



## REVIEW ARTICLE

# The Forest of Reverence (Sacred Groves) in the Arid Biogeographic Province of India: a Literature-based Comparison with the Sacred Groves of the Arid Deserts of The World

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## Abstract

Forests preserved on religious grounds are generally called "sacred groves". In other words, sacred groves are the patches of forests or natural vegetation protected by the indigenous people through religious and cultural practices from time immemorial. These are patches of natural vegetation dedicated to certain local deities, which helps to preserve rich varieties of plants and animal population. Sacred groves are one of the heritage sites for biodiversity and also an aesthetic site for local communities. All forms of vegetation viz. trees, shrubs and climbers found in such grove are believed to be under the protection of the reigning deity of that grove and removal of even the dead wood is a taboo. These practices played a key role in the maintenance of ecological services, protection of biodiversity and conservation of soil and water. Despite their size limitations, these fragments conserve local biodiversity and offer important ecological services. Therefore, the present study aims to give the comparative analysis of the sacred groves existing on the hot desert of India and the world.

## Introduction:

From the inception, conservation of living resources has been deeply associated with nature worship. There are a number of societies that practice many forms of traditional nature worship and share a close relationship with the forests since time immemorial. Continuation of such significant traditions of nature worship has been done by providing protection to patches of forests dedicated to the divinity, ancestral spirits, and deities. These landscapes have been conserved by indigenous societies according to their unique belief systems and have proved a very effective tool towards global biodiversity conservation. This has led to the evolution of strong traditional conservation ethics by these societies over the years. Globally, there has been an increased focus on traditional natural resource management and conservation systems in recent times. There is a wide recognition that ecological prudence exhibits a symbiotic relationship between ecosystems and the social systems. The Convention on Biological Diversity (CBD), signed at the United Nations Conference on Environment and Development (UNCED) in 1992, was the first international environmental convention to develop

measures for the use and protection of traditional knowledge, related to the conservation and sustainable use of biodiversity. In Article 8, paragraph (j), The Conference of Parties have undertaken to respect, preserve and maintain traditional knowledge of Indigenous People and Local Communities (IPLCs) relevant to the conservation and community-based conservation of the natural resources has shown its wider application in the process of promoting equitable benefit sharing at local and state level and now has become the major theme of dialogue at international level. The international legal strategies and instruments have increasingly used terms such as "traditional knowledge, innovations and practices" (Buck *et al.*, 2011). The existence and status of sacred groves is one such indicator of sustainability recognized by various international initiatives as an indicator of sustainable forest management (Khan *et al.*, 2008). It has also been adopted as an indicator for sustainable forest management in the Indian initiative of Criteria and Indicator approach for assessment of sustainable forest management (ITTO, 2005).

Over the time various researchers have given varied definitions to the sacred grove according to the observation they have out of their work. Hughes & Chandran (1998)

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have defined sacred grove as “ segments of a landscape containing vegetation, other forms of life and geographical features that are delimited and protected by human societies under the belief to keep them in a relatively undisturbed state as an expression of an important relationship of humans with the divine”.

“The sacred groves are pockets of more or less climax vegetation preserved on religious grounds, often in remote areas. Scattered throughout India, these patches of vegetation are dedicated to the Gods or other deities, ancestral spirits and mythological evidence are revered by local inhabitants as the deity's sacred territory” (Gadgil & Vartak, 1981; Chandrashekara *et al.*, 1998; Malhotra *et al.*, 2001). All forms of vegetation including shrubs, trees, and climbers are believed to be protected of the reigning deity of that grove. Even the removal of dead parts of trees may be a taboo in some cases (Vartak, 1996).

