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Review article

A review: Sacred groves and their Bryophyte studies

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Abstract: A general review on the major studies in sacred groves with respect to world and India. It also dealt with the studies on the bryophytes in sacred groves.

Keywords: Bryophytes - Sacred groves - Review.

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INTRODUCTION

Sacred groves are a unique ecosystem which comprises diversity in both flora and fauna. It acts as an Island in the anthropocentric area; it cannot be isolated from social and economic conditions. Sacred grooves are diverse due to minimal human activities because of certain reverence and fear about the God/Goddess lurk in them.

The whole concept of sacred groves is based on trust and fear; conserve the sacred groves for fulfilling the wishes of their ancestors. In the past, all activities like collecting firewood, medicinal plants, woods, etc. are forbidden but currently, some dilution is possible. The only thing that prevents local people from destruction is fear about the deity; they think that it's a sin if they are against local rules and regulations that are useful for sustaining the natural environment.

Most of the sacred groves are under the control of some trustees or non-government institutions. In some parts of the world, it is under the control of individual families, groups of families or statutory agencies for temple management (Chandrakanth *et al*. 2004). In the rural areas, it is controlled by the village head and they act as a watchdog role against violation of the rules. When they come to know any one of the residents breaks the rule regarding the sacred grove resident will get punished.

Sacred groves vary in size and can be seen as small plots with less than a hectare to larger tracts of land of several hundred hectares (Ntiamoa-Baidu 1995, Malhotra *et al*. 2007). They are a mixture of cultural and conservational value. Most often local people are concerned about the conservation strategies of the groves as part of their beliefs because people worship shrines inside the grove and protect the entire vegetation and believe that spiritual power will protect the village and people from all harm. Even though indigenous world views are malleable to do some developmental activities to new situations without compromising the culture proper communication with residents are indeed because in most cases even if sacred groves are accessible to residents, entry into the core area of the shrine is restricted and sometimes gender-based delimitation also seen.

In India names of the groves vary greatly with culture, languages, sometimes depending on the worshipped God/Goddess. In Bihar it is Sarnas (Chandrashekara & Sankar 1998); Himachal Pradesh - Dev van (Khumbongmayum *et al*. 2004); Karnataka - Devarakadu (Kalam 1996, Chandran & Hughes 1997, Chandrashekara & Sankar 1998, Chandrakanth *et al*. 2004); Kerala - Kavu (Chandran & Gadgil 1993, Chandran & Hughes 1997); in Madhya Pradesh - Dev (Chandrashekara & Sankar 1998); in Maharashtra - Deorais, Deovani, Devarai, or Devrahati (Chandrashekara & Sankar 1998, Khumbongmayum *et al*. 2004); in Manipur - Lai Umang (Khumbongmayum *et al*. 2004); in Meghalaya Khasi terms are Law Kyntang or Law Lyngdoh, Jaintia terms are Khlaw U Blei or KhlooBlai, Garo term is AsongKhosi (Jamir *et al*. 2006); in Rajasthan - Oran (Chandrashekara & Sankar 1998); in Tamil Nadu and Kerala SarpaKavu or Kavu (Chandrashekara & Sankar 1998); Uttara Kannada (northern Karnataka) as Kans (Chandran & Gadgil 1993, Chandran & Hughes 1997, Gokhale 2004).

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Many rituals are associated with sacred groves; in some cases, communities sacrifice animals and birds as gratitude for good harvest, to overcome adverse climatic conditions etc. and it is common as part of various festivals in the groves. In India various festivals are taking place according to the star; in Kerala Theyyam is a very interesting ritual associated with sacred groves. Unnikrishnan (1995) studied eco-folklore aspects of sacred groves of Northern Kerala and documented various rituals in the rural areas. People are beware of the deity within it, if taboos are broken, they believe that they will get punished in the form of the disease, natural disaster, etc. this fear make the groves safe from human activities but nowadays present generation is becoming a bane for all these traditional, conservational and cultural values of their ancestors.

In addition to the cultural value ecosystem services of the groves are remarkable, they act as a reservoir of plant wealth and thereby maintain a unique climatic condition within the groves. This helps other organisms to colonise here and a single sacred grove function as a biosphere reserve in action. It also plays a key role in maintaining the hydrological cycle of the area. So literally sacred groves can be considered as most important which acts like lungs which purify the air as well as conserve entire vegetation with cultural dimensions.

SACRED GROVES OF THE WORLD

Sacred groves are present all over the world. In Asia, America and Africa various cultural and ecological functions are reported. In European culture the Sacred forest was considered to be the site of miracles, the sources of great spiritual awakenings; and the forest itself was held to be a form of primitive church or temple. The first temples in Europe were a small growth of trees without underbrush, it is replaced with temples with wood and churches with stones and other places of worship such as pointed architecture also called gothic architecture continue to evoke the forest with their design and proportions (Schama 1995, Posey 1999, Kent 2009).

