

# A Preliminary Survey Of Some Sacred Groves In Alappuzha District, Kerala, India

M. S. Juginu

S. Binu Kumari

M. Mohan Kumar

PG and Research Department of Zoology,  
Kongunadu Arts and Science College, Coimbatore,  
Tamilnadu, India

**Abstract:** Sacred groves are tracts of virgin forest with rich diversity, which have been protected by the local people for centuries for their cultural and religious beliefs and taboos that the deities reside in them and protect the villagers from different calamities. Every sacred grove carries its own legends, lore, and myths which form the integral part of the sacred grove. An inextricable link between present society and past in terms of biodiversity, culture, religious and ethnic heritage exists in sacred groves. Sacred groves are distributed across the globe, and diverse cultures recognize them in different ways encoding various rules for their protection. Sacred groves act as an ideal centre for biodiversity conservation. Several plants and animals that are threatened in the forest are still well conserved in some of the sacred groves. It has been observed that several medicinal plants that are not to be found in the forest are abundant in the sacred groves. Further, rare, endangered, threatened and endemic species are often concentrated in sacred groves. The sacredness, religious beliefs and taboos play a significant role in promoting sustainable utilization and conservation of flora and fauna of the region.

**Keywords:** sacred groves, biodiversity, socio-cultural values and heritage, degradation and socio-economic changes.

## I. INTRODUCTION

Sacred groves of India are forest fragments of varying sizes, which are communally protected, and which usually have a significant religious connotation for the protecting community. Hunting and logging are usually strictly prohibited within these patches. Other forms of forest usage like honey collection and deadwood collection are sometimes allowed on a sustainable basis. Sacred groves are seen throughout Kerala having varied forms, cultural practices and belief systems. Snakes are worshipped by the tribals and traditional people. Adivasis and Dravidians are known to worship inanimate objects like trees and stones and live in villages covered by forest patches called "kavakadus" (Unnikrishnan 1997). Such green patches played an important role in balancing the village ecosystem and give a religious

dimension for protection. Although limited in area, the sacred groves or "kavus" (in Malayalam) of Kerala are distinct and unique in their biological diversity. These protected landscapes are found mostly in coastal and midland regions and rarely in highlands. Combinations of ponds/water bodies and sacred groves constitute a unique network of ecological landscape systems that intervene with life and culture of the people. The age-old system of having a temple, a tank and associated sacred grove explains the ancient method of water harvesting and sharing in villages of Kerala. As an ecosystem, they help in soil and water conservation, besides preserving the biological wealth. They are the treasure house of rare and endangered species of animals and abode of many medicinal, endemic, endangered and economically important plants. The ponds and streams adjoining the groves are perennial sources of water. Many animals and birds resort to them for their

water requirements during summer. The nutrients generated in the groves find their way into the adjoining agro ecosystems like paddy fields, coconut, tapioca and rubber plantations (Ramachandran and Mohan, 1991).

This paper aims at understanding the faunal and floral compositions of three distinct- undisturbed, partially destroyed and completely destroyed- sacred groves, the concept of the sacred, the cultural values and heritage, socio economic changes leading to the degradation of the sacred groves and suggests conservation strategies and awareness for upkeeping the tradition which in turn would benefit in terms of biodiversity conservation as has been an integral part of diverse cultures from time immemorial.

## CULTURAL VALUES AND HERITAGE OF SACRED GROVES

There are many myths, legends and faith associated with the sacred groves of Kerala. All sacred groves of Kerala are dedicated to Gods or Goddesses or to certain ancestral or natural spirits. The deities in the sacred groves are at times represented by some trees like *Alstoniascholaris*, *Adenanthrapavonina*, *Hydnocarpuspentandra*, *Commiphoracaudatum*, *Caryotaurens*, *Holarrhenaantidysenterica*, *Strychnosnux* - *vomica*, *Ficustinctorius*, *Mimusopselengi*, etc. A stone slab installed at the base of the tree is the altar on which the offerings including the animal sacrifices are made. These trees are also considered to be the abode of ancestral or natural spirits and demons. The sacred groves owned collectively by the villagers are mostly dedicated to Lord Ayyappa and called as 'Ayyappankavu' or 'Sasthamkavu' and to Goddess Bhagavathi called 'Bhagavathikkavu' or 'Ammankavu'. One interesting feature about 'Ayyappankavu' is the freedom to enter this sacred grove to offer worship irrespective of the caste or creed. Sacred groves owned by the tribal communities are dedicated to 'Vanadevatha', the Goddess of the forest, or to natural spirits or demons or ancestral spirits. The fishermen caste 'Dheevara' or 'Araya' also maintain sacred groves in the coastal areas of Kerala. These groves are called 'Cheerma' or 'Cheerumba' and the patron deity is 'Cheerma'. 'Cheerma' is the Goddess of smallpox and other epidemic diseases.