### Worldwide status of sacred groves:

There are shreds of evidence about the existence of sacred groves in many parts of the world among people with different religions and forms of social and economic organization (Hughes & Chandran, 1998). The sacred groves have been reported significantly from the regions wherever indigenous societies existed. Traditionally, nature worship is predominant in many societies of the world (Hughes, 1976; McNeely, 2005; Daniels *et al.*, 1995; Bhattacharya *et al.*, 2004). In Africa, sacred groves exist widely in almost every sub-Saharan section of the continent. There people may not axe any tree, break no branch, gather no firewood, burn no grass or harm wild animals. In West Africa as well, the area considered as sacred has been instrumental in the conservation of these botanically rich groves from degradation (Parrotta *et al.*, 2009; Lebbie & Guries, 1995). In some cases, like Ghana, there have been efforts at the policy level towards recognition of the socio-cultural and religious importance of sacred groves (Decher, 1997). There are many sacred groves associated with villages in the nations of Africa, such as Zimbabwe, Egypt and South Africa. In Asia also there are a few convincing shreds of evidence of widespread sacred groves (Agarwal, 2016). In Japan, Shinto shrines are as a rule surrounded by trees and often by extensive thick forests including sacred trees (Hosoi, 1976; Toshio *et al.*, 1981). Many Buddhist temples and monasteries in Japan, China, Korea, and Southeast Asia have carefully tended gardens, including trees that have the aspect of sacred groves (Zhuang *et al.*, 1997). Europe had thousands of groves in ancient times, although most of them have disappeared. There, as elsewhere, groves were originally associated with nature worship (Deeds, 1935). The sacred groves are also reported from Central Australia, where the Dieri tribe regard certain trees as sacred and they take care to see they are not harmed (Vartak, 1996).

### Status of sacred groves in India:

India is a vast country with rich biodiversity due to varied physiographic and climatic regimes. It is one of 12 mega-diversity countries in the world and encompasses a wide spectrum of habitats, viz. tropical rainforests to alpine vegetation and coastal wetlands to desert scrubs occupying 2.5% of the world's land area and 1.8% of the global forest area (Myers *et al.*, 2000). India has a very rich cultural heritage of conservation of nature and natural resources. This is the land of worship of trees, and other life forms as a symbol of productivity and prosperity. Nowhere else in the world, perhaps, the cultural integration is so incorporated with the management and conservation of natural resources; in other words, combining a wise perception of preserving while our basic survival depends on these resources. The rich biological heritage in India must have helped to simultaneously have the rich culture and traditions for its conservation as such conservational ethos is common to people of diverse cultural and linguistic diversity. The eco-centric view of traditional societies is widely reflected in their attitudes towards plants, animals, water and the earth. One of the first documentation of the sacred groves was done by the first inspector general of forests, (Brandis, 1897). There have been many attempts since then towards the study of spatial distribution and number of sacred groves in India. Gadgil & Vartak (1976), recorded four important regions for extant sacred groves in India, namely Khasi and Jaintia Hills of the Meghalaya, the Western Ghats, Aravalli Hills of Rajasthan and Sarguja, and Bastar areas of Chhattisgarh.

### Earlier records:

Many studies have been done in the past on the sacred groves around the world. Hence, for the benefit of the readers, we have consider only the major aspects of the sacred groves and have discussed ahead:

**Conceptual and historical context relating to sacred groves:** Anthwal *et al.* (2006) have cross referred the work of the Brandis & Grant, (1868) who were initiated the work on sacred groves in terms their occurrence and available floral and faunal characteristics in brief. They described the sacred groves of Rajputana and Kans (woodlands) of Mysore, the Garo and Khasi hills of Meghalaya, India . Taking the help of two sacred groves from Maharashtra, Gadgil & Vartak (1976) have illustrated the extant of four sacred groves in the state and also have discussed the immediate need of conservation of these virgin tracts of forest. Malhotra *et al.* (2001) have published the annotated bibliography of the published works on sacred groves in India, in which the authors have given references of 146 published works on sacred groves of Indian origin.

**Anthropogenic, socio-cultural extent of sacred groves:** Hiron *et al.* (2016) have explained the services provided by the forest (ecosystem services) and have discussed how

## REVIEW ARTICLE

these forests of reverence contribute towards maintaining the ecological balance thereby increasing the cultural extent of the sacred groves. Cultural Ecosystem Services (CES) which is usually defined as tangible and non-metric goods and services provided by the forests have been neglected by the researchers and policymakers as compared to the other ecosystem services as defined by Millenium Ecosystem Assessment (MEA, 2005). Researchers with the medium of this research have quoted that these sacred groves play a crucial role in maintaining a cordial relationship between Man and Nature. They also are potent of helping the decision makers to entrench the mode of decision making by providing them with shreds of evidence and outcomes of human and nature inter-relation. This further helps them to legitimize the importance of cultural ecosystem services which otherwise gets undermined.