Sacred groves have been documented in Indonesia and Senegal (MAB 1995); Cote d' Ivoire (Sanogo 1983, Koagne 1986); Cameroon (Fisiy 1994); Japan, Turkey, Syria, India and Nigeria (Tiwari *et al*. 1998); and Ghana (Ntimoah-Baidu *et al*. 1992, Decher 1997); Tibetans in Yunnan, China (Allendorf *et al*. 2014); Kurdistan (Plieninger *et al.* 2020).

Ramsay & Rose-Innes (1963) doubted the groves' originality in Northern Ghana characterizing them as 'proclimax or modified subclimax'. About 2000 sacred groves are known ranging 'in size from hundreds of hectares of forest to a single tree or perhaps even some stones (Gordon 1992). Sacred groves are best studied in India. Similarly in northern Thailand, traditional taboos protect sacred groves that are under much pressure from shortages of land and fuelwood (Rathakette *et al*. 1985).

Gadgil & Vartak (1976) point out peculiar customs among the tonga tribe in West Africa in which secret rites of the cult are performed by a sisterhood of priestesses. Any man entering the grove by accident is required to join the sisterhood and to dress and live like a woman for the rest of his life. Such experiences get people down to narrating stories, folklore, songs, proverbs, adages and riddles as well as symbols and emblems which are handed down to succeeding generations as part of their cosmovisions and identity. In some countries like Africa the sacred groves are conserved by village head or tribal head. In most of the cases spiritual values of the groves are more important than ecological values. This religious-social fence influenced the value, meaning and action of locals against wanton destruction of the plant and animal wealth surrounding the sacred groves and shrine.

On the international level, organizations such as the International Union for the Conservation of Nature (IUCN) and UNESCO have created guidelines for the management of sacred sites (Wild & McLeod 2008). Also, within the IUCN, there is a Specialist Group on Cultural and Spiritual Values of Protected Areas (CSVPA) that provides input on policies relating to sacred sites (http://www.csvpa.org/). Now the sacred groves are being declared as World heritage Sites to provide additional protection through international recognition and funding opportunities (Schaaf & Rossler 2010). That may increase the tourism pressure also. It may have so many positive as well as negative effects on conservation because most sacred groves are forbidden for human interference. Ecotourism programs can be optional to these sacred sites to get more protection than local rules and regulations; also beneficial to the residents and local government as income and revenue respectively. It is also helpful in expansion of local transportation and facilities in that area. Change in culture, perspectives together with infrastructure developments leads to increased tendency to break the taboos and visitors carrying capacity, lack of proper maintenance may disrupt the harmonious living between people and nature.

SACRED GROVES IN INDIA

India is estimated to have the highest concentration of sacred forests in the world. Estimates suggest that

there might be between 1,00,000 and 1,50,000 sacred forests around the country (Malhotra *et al*. 2007). Although the majority of these groves are less than 1 ha in size and cover only 0.01% of the total geographic area of the country, it is their number and spatial distribution that make them so valuable for biodiversity conservation (Bhagwat *et al*. 2005, Bhagwat & Rutte 2006) The German forester Dietrich Brandis, first general inspector of forest, is credited with identifying the phenomenon of religiously motivated forest conservation in India with the term sacred groves. Sacred groves have survived not only the intense deforestation initiated by the British but also the surge of deforestation that accompanied independence (Kent 2009). Khan *et al.* (2008) studied in detail the importance of sacred groves and their significance in conserving biodiversity. He has listed the relationship of ecological values, religious beliefs, traditional values and causes of degradation of sacred groves and listed the number of sacred grove in each states of India.

The Indian Forest Act of 1878 (a revision of the 1865 Act) designated state-controlled forests as either reserved forests, which were surveyed and managed by the Forest Department and had restricted access, or protected forests that were unsurveyed and remained open for limited use (Pouchepadass 1993). Under the British in India, the Forest Department "nationalized and brought under its control all forested land" (Nagendra & Gokhale 2008, Ormsby 2011). Sacred groves are out of Government protection or legal status, it was controlled under local community tradition. Even after independence many policies such as the Joint Forest Management (JFM) program was created with the intention of giving responsibility for forest care to local communities (Poffenberger & McGean 1996, Kolavalli 1997, Gokhale 2004, Nagendra & Gokhale 2008). Sacred groves were not included because of their emphasis on land that is already degraded by the human. Later, on the national level, India's Forest Acts and Forest Rights Act have relevance to the sacred groves. States and even districts within states vary in terms of forest policy, some of the sacred groves are purely under community group in which any government policies are not acceptable to the group. Local rules and approaches vary with state to state, district to district in that time an inclusive policy for all sacred groves is not possible in India.

Detailed discussions about sacred groves in India are established by Mahdav Gadgil and his Professor Vartak. The ideas that sacred groves are the last refuge for plants and animals are put forward by them. According to Gadgil & Vartak (1976) sacred groves are pristine remnants. He represented them as relics in both a botanical and cultural sense. Later many works had done with the concept of sacred groves, their significance, conservational value, etc.