The sacred groves owned by families are mostly dedicated to Snake God (Naga) or Goddess or both, hence, known as "Nagakkavu" or "Sarpakkavu". Sacred groves of the tribal inhabiting near and around the forest areas are known as 'Madankavu' or 'Yakshikkavu'. The sacred groves of North Kerala are mostly associated with Goddess whereas the sacred groves of South Kerala are associated mostly with snake worship. Many sacred groves associated with Siva temples also have serpent Gods. The various patrons Gods/Goddess/Spirits associated with the sacred groves are grouped as follows: (a) Dedicated to Snake Gods (Sarpakkavu/Nagakkavu): They are variously known as Nagam', 'Nagaraja', 'Nagakanya', 'Sarpam', 'Nagayakshi', 'Karingayakshi', and 'Karinganagini'. (b) Dedicated to Goddess Kali (Kalikavu/Bhagavathikkavu): They are variously known as 'Amma', 'Ayiravalli', 'Bhadrakali', 'Bhavani', 'Bhagavathy', 'Bhuvaneswari', 'Chandi', 'Chamundi', 'Devi', 'Durga', 'Mahishasuramardini',

'Mariamma', 'Mookambika', 'Rakteswari', 'Vanadurga', and 'Vanadevatha'. (c) Dedicated to Lord Ayyappan (Ayyappankavu/Sasthamkavu): They are variously known as Ayyappan, Sastha, and Paradaivam. (d) Dedicated to Spirits: They are variously known as 'Arukola', 'Marutha', 'Madan', 'Yakshi', 'Gandharvan', 'Yogeeswaran', and 'Muthappan'. Many sacred groves have more than one deity, the patron deity and two or more supporting deities.

The local people observe a strict code of conduct in protecting the sanctity of sacred groves. Human interventions are not normally allowed inside sacred groves except to perform rituals and offer prayers and offerings to propitiate the deities. No material, either plant or animal origin, are not permitted to be taken out of the sacred groves except on certain 4 exceptional cases or occasions, and that too, only after consulting the local priest. No one is allowed to cut or remove any plants or kill animals associated with the sacred groves; even the fallen twigs, branches or leaves are not to be removed. Violation of the rules that disturb or dispel the sanctity of the sacred grove and its immediate surroundings were considered to be unpardonable sins that will invite the wrath of the patron deity or spirits by bringing epidemic disease, famine, natural calamities or sufferings to the people.

## DEGRADATION OF SACRED GROVES

The sacred groves distributed in different parts of the country are facing various kinds of anthropogenic stresses. The intensity and frequency of these biotic stresses vary from one region to another region and even from one grove to the other in the same region. The commonly recognized factors which are responsible for destruction and degradation of the sacred groves are summarized below: Loss of faith in the traditional belief systems which are fundamental to the concept of sacred groves. These systems and the rituals attached to the belief system are now considered mere superstition.

Many groves are suffering due to transformation of the primitive forms of nature worship into formal temple worship. In many parts of the country change in religious beliefs from the traditional/ Hindu way of worship to Christianity led to destruction of sacred groves. Sacred groves in many parts of the country have been destroyed due to rapid urbanization and developmental interventions such as roads, railways tracks, dams and commercial forestry. Encroachment has led to the shrinkage of some of the largest groves in the country. Collection of biomass in the form of green manure, medicinal herbs, tree branches and dead wood as well as extraction of timber with religious justification is also contributing to degradation of sacred groves. Invasion by exotic weeds such as *Eupatoriumodoratum*, *Lantanacamera* and *Prosopisjulifera* etc., is a serious threat to some groves. Grazing pressure due to increasing live a stock population and fuel wood collection is also responsible for sacred grove destruction in some areas. Land reforms in some states for example in Kerala, have led to reduction in large land holding of big lands owners. Therefore they could not afford to have sacred groves in the remaining portion of their land, which in due course of time was brought under other uses.

## SOCIO-ECONOMIC CHANGES

Several social transformations in Kerala have led to changing attitudes towards sacred groves. The first concerns the land reforms introduced by the Communist government in 1957 and the actual implementation (such as redistribution of surplus land) till the mid-1970s that caused a large-scale fragmentation of the land (Raj and Tharakan, 1983; Radhakrishnan and Peasant Struggles, 1989., Parayil Govindan, 2000). Many sacred grove-owning upper castes were forced to distribute their land and the peasants receiving it cleared such lands for commercial farming. A second change is the transformation from joint to nuclear families (Chattopadhyay *et al.*, 2006). The joint family system abolition act of 1975 led to the fragmentation of family lands as they got subdivided among the various heirs, and so were the sacred groves that were part of such plots (Subhash *et al.*, 1998). A third change acting upon the clearing of sacred groves is the growing population density, intensifying people's house building activities. It is common practice in Kerala that before constructing a house a priest-astrologer is consulted about its favorable positioning. If the best location is determined near or inside a sacred grove then the owner is forced to neutralize the site (i.e., destroy that sacred grove, accompanied by proper rituals) for reasons of ritual purity. Impure activities going on inside the house, such as making and eating non-vegetarian food, alcohol consumption, menstruation, child birth, death, as well as having a septic tank nearby, is thought to anger the snake gods, which should be avoided.

From the 1980s onwards, monetary elements increasingly played a role in the decline of sacred groves as well. From the early 1970s to the mid-1990s, there was a 2000 percent increase in land prices in Kerala (Osella *et al.*, 2016). Many families then cleared the sacred groves for the construction of houses or in order to sell the adjoining piece of land (Subhash *et al.*, 1998). Moreover, the value of land, in urban as well as rural areas, increased as a result of the large inflow of remittances from the Gulf States which gave some families more buying power than others (Prakash, 1998). According to the interviewed priests, migration from Kerala to other states and abroad also forced people to clear the sacred groves existing in their courtyards.

