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Traditional Knowledge System and Biodiversity Conservation in Uttarakhand

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Abstract

The Indian Knowledge System contains a wealth of traditional knowledge which held by local communities across India. This study was focused on traditional ecological knowledge of Uttarakhand, which includes sacred natural sites (sacred groves, forest, pastures, and water bodies), dedicating forest to deity, cultural practices, and festivals, etc. Traditional Knowledge plays a vital role in biodiversity conservation in the Himalayan ecosystem. It includes a profound understanding of plants and animals, medicine, and sustainable practices for conserving and managing the natural resources and their ecosystem. The study concludes that the association of tradition with environment is inherited in the mountain communities of Uttarakhand. Also, one cannot think about biodiversity conservation and sustainability in the mountain ecosystem without traditional knowledge.

***Keywords*:** Biodiversity, Conservation, Ecosystem, Sacred Groves, Sustainable

Introduction

Uttarakhand is rich in biodiversity in terms of diverse flora and fauna. The unique geography and climatic conditions are suitable for rich biodiversity. In India, especially in Uttarakhand, the biodiversity outside the protected areas is rich due to religious and socio-cultural beliefs. There are countless reasons for preserving biodiversity, i.e., food, air, medicine, water, etc, but the primary reason remains always ethical. Last two decades, Uttarakhand has been facing overexploiting due to extreme anthropogenic pressure (Negi and Lakhera, 2017), which will lead to a rapid decline of biodiversity. Traditional societies are characterized by their close interconnection with nature and its resources. Religious beliefs, taboo and rituals are characteristic part of local communities and greatly interwoven to the management of the biodiversity in Uttarakhand (Negi 2005, 2010). There are numerous indigenous groups residing in the Uttarakhand Himalayas and their traditional knowledge support a symbiotic relationship between nature and resources. This provides awareness that nature is important for human survival, so indigenous people worship light, air, food, water (Jasmine et al, 2016). Traditional Knowledge ensuring the conservation and sustainable use of biodiversity (Gadgil et al, 1993). This knowledge is grown and passed from generation to generation in the form of cultural values, rituals, traditional laws, agricultural practices, stories, and songs, for the benefit of the communities.

Traditional knowledge is adapted to a local culture and environment and plays a significant role in the daily lives of the majority of people nationally as well as globally, and is considered to be an essential part of cultural identities (Berkes 1999; Gadgil et al 1993). These traditional communities and indigenous peoples have a deep understanding of their surroundings and its ecosystem and forming an important base for the conservation and for sustainable use of global biodiversity, closely interlinked to cultural and biological diversity (Berkes 1999). This paper will highlight traditional knowledge used

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by local communities to conserve as well as their linkages to ecosystems and related belief systems in Uttarakhand.

Traditional Knowledge and Environmental Conservation in Uttarakhand

Most of the local communities depend upon natural resources and biodiversity for their livelihood. The sustainable use of ecological resources depends upon the human-nature relationship (Gadgil et al, 1993). The people of different communities around the world share different tradition and ethics along with their practices. Communities' relationship with nature is not uniform; it is shaped by day-to-day interaction and ethics (Parween & Marchant, 2022). There are various examples of local technologies, knowledge, and traditional wisdom to tell the stories of survival and sustainability of mountainous communities in Uttarakhand against extreme conditions described in detail below.

Traditional Agricultural Practices in Uttarakhand

In response to harsh agro climatic conditions and unique geography, terrace farming is performed in the Himalayan region (Figure 1). This technique was the only feasible method of cultivation in the sloppy areas of mountain topography. Terrace farming is also useful to check the soil erosion in sloppy hills. In the Himalayan region, farmers are endowed with unique farming skills. Their cultivated practice is called Baranaza, it is mixture of twelve grains and pulses, sown and harvested concurrently in one crop field (Juyal and Sati 2010).