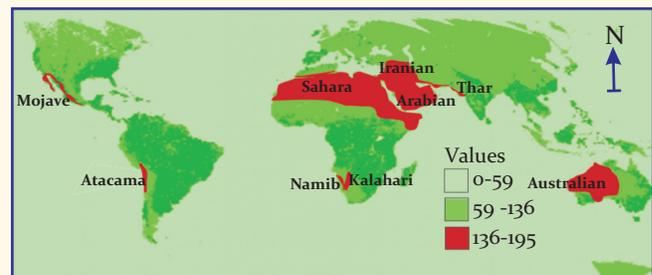
**Management, conservation, policy and functional aspects:** About the existence of the sacred groves in Rajasthan, Pandey (1999) has revealed that the area of the sacred groves there ranges between 0.1 ha to 500 ha. This revelation has been extracted from the extrapolative work done by the researcher for 1027 recorded groves and number of villages from the state. Chandrashekara & Sankar (1998) have discussed how the management of the sacred groves impacts the vegetation structure and floral and faunal wealth of the area. Researchers have concluded that the intervention of various stakeholders towards the management of such groves creates a healthy and well sustained ecological wealth. Khanwalker (2009) has discussed the Aravalli Sacred Grove Conservation Program which has been initiated in Rajasthan as a result of community based conservation efforts and the willful intervention of the local government. Under this program the local community is being indulged in the intensive discussion with the local government about the important flora of the area for which they then start the cultivation of the unanimously selected plants on the fringes of the sacred groves and also in the backyard of their houses so as to conserve the important species and to earn their livelihood. Agnoletti (2014) has recommended the International directives dealings at the policy level, which have reinforced the trend toward cultural globalization by often overlapping the idea of nature with that of landscape, encouraging re-naturalization, particularly in the form of forest cover, and neglecting ancient landscape patterns and the long and rich cultural history that led to their creation. It is important to encourage the recognition of a different level of biodiversity, bio-cultural diversity, looking for examples of positive integration between society and environment occurring in the rural landscape.

**Ecological and biological dimensions:** while discussing the sacred groves of Karnataka, Amrithalingam (2016) has quoted that the sacred groves play a major role in

environmental protection. Right from controlling air pollution, maintaining the optimum temperature, harboring many organisms, increasing soil fertility, forming an integral part of social, religious, ecological and environmental traditions these sacred patches of the forest has helped sufficiently well to maintain a harmonious ecosystem.

## Existence and Status of the sacred groves in the hot deserts of the world:

The majority of the world's most arid areas (hot deserts) lie between 15° and 30° North or South of the equator. On the basis of the existence and conservation significance of the sacred groves, the authors have explained the sacred groves of the hot deserts of the world.



Map: Worldwide geographical distribution of the hot deserts

**Mojave Desert, Southern US:** here, Joshua National Park is considered as sacred for its resources. Joshua is a tree which is indispensable for the people to earn their livelihood. The national park covers an area nearly 800,000 acres. Despite of its good maintenance the fact remains intact that Joshua has a fragile morphology. Local people worship the tree in order to please the rain God. The National Park caters to some very unique geomorphological and aesthetic characteristics which has been a great source of increment in eco-tourism. Over the years local dwellers have deteriorated the resources of the surrounding area which greatly affected the vegetation and the trend is still continuing on the desert (Source: [www.joshuatree.org/](http://www.joshuatree.org/)).

**Atacama Desert, Chile, South America:** world's driest desert in Chile. Cultural practices are followed since the time immemorial. It has a broad spectrum of interrelated natural sacred sites. Aboriginal people worship the ancestor mountain (Tata-Mayllkus) with the precious water; they share a relationship with the earth. This water is impregnated and made into a fecund (Friedberg, 1999).

**Namib Desert, South/Western coast of Africa, Namibia:** the 936 properties on the World Heritage List in year 2011 included 183 natural sacred forests and 28 mixed properties i.e., Both Government and Private forests existing on this desert. The sacred grove is associated with local prayers and ceremonies i.e. birth prayers, prayers for water availability and rain (source: [www.britannica.com/science/desert](http://www.britannica.com/science/desert)).

**Kalahari Desert, South Africa:** the Kalahari's longest

north-south extent is roughly 1,000 miles (1,600 kilometers), and its greatest east-west distance is about 600 miles; its area has been estimated at some 360,000 square miles (930,000 km<sup>2</sup>). The Kalahari Desert is inhabited primarily by Bantu speakers and Khoisan-speaking San, with a small number of Europeans. These communities take care of natural forests and still practice their old traditional practices related to the forests and species in the forests which are called as sacred by the local community. Cattles are the basis of the economy and are worshipped so as to continue earning their livelihood. Many tree species are conserved for the use in the traditional healthcare practices by the tribal communities (source: www.britannica.com/place/Kalahari-Desert).