The inevitable indifference and lack of proper care in their absence might anger the serpent gods who would retaliate by giving the family, even at a distance, numerous problems. To avoid the deity's displeasure the emigrants often cleared their abandoned groves with the appropriate religious rituals supplied by Hindu priests. Although religion (i.e., Hinduism as a worldview) was not the direct cause of the destruction of the groves, families started employing ritual strategies, supplied by the same religion, to mitigate possible consequences. This shows us Hinduism—and by extension possibly other religions as well—both as a continuum and as elastic, adjustable and inventive. If the situation requires that changing needs and values are accommodated, the same tradition may well prove versatile and varied enough to offer transition rituals that benefit both client and priest, even when this is at the cost of old-growth green pockets of biodiversity. The ritual repertoire offered by Hindu priests involves three

ceremonies that respectively relocate, reduce, or destroy the deity's home.

The first is called *kaavumattam* and entails shifting the deity to another location inside the owner's garden itself. The entire sacred grove is cleared and the deity (either merely its spirit or its existing material form, i.e., the aniconic stone symbol or the iconic statue) shifted from the original *kaavu* to another location inside the owners' garden where a single new tree is planted. This ritual is relatively simple and can be finished in a day.

The second ritual is called *punaprathishtta* and is the most common ritual among the three. It entails limiting the size of the sacred grove and restricting the abode of the deity to a single fixed spot inside the reduced grove. The ritual became accepted practice nearly fifty years ago and is now widely applied. The biggest part of the ground is cleared and all vegetation cut except for one big tree, which symbolically represents the ancient grove.

The priest restricts the deity's space to no more than a concrete strip of floor on which a pyramid-shaped stone is placed. The serpent deity is then ritually invoked to take this open-air shrine as its abode (Neff and Deborah 1987). In certain groves, a concrete structure covering the deity with some kind of roof or shelter may be added. In that case the god has changed status, has become a more prestigious indoor god, and the structure is called a temple. Once the original vegetation has been destroyed and the deity is supposed to reside in a single concrete structure, the rest of the site can be utilized for alternative purposes.

Another third ritual is called *ozhippikkal* and entails expelling the deity from the grove to an existing, man-made serpent shrine in the compound of a major temple elsewhere. When this has been accomplished, the owners need to wait twenty-one days before the sacred grove area can be permanently cleared of trees and other vegetation. We observed that this ritual is conducted mainly when owners intend to sell the whole plot or construct a house. Pulluva priests (non-brahmin priests specialized in serving the serpent deities) say they take one to three days to finish the ritual according to the power of the deity. In some cases the Brahmin priests spend a mere three hours on the actual site of the sacred grove and conduct the rest of the ceremonies in their higher status temple compound. Pulluva priests may also take merely the spirit of an evicted deity to a famous regional temple containing a serpent shrine. They have to pay a yearly fee to the serpent shrines where they ritually propitiate the spirits of moved deities.

The Brahmin priests recommend the families to make an annual pilgrimage to offer prayers and all kinds of material offerings and money to that specific serpent shrine temple. All interviewed grove-owners remarked that the shifting and clearing rituals are very expensive. There is no standard rate for the rituals. The priests will state an amount in accordance with the financial condition of the grove-owner, the status of the priest performing the ritual, the time the ceremony requires, the day on which the ceremony takes place, and the power of the deity residing in the grove. Rates for *punaprathishtta* rituals range from 5000 rupees (71 EUR) to 20,000 rupees (284 EUR); rates for *kaavumattam* rituals range from 50,000 rupees (710 EUR) to 20,000 rupees (284 EUR);

and rates for ozhippikkal rituals range from 80,000 rupees (1136 EUR) to 3,00,000 rupees (4263 EUR).

## OBJECTIVES

- ✓ Ecological importance
- ✓ Socio-cultural importance
- ✓ Anthropogenic disturbance
- ✓ Conservation of sacred groves.

## STUDY AREA

### ✓ CHEMATHU KAVU

This kavu belongs to Chemathu temple once the “Kalari” of vallyathans, the warriors of Kayamkulam rajah. The kavu and temple is inside abigkottamathil. Though the power of Chemathu has been lost, there is no change in the power of the “Kalaridevatha”, “Nagaraja” and “Nagayakshi”. The sacred grove and the temple existed there for more than 100 years. Still there was no decrease in the size or diversity of kavu, the local people considers this kavu as the abodes of their deities and protect it as a valuable treasure. This kavu is located near kayamkulam at Devikulangarapanchayath and was selected as an undisturbed sacred grove.

### ✓ KUMMAPPALLIL KAVU

This kavu was taken as an example for partially destroyed sacred grove and is located at Kayamkulam. This kavu is partially destroyed made by local people. This place had lost its sacredness due to the interference of people mainly because of the improper ownership and careless managing of the kavu for a long period of time.

### ✓ NAMBOZHIYIL KAVU

This kavu is located near kayamkulam and taken as a typical example for anthropogenic destruction. Now this “so called” sacred grove is typically a miniature form of a formerly well maintained “NagayakshiKavu”. Years ago, this place was a sacred grove spreading about 75 cents of land and was owned and managed by an ancient Brahmin family. Later, they left the place and handed over this sacred place with the adjoining land to some people belonging to some other community. They gradually cut down the huge trees and other plants and reduced the forrest area to 4 or 5 cents. This kavu is now represented by few small trees and is isolated from the adjoining land by walls.