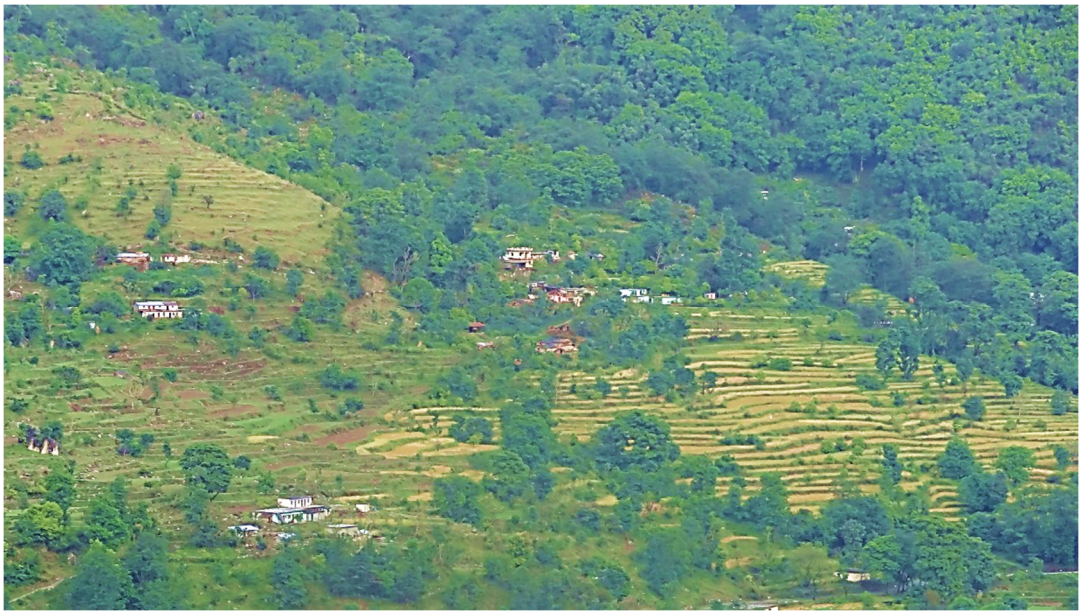


Figure 1. Terrace farming in Garhwal region of Uttarakhand

Seed Protection and Conservation in Uttarakhand

For seed storage in Uttarakhand, Storage bins have been used by local communities for ages. The bins that are made from wooden splinters are known as Bhaker and made up of ningal are called Topare (Juyal and Sati 2010). The local communities used different plant materials for seed storage and protection. They use Peach leaves, Timur leaves, Lemon leaves, Bakayan leaves, Walnut leaves, cow dung, cow urine, and Mustard oil as a repellent for pulses and cereals protection from insect pests. These methods are the oldest indigenous practice for grain protection in the Garhwal region (Juyal and Sati 2010).

Sacred grooves and Forest Conservation: Forest plays an essential part in the existence of the mountain community. Forest provides fuel, fodder, medicines, and many other edible products. The local

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community deeply understands the direct and indirect benefits offered by the forest ecosystem. In Uttarakhand forest was consciously protected since ancient times through various community-level regulations. Many forests were named after gods and goddesses in order to ensure protection. In different parts of India, several communities practice different forms of worship of nature.

In Uttarakhand, forests are connected to myth, legend, and folklore. Most local communities closely tied with forests tend to regard them with a strong respect, and sometimes feel powerful spirits (Negi 2010). Forests have been the lifeline for tribal and other forest-dwelling communities. To protect this natural resource, people began to use the concept of sacred groves. Historically, when human society was in a primitive stage linked to the sacred groove (Khumbongmayum et al., 2004). Sacred groves are one of the first instances of traditional conservation. Sacred groves are small forest patches with trees, climbers, herbs, and shrubs. These forest patches are small and scattered and share common features, i.e. dedicated to a local deity (Anthwal et al. 2010). Therefore, sacred forest can be defined as any forest patch that is considered precious and protected by the local community for spiritual and religious beliefs (Khumbongmayum et al., 2004). In Uttarakhand, many landscapes are rich in biodiversity, and due to association with a deity, the exploitation of any natural resource is strictly prohibited. So, these sacred groves become vital reservoirs of biodiversity, which include specific species of animals, insects, and plants play an important role in the protection of particular ecosystems by local people. These sacred groves are similar to modern-day conservation strategies like biosphere reserves and national parks. Some scared groves examples are given below (Table 1).

Table 1. Some Sacred groves and their associated deity in Uttarakhand

Place	Name of Groove	Dedicated deity
Pauri Garhwal	Danda Nagraja	Lord Vishnu
	Binsar,	Lord Shiva
	Tarkeshwar	Lord Shiva
	Kiunkaleshwar	Lord Shiva
	Kot	Lord Shiva
	Paabo	Lord Shiva
	Chapdon,	Lord Shiva
	Mundeshwar	Lord Shiva
	Neelkanth Mahadev	Lord Shiva
Rudraprayag	Tungnath	Lord Shiva
	Madhmaheshwar	Lord Shiva
	Kalimath	Goddess Durga
	Hariyali Devi	Goddess Durga
Dehradun	Hanol	Mahasu Devta
	Tapkeshwar,	Lord Shiva
	Chandrabani	Goddess Durga
	Lakhamandal	Pandavas
Almora	Syahi Devi	Goddess Durga
	Chitai	Local Deity
	Golu Devta	Lord Shiva
Pithoragarh	Thal ki Dhar	Local Diety

Cultural beliefs and Biodiversity conservation

Many plant species are known to be sacred in the Himalaya and used in many rituals and offerings to gods, such as Peepal (*Ficus religiosa*), Tulsi (*Ocimum sanctum*), Doob (*Cynodon dactylon*), Brahmkamal (*Sassurea obvallata*), and Mango (*Mangifera indica*) (Anthwal et al., 2006). In Many parts of India, animals are also considered sacred i.e., cow, elephant, peacock, vulture, monkey, tiger, etc. These animals are connected with the god and goddess in ancient times in old Hindus scriptures. Many plant species have

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medicinal value, they are used in ayurvedic medicines to cure diseases (Anthwal et al., 2006). In hills of Uttarakhand have a rich tradition of environmental conservation through their socio-cultural and religious interactions.

Traditional Grazing Practices: In India, many pastoral communities, where grazing is an important activity, and traditional grazing practices have evolved based on local ecological knowledge. Local communities have broad information about the optimum grazing periods, management of livestock and nutritional value of the grassland (Sati 2016). For example, the seasonal migration of livestock by the Van Gujjar community in Uttarakhand avoids overgrazing and preserves the grasslands and ecosystem.

Conclusion

The study suggested that Traditional knowledge and their practices are involved in enriching biodiversity at the landscape level. Local communities and their members are the prime stakeholders for sustainable development. The growing need for natural resources, anthropogenic pressures, and social changes have become a danger to sacred groves and mountains. Traditional knowledge and religious belief are valuable for biological conservation, especially in the Himalayan ecosystem. Empowering local communities is crucial for conserving biodiversity and cultural diversity.

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