**Australian Desert, Australia:** apart from Antarctica, Australia is the driest continent in the world. About 35 per cent of the continent receives so little rain, it is effectively desert. In total, 70 per cent of the mainland receives less than 500 mm of rain annually, which classes it as arid, or semi-arid. Australia's deserts are distributed throughout the western plateau and interior lowlands. The total desert area equates to 18 per cent of the total mainland area of Australia. Size of Australian deserts ranges from 1,250 to 3,48,750 km<sup>2</sup>. The desert outback belies the land's natural riches—gold, semi-precious gems, a wealth of grazing animals, and a varied collection of magnificent rock outcroppings juxtaposed to the stark, lunar-like landscape. Amidst all the belies few patches of forests have been preserved as sacred in mainly Southern and Western part of Australian desert. Forests are significant for the use of domestic sheep or cattle farming on sheep stations and cattle stations which are leased from the federal government on the outskirts of the grove (Source: www.ga.gov.au/scientific-topics/national-location-information/landforms/deserts).

**Sahara desert, North Africa:** the Sahara Desert is located in the northern portion of Africa and covers over 3,500,000 square miles (9,000,000 km<sup>2</sup>) or roughly 10% of the continent. It is bounded in the east by the Red Sea and it stretches west to the Atlantic Ocean. To the north, the Sahara Desert's northern boundary is the Mediterranean Sea, while in the south it ends at the Sahel, an area where the desert landscape transforms into a semi-arid tropical savanna. Since the Sahara Desert makes up nearly 10% of the African continent, the Sahara is often cited as the world's largest desert. It is believed that people have inhabited the Sahara Desert since 6000 BCE and earlier. Since then, Egyptians, Phoenicians, Greeks, and Europeans have been among the people in the area. Today the Sahara's population is around 4 million with the majority of the people living in Algeria, Egypt, Libya, Mauritania, and Western Sahara. The concept of sacred groves has been followed by every community which has inhabited the desert ever. Most of the

people living in the Sahara today do not live in cities; instead, they are nomads who move from region to region throughout the desert. Because of this, there are many different nationalities and languages in the region but Arabic is most widely spoken. This nomadic culture on the desert has distorted the culture of the desert has also affected the sacred groves. In addition to this, incessant mining activities have caused great loss of forest in the desert due to which rarely any oath of the forest with cultural significance is found. Though few leftover forests are utilized for their NTFPs and other natural resources (Source:www.thoughtco.com/sahara-desert-overview-1435189).

**Iranian Desert, South western Asia:** deserts of Iran are the aridest and hottest areas of the country and a part of Lut Desert is world-famous to be the hottest area. They stretch across the plateau; approximately one-sixth of the total area of Iran is desert. In general the deserts have strong sunshine, very little humidity, limited rainfall, very hot weather in summers, cold and dry weather in winter (Heshmati, 2007). In other words, the ecological conditions of Deserts of Iran are so severe in a way that they are not tolerable either in summer or winter. Environmental (topography, climate) features have an important influence on biodiversity richness of Iran. Ecological zones support about 8000 species of flowering plants. Northern Iran is rich in biodiversity with 8000 plant species representative of many different life forms (Herb, Grass, Shrub & tree) in the Hyrcanian zone that is located north of 35°N latitude. The concept of sacred groves is not a very common practice in Iranian desert, but few patches are conserved on religious ground of supernatural believes related to the forest (Phillips, 1962).

**Arabian Desert:** it stretches from Yemen to the Persian Gulf and Oman to Jordan and Iraq. Arabian Desert, great desert region of extreme south western Asia that occupies almost the entire Arabian Peninsula. It is the largest desert area on the continent—covering an area of about 900,000 square miles (2,300,000 km<sup>2</sup>)—and the second largest on Earth, surpassed in size only by the Sahara in northern Africa. As Muslims, Saudi Arabians participate in a community (ummah) in which issues of race, ethnicity, and national origin should be of no significance and never form the basis for social action, political behavior, and economic organization. The identity of Muslim transcends the borders of states and ideally takes precedence over all other identities. Culture Associated with Forest is not seen; rather all the forests are preserved only for their natural products and are utilized as per the requirement of the local people (Powers *et al.*, 1996).