## II. MATERIALS AND METHODS

Field studies were conducted in these three different sacred groves namely, undestroyed, partially destroyed and fully destroyed in Alappuzha district, Kerala to evaluate the effect of prevailing anthropogenic disturbances on faunal and floral characteristics. All the flora and fauna datas were identified with the help of experts in concerned fields. Findings of this study suggest that disturbance results into i. A

species poor community. ii. Alter species composition with an increase in the species typical of open habitats iii. Disappearance of many mature floral and faunal species and colonization of forest floor by new species iv. Impairment of tree regeneration process and development of unstable population structure and v. Change in Soil properties and fine root dynamics and nutrient mineralization rate are occurred in fully destroyed sacred groves than in undestroyed one.

## III. RESULTS AND DISCUSSION

The steps taken by government agencies for the conservation of this vital natural resource often do not yield desired result on account of non-involvement of local people in 10 decision making process and implementation of the programmes. Therefore to make any conservation programme successful participation of the local people especially the youth is essential. This is possible by educating them about the importance of conservation of these forest patches by highlighting their direct and indirect and short and long term benefits to both local community and to the area at large. At the same time there is need to train local people about the sustainable use of the Plant resources such as medicinal, food, fuelwood, timber and other economically important plants needed in day-to-day requirement to check their over exploitation. Jayarajan (2004) in his study on sacred groves of north Malabar suggested several measures to check degradation and conservation of sacred groves many of them are relevant for the conservation of sacred groves found elsewhere in the country.

- ✓ The faith in sacredness of groves should be respected and supplemented with ecological knowledge.
- ✓ The ownership of sacred groves should be transferred to the communities from the individuals.
- ✓ The state government should declare sacred groves as heritage sites and provide financial support for their upkeep including fencing.
- ✓ Re survey of sacred groves in different states to assess their present condition and recover the encroached areas if possible.
- ✓ Conservation of intact groves and restoration of degraded ones. 6) Awareness campaign should be organized for the local people focusing the need of the protection of the groves.
- ✓ A buffer zone between sacred groves and the surrounding man-impacted landscape elements may be created to check anthropogenic disturbances and provide conditions for regrowth of the forest.
- ✓ The endemic and threatened plant species confined to sacred groves should be identified and steps should be taken to conserve these species. The well- preserved sacred groves should be immediately brought under protected area network to ensure the protection of such species and their habitats.
- ✓ Adequate funding should be given to the village “dorbars” to create tree plantations to meet the biomass needs of the villagers so that anthropogenic pressure on the sacred grove may be reduced.



- ✓ The degraded sacred groves should be immediately restored or regenerated using appropriate technology. Efforts should be made to utilize the traditional knowledge in the regenerating those native species for which technology may not available.

#### COMMON PLANTS

Common Plants	Family
Artocarpushirsutus	Moraceae
Ficusindica	Cactus
Ficusreligiosa	Horaceae
Hydnocarpuspentadra	Achariaceae
Syzygiumgardneri	Myrtaceae
Alstoniascholaris	Apocynaceae
Caseriaesculenta	Hippacrateaceae
Mimusopselengi	Sapotaceae
Ricinuscommunis Linn.	Euphorbiaceae
Nerium oleander Linn.	Apocynaceae
Plumeriarubra Linn.	Apocynaceae
Saracaasoca (Roxb.) de wilde	Caesalpiriaceae
Citrus aurantifolia	Rutaceae
Mangiferaindica Linn.	Aneardiaceae
Cratera magna (Lour) DC	Capparidaceae
Jasminumgrandiflorum L.	Oleaceae
Bambusaarundinacea (Retz.)	Gramineae
StreblusasperLour	Moraceae
Calamusrotang Linn.	Palmae
Santalum album Linn.	Santalaceae
Cocosnucifera	Palmae

#### a. MEDICINAL PLANTS

Botanical Name	Family	Uses
Achyranthesaspera	Amaranthaceae	The plant is used for the treatment of Piles, enlargement of cervical gland, dropsy, skin eruption, Colic, leaf juice is applied to wound.
Andrographispaniculata	Acanthaceae	Plant is administered in case of dyspepsia and bronchitis. Root and leaves are used in syphilitic ulcer.
Aristolochiaindica	Aristolochiaceae	Seeds are used to treat biliousness, dry cough and pain in the joint. Roots are recommended in case of cholera, diarrhoea and lucoderma.
Azadirachta-indica	Meliaceae	Plant is used in the