Chandran & Hughes (1997) mentioned that sacred groves are associated with temple-based worship and practise of honouring sacred groves started from paleolithic times.

They gave precision to this theory of decline by identifying Sanskritization as the major factor leading to the degradation of forest shrines. As locals forest-dwelling gods become identified with deities from the pan-Indian Sanskritic tradition (Vishnu, Shiva, Parvati, etc.), communities build physical temples for them in the groves. But over time, the belief once associated with conservation and worship of entire forest land is transferred to the icon of the deity, and neglects the surrounding vegetation.

As the human population grows dramatically it is evident that modernisation and multiple needs such as agricultural, infrastructure development, rising demand for firewood, woods, medicinal plants, etc. leads to the encroachment and even complete removal of forest patches which is easily accessible to people. The younger generation kept the shrine in the corner to worship or at least to pay homage only as symbolic of ancient but vanishing tradition. Modern, educated men fail to take account of ecological and climatic values of nature, not even think that undisturbed nature is the means for gigantic diversity and also act as a crucial antidote to pollution of industrialization.

In ancient times some sacred groves are conserved mainly for protecting rare and important trees or lianas. Conservation through religious concept is more pertinent to reconcile nature and human. Besides economic values of the sacred groves are very important; they serve as a source of drugs being used locally. Once the groves are destroyed this traditional knowledge also will vanish and many of these could also have unanticipated uses. Gadgil & Vartak (1976) come across a possible instance of a sacred grove of the water deities, Sati Asara, at Bombilgani (Srivard-han Taluka, Kolaba district). This grove harboured a solitary, but well grown specimen of the liana locally known as Gaydhari or succourer of the cattle (Entadaphaseo-loides, Family Mimosaceae). It was informed that the bark and leaves of this climber were used in treatment of snake bite of cattle. Since no other specimen of this liana occurred at least within a radius of forty kilometers, people from a considerable area relied upon this one specimen in the sacred grove. Floristic diversity and its medicinal use is another foremost fact about the groves. Many floristic works have been conducted and reported rare,

endangered, endemic plants from sacred groves (Gadgil & Vartak 1976, Chandrashekara & Sankar 1998, Singh *et al.* 2010, Chanda & Ramachandra 2019).

There are so many stories of sacred groves when men try to conquer or exploit the area by cutting trees, hunting without prior permission, those people killed or suffer with many incurable diseases by the curse of deity within the grove. Such stories make people dread and fear and start preserving the grove as such they exist and prevent all anthropogenic activities, not even dead wood could be removed from the grove without incurring the wrath of the gods. This belief makes them protected for several years. But, nowadays the modern people who are less aware of such beliefs and taboos, are trying to violate or have begun to weaken it. That is a main threat to the sacred groves in the present day.

BRYOPHYTES STUDIES IN SACRED GROVES

Several floristic works have been done in different sacred groves; but most of the work's emphasis on angiosperms and other higher groups. Only very limited works are associated with lower groups especially about bryophytes. First report of bryophytes of India is by Manju *et al*. (2008), by describing a new species of moss *viz*., *Fissidens kammadensis* Manju, Rajesh et Madhus. from Kammadamkavu, a sacred grove of Kasaragod district of Kerala. Singh *et al.* (2010) conducted detailed study in Haat kali sacred grove of central Himalaya and reported 42 Angiosperms, 4 Pteridophytes, 15 Bryophytes and 35 Lichens. Among these *Macromitrium rigbyanum* Dixon is reported as an endemic moss. Jyothilakshmi *et al*. (2016) have done a detailed study of VallikkattuKavu in Kozhikode district of Kerala and reported a total of 29 species of bryophytes. Among these, 10 are liverworts and 19 are mosses. Chanda & Ramachandra (2019) reported a total of 1740 plant species of all plant group from 346 sacred groves all over five zones of different parts of India of which bryophytes includes 7 families and 7 genera, mosses with 8 families and 8 genera. Neethu & Sreeja (2020) reported 18 species of bryophytes from Madayikavu and Konginichalkavu of Kannur district. Among these 8 are liverworts, 2 are hornworts and 8 are mosses. This review indicates that the studies on the bryophytes in sacred groves are very less in India and elsewhere and limited to few studies. The reporting of a curious new species from a sacred grove in Kerala proves it’s potential. Further observation and detailed investigation on bryophyte diversity of the sacred groves may prove worthy.

CONCLUSION

Sacred groves are indigenous forest patches with enormous diversity in biotic and abiotic factors and mostly found in the low altitude areas. Due to the peculiar climatic conditions almost all types of vegetation can be seen here and the microclimatic conditions provide space for all plant groups such as small bryophytes to large angiosperms. The cultural importance of the same will provide the guaranteed protection of both flora and fauna. As part of culture change and population pressure people are taking benefits of sacred groves and thereby reducing their diversity and eccentric nature and climate. Proper conservational policies under government by protecting the rights and freedom of the residents is mandatory for the future existence of sacred groves.

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