**Thar Desert, India:** Indio-Pacific Region, in northwest India and a part of Pakistan. The Thar Desert is a vast tract covering over 4000 km<sup>2</sup> in the northwestern part of the Indian subcontinent and it stretches from the western fringes of Aravalli Mountains to the Indus River. Much of it has a rainfall of 100–300 mm, though the eastern end of the

## REVIEW ARTICLE

arid zone as currently defined lies to the east of the 400 mm mean annual rainfall contour (Dhir *et al.*, 2012). The Great Indian Desert, or the Thar Desert, extends over about 0.32 million km<sup>2</sup> forming approx. 10% of the total geographic area of India. More than 60% of the desert lies in the State of Rajasthan, followed by 20% in Gujarat. Sacred Groves in Rajasthan have been great worked upon and local communities follow their traditional practices related to forests in a holistic way. Bishnoi community of Rajasthan has been able to sustain the relics of the culture and local healthcare practices in its pristine way. Sacred groves in Rajasthan are known as Oran which is conserved on various religious grounds. Ceremonies like birth, marriage, worship, and death are performed in these groves and are considered as a good omen by all the residing local communities. Bishnoi communities are strictly against cutting of any tree from the forest and hence encourage sustainable utilization of natural resources (Sharma *et al.*, 2009). The Gujarat State is divided into four regions with distinct the climate, vegetation, and soil physical conditions i.e. North and Central Gujarat, South Gujarat, Saurashtra, Kachchh. Guneri and Shraavan Kawadia are the two sacred groves among the others which are existing in the west and east Kachchh. Guneri (N 23°48'24.1" E 068°48'29.8") is a patch of mangrove forest with *Avicennia marina* being the dominant and the only species found. It is Asia's only surviving inland mangrove. The status of sacred groves in Gujarat is jeopardy because of the rapid urbanization over the years has caused lots of harm to these forest patches and has also led to their shrinkage in area. Also, people are not aware of the existence of the sacred groves in their area which has further made the condition inclement for its survival (Patel *et al.*, 2013a,b, 2014, 2015; Tripathi *et al.*, 2013).

### Methodology :

Earlier reports covered the available literature from 1868 to 2017 without language restriction with the help of secondary data analysis. Secondary information related to sacred groves in general and from the desert of India has been collected from various sources including published research articles, technical reports, books and supporting documents from different stakeholders like research organization, NGOs, Forest Department, other Govt. Departments, etc both in the national and international domain. Databases like ENVIS Center, CPR Environmental Education Center, JNTBGRI (Jawaharlal Nehru Tropical Botanic Garden and Research Institute), to identify all the article potent for making the review efficacious in providing a complete analogy to the concept of sacred groves on the hot desert in the world. The critical review of the available information led to the gap analysis that no study on the land use land cover changes over the year within the sacred grove has been done in Indian origin. At least 2 to 3 reviewers were independently screened in terms

of all the citations made in the current review paper, for the available abstracts and any article to be of potentiality for the research were retrieved during analysis process of the literature. Bibliographies of other publications relevant to the study were also screened with deep contemplation on the review discipline. Many authors included in the review article were contacted in order to confirm about the standard of information in the article and also to get their sumptuous suggestions on other pieces of literature related to the article and if any information has been missed.

### Conclusion:

In the arid environment, the existence of sacred forests implies the importance of groves in the environment and the services it provides, so documentation and valuation of ecosystem services of these sacred groves need to be done. The threat assessment to the groves and the ethnobotanical uses it provides has not been translated into a conservation management plan. The critical analysis of the available information has also given the analysis that the concept of sacred groves in terms of community-based conservation is rampant around the world and also in the arid environments these forests are being preserved diligently by the local people. The analysis has also revealed that the sacred groves are conserved quite well in the arid regions of the international countries but in Indian origin, the survival of the sacred groves has been declining with a fast pace. Activities like urban development, commercial development, Sanskritization of traditional knowledge, unsustainable utilization of the available natural resources, huge pastoralism on the fringes of the sacred groves, migration of the community as nomads have emerged out as important concerns behind such a decline. Future research endeavors to be more focused on setting up a protocol aimed towards the maintenance and sustenance of these forests.

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