		treatments of Leprosy, piles and urinary diseases. Leaves are used as a poultice for voils and eczema. Oil from seeds is used in the treatment of skin disease and rheumatism.
Aervalanata (L) Juss	Amaranthaceae	Plant is used to treat Lithiasis. Root is used against stangury.
Artocarpushirsutus	Moraceae	Dried leaves along with other medicines are applied over bubos and swelled testicles.
AlstoniaScholaris	Apocynaceae	Bark is used in the treatment of diarrhoea, dysentery, liver complaints, skin disease and rheumatic pains. Milky juice is applied to ulcers.
Aporosalindleyana	Euphorbiaceae	Adecotion of the root is given against jaundice, fever and headache, seminal loss and instainty etc.
Dioscoreabulbifera	Dioscoreaceae	Underground stem is used to treat dyspepsin, urinary discharges, leucoderma bronchitis, syphilis and ulcers.
Ficusamottiana	Moraceae	Leaves and bark are used against skin diseases.
Buchanania-lanceolata	Ancardiaceae	Ripe fruit improve digestive power. It is also used against rheumatism.
Centellaasiatica	Umbelifers	The juice of the leaves may be taken as a tonic. It is used against diseases of skin nerves and blood epilepsy. Leaves are used as a poultice and have marked stimulating and healing action. An ointment prepared from the leaves is used in case of elephantiasis.
Moullavaspicata	Caesalpiniaaceae	Bark is used against skin diseases. Root is prescribed in case of Pneumonia.
Asparagus racemosus	Asparagaceae	Root is used in the treatment of throat complaint, tuberculosis, Leprosy, epilepsy, disease of blood, kidney and lever.
Biophytumsensitivum	Oxalidaceae	Powdered leaves and seeds area pplied to wounds. Roots are given against lithiasis.
Curculigoorchicidesgaertn	Hypoxidaceae	A detection of the roots in milk is often prescribed in the cases of leucorrhoea, piles, jaundice, gonorrhea, asthma and bronchitis. Roots are used for itch and skin diseases.
Callicarpatomentosa (L) Murray	Lamiaceae	Leaves are used to prepare a wash for the mouth. Bark and root is used to treat fever, hepatic obstruction and skin diseases.
Costusspeciosus (koen) sm.	Costaceae	Root is bitter astringent, purgative, depurative, stimulant, tonic and

		anthelmintic. The drug diosgenin is extended from the rhizome.
Sarcostigmakleiniwight	Icacinaceae	Powdered bark mixed with honey is given to rheumatism. Oil from seeds is used against rheumatism leprosy and iles.
Vateriaindica L	Dipterocarpaceae	Bark is used in treatment of cough, anemia, ear diseases, urinary discharges skin eruption and leprosy. Resin is used against diarrhoea, piles rheumatism, gonorrhea and other viral infections
Calophyllumapetalum	Calophyllaceae	Oil from the seed is used in Leprosy, cutaneous problems and rheumatism.
Ocimum sanctum	Lamiaceae	Leaf is taken internally in case of fever, cough etc.
Samaderaindica	Simaroubaceae	Infusions of leaves are used to kill lice, flies and white ants. Seeds are used against bilious fever and are used as purgative and emetic. Oil from seeds is used as external application in rheumatism.
Ficusbenghalensis	Moraceae	Bark is used in the treatment of Ulcers, burning sensation and Vaginal disorders. Milky juice is used in the treatment of piles and gonorrhoea. Tender ends of the aerial roots are effective remedy for obstinate vomiting.
Hydnocarpuspentadra	Achariaceae	Oil form seed is used in the treatment of leprosy and other cutaneous diseases. It is given for ophthalamia and dysentery.
Inchno carpus	Apocynaceae	Leaves are recommended in case of fever. Roots are used in the treatment of skin-eruption.
Mimosapudica	Legumes	A paste of leaves is applied to glandular swelling. The juice of leaves is used in dressing for sinus and also as an application for sores and piles. Roots are used against biliousness, leprosy, dysentery, vaginal and uterine complaints.
Mimusopselengi	Sapotaceae	Bark is used against the inflammation of the alveoli and also in excess salivation. Pulp of the ripe fruit is used against dysentery.

Table 1: Floral diversity in Chemathu Kavu (undestroyed)

#### BUTTERFLIES

COMMON NAME	SCIENTIFIC NAME
Southern Birdwing	<i>Triodes minos</i> Cramer (Troides Helena)
Common Rose	<i>Pachlioptaaristolochiae</i> (Fabricius) (Trosaristolochiae)

