

Sreena K.S

Ph.D scholar
Kerala Agricultural University
Department of Agronomy
College of Agriculture
Vellayani
Thiruvananthapuram
Kerala-695 522
India

Shalini Pillai P

Professor
Kerala Agricultural University
Department of Agronomy
College of Agriculture
Vellayani
Thiruvananthapuram – 695 522
Kerala-695
India

Corresponding Author

Shalini Pillai P
shalinipillaivellayani@gmail.com

Sacred Groves: The Fading Footprints of Nature

Sacred groves, which are regarded as the miscellany of climax vegetation, form a vital part of the life support system of our planet earth. They ensure that we get clean air to breathe, wholesome food and medicines and clean drinking water, not only for human beings but also for the innumerable species surviving on this earth. Studies have enumerated 13,270 sacred groves in India. Out of this, 138 ha come under undisturbed vegetation and 3,188 ha under vegetation with open canopy. Sacred groves are treasures of numerous trees and epiphytes and other living organisms like amphibians, reptiles, butterflies and birds. The trees in sacred groves are more protected due to the traditional belief and respect associated with them. However, this is absent for the ordinary trees. Sacred groves are valued and revered for several ecosystem services ranging from its role as source of food and water, mitigation of flood and drought, role in carbon sequestration and nutrient cycling and supporting the society with recreational and spiritual services. However, with modernization and changing beliefs among the younger generation, many of the groves are in the verge of extinction. There is a need to revalorize the ancient philosophy of the traditional conservation customs validating it with sound scientific back up, highlighting the ecosystem dynamics and ecological functions of the sacred groves.

INTRODUCTION

“Sacred groves are one of the most valuable, but primitive practices of nature conservation. These are the relict climax communities preserved by the local people for certain beliefs. Such forests are rich in biological diversity and harbor many endangered plant species including rare herbs and medicinal plants” (Manikandan et al., 2011).

Many of the groves are owned or managed by individual family, and taboos and restrictions associated with the groves aid in their

conservation. According to Huges and Chandran (1998), sacred groves are the “segment of landscape, 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 expression of an important relationship of humans with the divine or with nature.” Sacred groves are natural museums of colossal trees, threatened species, medicinal plants, regulator of water sheds, recreation hubs for urban life, authentic gardens and gene banks for breeders and botanists. Sacred groves serve as mini-ecosystems by ensuring environmental conservation and economic benefits to the local communities. Thus, to achieve the goals of sustainability, it is crucial to identify strategies for the effective conservation and management of the sacred groves.

ORIGIN OF SACRED GROVES

The concept of sacred groves or virgin forests has been judged to have originated during the hunting and gathering era, much before the advent of settled agriculture. (Gadgil and Vartak, 1975). Hence it is assumed to be of the pre-Vedic period, which dates back to about 3000 to 5000 BC. They were important features of mythological landscapes and cult practices of Celtic, Estonian, the Baltic, Roman, ancient Greek and Slavic polytheism.

SACRED GROVES – GLOBAL SCENARIO

World over, sacred groves have been established for several religious purposes, as burial lands, water management and for retaining water quality (Ormsby and Bhagawat, 2010). Almost all continents of the world, except the poles have sacred groves (Malhotra et al., 2007). While sacred groves are seen in India, Korea, Japan, China, Thailand and Indonesia in Asia, countries like Nigeria, Sierra Leone, Ghana, Ivory Coast, Zimbabwe, Egypt and Kenya have such groves in Africa. Further, considerably large sacred groves have been reported from Europe and Britain also. Most of them are in different stages of degradation. Sacred groves vary in their age and size from few meters to greater than 100 ha. However, severe degradation has been observed in the smaller groves (<1 ha) due to anthropogenic disturbances, climate change and invasion (Ray and Ramachandra, 2010).

SACRED GROVES – INDIAN SCENARIO

Sacred groves are known by different names in India – Kavvu/ Sarpakavu (Kerala, Tamil Nadu), Devarakadu (Karnataka), Dev van (Madhya Pradesh, Himachal Pradesh), Sarnas (Bihar) and Oran (Rajasthan). India has the highest concentration of sacred forests in the world with 13,270 sacred groves (Table 1). Out of this 138 ha account for totally undisturbed vegetation and about 3,188 ha have an open canopy. However, estimates made by Malhotra et al. (2007) showed that there might be between 100,000 and 150,000 sacred forests around the country. The total area under sacred groves in India has been estimated to be 33,000 ha which comes to 0.01 per cent of the total area of the country (Gokhale et al., 1998).

Table 1. Distribution of sacred groves in India

State	No. of sacred groves
Andhra Pradesh	750
Arunachal Pradesh	58
Assam	40
Chhattisgarh	600
Gujarat	29
Haryana	248
Himachal Pradesh	5000
Jharkhand	21
Karnataka	1424
Kerala	2000
Maharashtra	1600
Manipur	365
Meghalaya	79
Orissa	322
Rajasthan	9
Sikkim	56
Tamil Nadu	448
Uttaranchal	1
West Bengal	670
Total	13720

The sacred groves of India adopt a local customary system of governance, wherein the groves are managed by a community group, not by a government agency. However, management and ownership of groves varies from state to state in

India and there are different approaches even within states. Groves in the leeward side of Aravalli regions were sparsely wooded patches dominated by *Prosopis cineraria* trees; those on the North Eastern Himalayan ranges were evergreen or deciduous formations; most of the groves in the plains were mono or multispecies the clusters. However, all of them had certain common features like, a dense or sparse cover of trees, presence of a village deity, a routine worship pattern with yearly festival and a deliberate proximity to a perennial water source.

