoi)	Khet
7	Khan-Phu	Sharho, shungfa
8	Langai-punsum Phu	Gomkeleng, Mirba
9	Maanma Drema Phu	Gongkhar
10	Ongmae Phu	Lhou
11	Puphu Phu	Jang
12	Serghar Phu	Shurbi
13	Tsong-Tsong la Phu	Kharung.

Source: <http://www.ncbi.org.in/>

The indigenous beliefs of the Monpa people are the foundation of the *Phu* idea. *Phu* is neither associated with a deity nor with the oracle or a living entity. It is said to have its own distinct supernatural power, locally known as ‘*Dakpa*’ and are found to reside in areas with lush green forest, mountains, bamboo groves where they have taken the residence and is regarded as the guardian of the area. Prostration is not practiced. *Phu* are remarked to be treated as friend, our companion whom we can ask for help in need or as to accompany us in our life to help us overcome any obstacles and for our good will. The person born in their respective village can ask the *Phu* of their respective area for guidance and aid, thus each individual has different association or can have same *Phu* depending on the place they are born. The area where the *Phu* resides has to be treated with great respect by venerating the tress, animal species and plants accommodating the area. Polluting the area and illegal encroachment of the land, felling of tress or any ill means will be treated with severity; there can be health deterioration or bad omens, locally known as “*Noipa/ Nepa*”. No specific offerings are being associated, however one can offer *Serkim* (local offering of raw rice mixed with grains along with tea/juice/local wine) and *Sur*; incense to *Phu*.

Both GFA and *Phu* are the ecological heritage of the Monpa tribe. Apart from its social cultural importance, SGs also play a crucial role in *conserving biodiversity, and their importance is multifaceted:*

1. *Preservation of Endangered and rare Species*: These sacred forests offer refuge to endangered, uncommon, and distinguished plant and animal species. These places serve as havens for species that could otherwise be endangered by urbanization or deforestation since they are frequently preserved because of cultural beliefs.

2. *Ecosystem Services*: By preserving essential ecological processes like carbon sequestration, soil conservation, and water management, sacred groves support the stability of ecosystems, which guarantees that essential services won't be interrupted.

3. *Traditional Knowledge*: Local understanding of the sustainable use of natural resources is frequently connected to the preservation of SGs. The local biodiversity and traditional conservation methods are often well-understood by the communities surrounding SG, which helps support ecological equilibrium.

4. *Cultural and Spiritual Value*: Because sacred groves are sites of spiritual value, the community is strongly motivated to conserve and safeguard them. A sense of stewardship can be promoted and human-induced pressures like over harvesting, cutting down of trees and land conversion can be lessened by this relationship between culture and nature.

5. *Preservation of Genetic Diversity*: By safeguarding a diverse range of plant species, sacred groves help to maintain genetic diversity. This is essential to preserving robust ecosystems and guaranteeing that species are able to adjust to shifting environmental circumstances.

6. *Promoting Sustainable Practices*: In order to keep sacred groves and their environment from degrading, many communities around them employ sustainable agriculture methods, such as limited grazing or the use of few chemicals. These actions support biodiversity preservation and general environmental health.

7. *Gene pooling*: Endemic plants are protected in their original habitat which serves as the gene for the protection and preservation of the indigenous plant species and for future ecological and scientific development.

CHALLENGES

1. *Changes in the people's Attitude and Perception* - With modernization came along the new ideology and reasoning. The oral traditional practices and beliefs of people are changing with the change in their outlook, science and the growing economic needs are making the community to discard their traditional practices and to exploit the sacred groves.

2. *Erosion of religious beliefs and traditional values* - Traditional ways of resource management are becoming non functional due to direct conflict between ever increasing human population and limited natural resources. Cultural changes in the young generation are so rapid that they no longer believe in the methods their ancestor followed. This is a global tragedy "with the disappearance of each indigenous group, the world loses an accumulated wealth of millennia of human experience and adaption (Posey 1983)

3. *Increasing population pressure*- The people living nearby the sacred groves are dependent upon it for the resources. Many are poor and so they depend upon the grove to meet their vital domestic necessities such as fuel wood, vegetables, medicinal plants etc.

Conclusion

With its spiritual connotation and significance, SGs are an essential aspect of the indigenous community's socio-cultural existence. Apart from its cultural significance, sacred groves contribute to the preservation of the forest's wildlife and plants. Additionally, sacred groves can serve as models for community-based animal and forest protection, moving towards a sustainable strategy. We can turn into the foresight of our ancestors about the preservation of ecology and environment or else it will not take long for our beautiful land to become a desert. World's limited resources are undergoing certain changes due to man's tendency to exploit them to meet his ever expanding necessities and if proper measures are not taken to stabilize human population, the ecological balance will be lost.

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