Crimson Rose	<i>P. hector</i> (Linnaeus) (Tros hector)
Common Blue Bottle	<i>Graphiumsarpedonterdon</i> (Felder & Felder) (Zetidessarpedon)
Common Jay	<i>G. dosoneleius</i> (Fruhstorder) (Zetides spp.)
Tailed Jay	<i>G. agamemmonmenides</i> (Felder & Felder) (Zetidesagamemmon)
Common Mime	<i>Papilioclytiaclytia</i> (Linnaeus) (Chilasaclytia)
Lime Butterfly	<i>P. demoleusdemoleus</i> Linnaeus
Malabar Banded Swallo	<i>P. liomedon</i> Moore
Red Helen	<i>P. helenus</i> (Hampson)
Common Mormon	<i>P. polytespolytes</i> (Linnaeus)
Blue Mormon	<i>P. polymnestorpolymnestor</i> Cramer
Paris Peacock	<i>P. paristamilana</i> Moore
Buddha Peacock	<i>P. buddha</i> Westwood
Lemon Emigrant	<i>Catopsiliapomona</i> (Fabricius) (C. Pomona &crocalle)
Common Emigrant	<i>E. blandasilhetana</i> (Wallace) (Teriasblanda)
Three-spot Grass Yellow	<i>Delias eucharis</i> (Dury)
Common Jezebel	<i>Leptosianinana</i> (Fabricius)
Psyche	<i>Ceporanerissaphryne</i> (Fabicius) (Huphinanerissa)
Common Gull	<i>Anapheisaurota</i> (Fabricius) (Belenoismentina)
Caper	<i>Appiaslyncidalatifasciata</i> Moore
White/Pioneer	<i>Parononiavaleriahippia</i> (Fabricius) (Parononiavaleria)
Chocolate Albatross	<i>P. ceylanica</i> (Felder & Felder) (Parononia (sic!) ceylonica)
Common Wanderer	<i>Hebomoia glaucippe australis</i> Butler
Dark wanderer	<i>Melantisledaleda</i>
Giant Orange Tip	<i>Elymniashypermnestracuadata</i> Butler
Common Evening Brow	<i>Lethe europaregalva</i> Furhstorfer
Common Palmfly	<i>L. rohiraneelgheriensis</i> Guerin-Menvill
Bamboo Treebrown	<i>Mycalesis persuestyphlus</i> Fruhstorfer
Common Treebrown	<i>M. khasiaorcha</i> Evans
Common Bush Brown	<i>Orsotrioenamedusmandata</i> (Moore)
Pale- Brand Bush Brown	<i>Y. ceylonica</i> Hewitson
Nigger	<i>Y. heubnerihuebneri</i> Krby
CelyonFourring/ White Fourring	
Common Fourring	

#### SPIDERS

COMMON NAME	SCIENTIFIC NAME
The Giant Crab Spider	Heteropodavenatora
Banded Fourleg	Argiopepulchella
Common two-tail	Hersiliasavigni
Green Lynx	Peucetiaviridana

Brown Lynx	Oxyopesrufisternum
Round Longlegs	Artemiatlanta
Zebra Jumper	Plexippuspykulli
Tribanded Spiky Orb	Gasteracanthageminata

#### AMPHIBIANS FROGS, TOADS & CAECILIANS

Common Name	Scientific Name
Paddy Field or Cricket Frog	Ranalimnocharis
Indian Pond or Green Frog	Ranahexadactyla
Indian Bull Frog	Ranatigerina
Rufescent Frog	Ranarufescens
Fungoid Frog	Ranamalabarica
Water Skipper or Skipper Frog	Ranacyanophlyctis
Red Narrow-mouthed Frog	Microhylarubra
Common India Toad	Bufomelanosticus
Malabar Flying Frog	Rhacophorusmalabaricus

#### REPTILES TURTLES & TERRAPINS

Common Name	Scientific Name
Southern Flapshell Turtle	<i>Lissemyspunctata punctate</i>
Indian Pond Terrapin	<i>Melanochelystrijugacoronata</i>

#### LIZARDS

Common Name	Scientific Name
Spotted Indian House Gecko	<i>Hemidactylusbrookii</i>
Southern House Gecko	<i>Hemidactylusfrenatus</i>
Indian Garden Lizard	<i>Calotesversicolor</i>
Common Skink	<i>Mabuyacarinata</i>
Common Indian Monitor	<i>Varanusbengalensis</i>

#### SNAKES

Common Name	Scientific Name
Indian Rock Python	<i>Python molurus</i>
Common Sand Boa	<i>Eryxconicus</i>
Red Sand Boa	<i>Eryxjohnii</i>
Whitaker's Sand Boa	<i>Eryxwhitakeri</i>
Common Wolf Snake	<i>Lycodonaulicus</i>
Striped Keelback	<i>Amphistemastolata</i>
Checkered Keelback	<i>Xenocropispiscator</i>
Rat Snake	<i>Ptyas mucosa</i>
Bronzeback Tree Snake	<i>Dendrelaphistristis</i>
Vine Snake	<i>Ahaetullanasutus</i>
Common Cat Snake	<i>Boigatrigonota</i>
Common Krait	<i>Bungaruscaeruleus</i>
Indian Cobra	<i>Najanaja</i>
Russel's Viper	<i>Viperarussellii</i>
Beaked Worm Snake	<i>Typhlopsacutus</i>

#### AVES

Common Name	Scientific Name
Paddy bird/ Pond	<i>Ardeolagrayii</i>

heron	
Night heron	<i>Nycticoraxnycticorax</i>
Whitegret / Whiter heron	<i>Egretta alba</i>
Water hen	<i>Amauronissp</i>
House crow	<i>Corvussplendens</i>
Jungle crow	<i>Corvusmacrorhynhus</i>
Brahminy kite	<i>Haliastur Indus</i>
Owl	<i>Bubo oriental</i>
Crow pheasant	<i>Centropussinensis</i>
Eagle owl	<i>Bubo nipalensis</i>
Kestrel	<i>Faleotinnuneules</i>
Kingfisher	<i>Haleyomsmyrnesis</i>
Koel	<i>Eudynamysseolopaceus</i>
Myna	<i>Aeridotheristristis</i>
Parrot	<i>PsittaculakrameriManillensis</i>
Indian oriole	<i>OriolusKunndoo</i>