CLASSIFICATION OF SACRED GROVES (Tiwari et al., 1998)

BASED ON THE NUMBER OF SACRED TREES IN THE GROVE:

- a) Single tree based groves: One sacred tree covers a large area and numerous secondary trees or vegetation thrives under the shade of primary sacred tree.
- b) Multi trees based groves: The grove is worshipped as a whole, without any principal sacred tree

BASED ON NATURE OF HUMAN INTERFERENCE

- a) Totally free of human interference
- b) Partly affected by human interference

BASED ON STRUCTURAL FRAME/LAND USE/RELIGION

- a) Traditional sacred groves - Home of the village deity and will have an iconic symbol
- b) Temple groves/Church groves-Groves are seen around a temple and conserved.
- c) Groves seen around the burial or cremation-grounds.

CATEGORIES OF SACRED GROVES IN INDIA (AMRITHALINGAM, 2016)

- a) Local sacred groves - They are managed by the entire village, although the village may be composed of several tribal communities and ethnic groups.
- b) Regional sacred groves - They are managed by a temple trust, and are visited by people from several districts
- c) Pan-Indian sacred groves - They are managed by a temple trust, where people from many parts of the country visit and worship the deity.

d) Sacred groves maintained as the abode of ancestral spirits - They act both as burial ground and location of deity and ancestor worship.

IMPORTANCE OF CONSERVING SACRED GROVES

A. BIOLOGICAL VALUE AND BIODIVERSITY

Biological spectrum of sacred groves closely resembles tropical forest biodiversity. Sacred groves are genetic pools and the last refuge for many threatened endangered and endemic plant and animal species. Sacred groves are treasures of numerous trees and epiphytes and other living organisms like amphibians, reptiles, butterflies and birds. Indian gazelle (*Gazella gazella*), blackbuck (*Antelope cervicapra*), the migratory bird Demoiselle crane (*Anthropoides virgo*) are all seen in these groves. Common Myna is the most common species, noticed in 25 groves. Among endemic species, the Malabar Grey hornbill was seen in 11 groves. Trees in sacred groves are more protected as they are subjected to practical manifestations of worship, adoration and veneration that are not practiced with ordinary trees. These groves are useful in forest tree-breeding programmes.

B. ECOLOGICAL SIGNIFICANCE OF SACRED GROVES

- Ecological services are the greatest payback of sacred groves to the society (Barik et al., 2018). Ecosystem services include:
- Provision for food and water
- Management of natural disasters like flood, drought, diseases
- Cultural enrichment through spiritual and recreational support
- Maintenance of nutrient cycles of the nature

C. RECHARGE OF AQUIFERS AND CONTROL OF FOREST FIRES

Many sacred groves hold water resource in the form of water bodies like perennial springs, ponds, streams or rivers. During the rainy season, the vegetation and litter absorbs water like a sponge and release it slowly at times of water shortage or drought. Sacred groves can also serve to reduce the possibility and intensity of forest fires. They also help to render the micro-climate cooler through increase in relative humidity.

D. CARBON SEQUESTRATION

Sacred groves play a major role in carbon cycling. Studies have shown that tree density is the major factor that affects the C biomass and consequently the C sequestration. Sacred groves having thick vegetation possess high carbon sequestration potential thereby contributing to reduced concentration of CO₂ in the atmosphere (Hangarge et al., 2012). Estimates show that *Terminalia bellirica* sequestered 327.78 tonnes of carbon and *Ficus amplissima* sequestered 221 tonnes of C.

E. SOIL CONSERVATION AND NUTRIENT CYCLING

The undisturbed vegetation cover of the groves improves the soil stability of the region and act as soil binder. Sacred groves mimic tropical rainforests in litter accumulation. Leaf fall and litter accumulation in soil returns nutrients into the soil from the standing biomass. Consequently, the water leaching out from sacred groves into the surrounding cultivated land is nutrient rich. In general, physico-chemical properties of the soil have been found to be superior in sacred groves than undisturbed forests (high soil porosity, low bulk density). Litter decomposition is also faster in sacred groves due to the preponderance of soil microbial activity signaled by dehydrogenase activity.

THREATS TO SACRED GROVES

Anthropogenic activities constitute the major threat to sacred groves leading to their degradation and loss in diversity. Exploitation for timber, pastures, replacing trees with cash tree crops, encroachment and agriculture are the key disturbance factors. Modernization leading to the disappearance of the traditional beliefs among younger generations, urbanization and developmental activities such as roads, railways tracks, dams, commercial forestry – all leads to the destruction of the groves. Invasive weeds like *Lantana camara*, *Chromolaena odorata*, etc. also pose threat to the groves.

CONCLUSION

Sacred groves need to be protected and conserved with reverence. Faith and beliefs associated with the sacredness of groves should be appreciated and enriched with ecological knowledge. Community ownership of sacred groves can protect the sacred groves more than individual ownership status. Sacred groves could be elevated

to the status of heritage sites. Conservation of the intact groves and restoration of the degraded ones should be considered. A buffer zone separating the sacred groves and the surrounding human inhabited areas will help to restore these groves to some extent. Above all, the community needs to be sensitized and made aware regarding the significance of protecting and conserving the sacred groves, the traditional hot spots of biodiversity which could help mankind to survive the threats posed by climate change.

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