#### MAMMALS

Common Name	Scientific Name
Fruitbat	<i>Pteropusgiganteus</i>
Palmcivet	<i>Paradoxurushermaphrditus</i>
Small livef	<i>Viverriculaindia</i>
Indian rat	<i>Must rattus</i>
Mouse	<i>Musmuseulus</i>
Bandicot	<i>Bandicotamalabarica</i>
Palm squirrel	<i>Funambuluspalmarum</i>
Mongoose	<i>Herpestesedward-sii</i>

Table 2: Faunal diversity in Chemathu Kavu (undestroyed)

#### COMMON PLANTS

Common Plants	Family
Ficusindica	Cactus
Ficusreligiosa	Horaceae
Alstoniascholaris	Apocynaceae
Ricinuscommunis Linn.	Euphorbiaceae
Nerium oleander Linn.	Apocynaceae
Saracaasoca (Roxb.) de wilde	Caesalpiaceae
Citrus aurantifolia	Rutaceae
Jasminumgrandiflorum L.	Oleaceae
Santalum album Linn.	Santalaceae

#### MEDICINAL PLANTS

Botanical Name	Family	Uses
Achyranthesaspera	Amaranthaceae	The plant is used for the treatment of Piles, enlargement of cervical gland, dropsy, skin eruption, Colic, leaf juice is applied to wound.
Azadirachta-indica	Meliaceae	Plant is used in the treatments of Leprosy, piles and

		urinary diseases. Leaves are used as a poultice for boils and eczema. Oil from seeds is used in the treatment of skin disease and rheumatism.
Artocarpushirsutus	Moraceae	Dried leaves along with other medicines are applied over bubos and swelled testicles.
Dioscoreabulbifera	Dioscoreaceae	Underground stem is used to treat dyspepsin, urinary discharges, leucoderma bronchitis, syphilis and ulcers.
Ficusarnottiana	Moraceae	Leaves and bark are used against skin diseases.
Asparagus racemosus	Asparagaceae	Root is used in the treatment of throat complaint, tuberculosis, Leprosy, epilepsy, disease of blood, kidney and liver.
Callicarpatomentosa (L) Murray	Lamiaceae	Leaves are used to prepare a wash for the mouth. Bark and root is used to treat fever, hepatic obstruction and skin diseases.
Sarcostigmakleiniwight	Icacinaceae	Powdered bark mixed with honey is given to rheumatism. Oil from seeds is used against rheumatism leprosy and iles.
Ocimum sanctum	Lamiaceae	Leaf is taken internally in case of fever, cough etc.
Ficusbenghalensis	Moraceae	Bark is used in the treatment of Ulcers, burning sensation and Vaginal disorders. Milky juice is used in the treatment of piles and gonorrhoea. Tender ends of the aerial roots are effective remedy for obstinate

		vomiting.
Mimosapudica	Legumes	A paste of leaves is applied to glandular swelling. The juice of leaves is used in dressing for sinus and also as an application for sores and piles. Roots are used against biliousness, leprosy, dysentery, vaginal and uterine complaints.
Mimusopselengi	Sapotaceae	Bark is used against the inflammation of the alveoli and also in excess salivation. Pulp of the ripe fruit is used against dysentery.

Table 3: Floral diversity in Kummappallil Kavu (partially destroyed)

#### BUTTERFLIES

COMMON NAME	SCIENTIFIC NAME
Southern Birdwing	<i>Triodes minos</i> Cramer (Troides Helena)
Common Rose	<i>Pachlioptaaristrolachiae</i> (Fabricius) (Trosaristolachiae)
Common Blue Bottle	<i>Graphiumsarpedon</i> (Felder & Felder) (Zetidesarpedon)
Common Jay	<i>G. dosoneleius</i> (Fruhstorder) (Zetides spp.)
Tailed Jay	<i>G. agamemnon</i> (Felder & Felder) (Zetidesagamemnon)
Lime Butterfly	<i>P. demoleus</i> demoleusLinnaeus
Malabar Banded Swallow	<i>P. liomedon</i> Moore
Common Mormon	<i>P. polytes</i> polytes(Linnaeus)
Blue Mormon	<i>P. polymnestor</i> polymnestorCramer
Paris Peacock	<i>P. paristamilana</i> Moore
Common Jezebel	<i>Delias eucharis</i> (Dury)
Common Gull	<i>Ceporanerissaphryne</i> (Fabricius) (Huphinanerissa)
Bamboo Treebrown	<i>Lethe europaregalva</i> Fuhrstorfer
Common Treebrown	<i>L. rohiraneelgheriensis</i> Guerin-Menvill

#### b) SPIDERS

COMMON NAME	SCIENTIFIC NAME
The Giant Crab Spider	<i>Heteropodavenatora</i>
Common two-tail	<i>Hersiliasavigni</i>



Brown Lynx	Oxyopesrufisternum
Round Longlegs	Artemaatlanta
Zebra Jumper	Plexippuspykulli

#### AMPHIBIANS FROGS, TOADS & CAECILIANS

Common Name	Scientific Name
Indian Pond or Green Frog	Ranahexadactyla
Indian Bull Frog	Ranatigerina
Red Narrow-mouthed Frog	Microhylarubra
Common India Toad	Bufo melanostictus
Malabar Flying Frog	Rhacophorusmalabaricus

#### REPTILES TURTLES & TERRAPINS

Common Name	Scientific Name
Southern Flapshell Turtle	Lissemyspunctata punctuata
Indian Pond Terrapin	Melanochelystrijugacoronata

#### LIZARDS

Common Name	Scientific Name
Southern House Gecko	Hemidactylusfrenatus
Indian Garden Lizard	Calotesversicolor
Common Indian Monitor	Varanusbengalensis

#### SNAKES

Common Name	Scientific Name
Indian Rock Python	Python molurus
Common Sand Boa	Eryxconicus
Rat Snake	Ptyas mucosa
Bronzeback Tree Snake	Dendrelaphistris
Vine Snake	Ahaetullanasutus
Common Cat Snake	Boigatriginota
Common Krait	Bungaruscaeruleus
Russel's Viper	Viperarussellii

#### AVES

Common Name	Scientific Name
Paddy bird/ Pond heron	Ardeolagrayii
Night heron	Nycticoraxnycticorax
House crow	Corvus splendens
Brahminy kite	Haliastur Indus
Owl	Bubo orientalis
Eagle owl	Bubo nipalensis
Kingfisher	Haleymysmyrnesis
Koel	Eudynamis seolopaceus
Myna	Aeridotheristris
Parrot	Psittaculakrameri Manillensis
Indian oriole	Oriolus Kunndoo

#### MAMMALS

Common Name	Scientific Name
Fruitbat	Pteropus giganteus

Small livef	Viverriculaindia
Indian rat	Must rattus
Mouse	Mus musculus
Palm squirrel	Funambulus palmarum

Table 4: Faunal diversity in Kummappallil Kavu (partially destroyed)

#### COMMON PLANTS

Common Plants	Family
Nerium oleander Linn.	Apocynaceae
Citrus aurantifolia	Rutaceae
Jasminum grandiflorum L.	Oleaceae

#### MEDICINAL PLANTS

Botanical Name	Family	Uses
Achyranthes aspera	Amaranthaceae	The plant is used for the treatment of Piles, enlargement of cervical gland, dropsy, skin eruption, Colic, leaf juice is applied to wound.
Dioscorea bulbifera	Dioscoreaceae	Underground stem is used to treat dyspepsia, urinary discharges, leucoderma, bronchitis, syphilis and ulcers.
Ocimum sanctum	Lamiaceae	Leaf is taken internally in case of fever, cough etc.
Mimosa pudica	Legumes	A paste of leaves is applied to glandular swelling. The juice of leaves is used in dressing for sinus and also as an application for sores and piles. Roots are used against biliousness, leprosy, dysentery, vaginal and uterine complaints.

Table 5: Floral diversity in Nambozhil Kavu (Totally destroyed)

#### BUTTERFLIES

COMMON NAME	SCIENTIFIC NAME
Common Rose	Pachliopta aristolochiae (Fabricius) (Trosaristolochiae)
Malabar Banded Swallow	P. liomedon Moore
Common Mormon	P. polytes polytes (Linnaeus)

Common Gull	<i>Ceporanerissaphryne</i> (Fabicius) (Huphinanerissa)
-------------	---

#### SPIDERS

COMMON NAME	SCIENTIFIC NAME
Common two-tail	<i>Hersiliasavigni</i>
Round Longlegs	<i>Artemaatlanta</i>

#### AMPHIBIANS FROGS, TOADS & CAECILIANS

Common Name	Scientific Name
Indian Bull Frog	<i>Ranatigerina</i>
Common India Toad	<i>Bufomelanosticus</i>

#### REPTILES LIZARDS

Common Name	Scientific Name
Indian Garden Lizaerd	<i>Calotesversicolor</i>

#### SNAKES

Common Name	Scientific Name
Rat Snake	<i>Ptyas mucosa</i>
Vine Snake	<i>Ahaetullanasutus</i>

#### AVES

Common Name	Scientific Name
House crow	<i>Corvussplendens</i>
Owl	<i>Bubo oriental</i>
Koel	<i>Eudynamysseolopaceus</i>

#### MAMMALS

Common Name	Scientific Name
Indian rat	<i>Must rattus</i>
Mouse	<i>Musmuseulus</i>

Table 6: Faunal diversity in Nambozhiyil Kavu (Totally destroyed)

#### IV. CONCLUSION

In the past protection and conservation of the sacred grove were closely linked with the religious beliefs and traditional culture of the indigenous tribal communities all over the world. This cultural heritage survived through generations, but unfortunately the religious beliefs and taboos that were in the Centre of sacred grove preservation are now fast eroding due to change in social setup, increased consumerism for better living and change in the belief system of the people attributable to modern system of education (Rao, 1996). Therefore it is extremely difficult if not possible to protect sacred groves indefinitely only on the basis of religious beliefs. There is a need to revitalize the age old ethos of conservation culture of traditional societies by supplementing with scientific knowledge about the crucial role these forest patches play in conserving biodiversity and providing large

number of valuable good and vital ecological services to the people living around the sacred groves. Therefore urgent interventions are required for the conservation of these forest patches.

#### ACKNOWLEDGEMENTS

The authors are grateful to Department of zoology, Kongunadu Arts and Science College for guiding and providing necessary help for conducting this research studies.

#### REFERENCES

- [1] Chattopadhyay Srikumar, and Richard W. Franke. Striving for Sustainability: Environmental Stress and Democratic Initiatives in Kerala. New Delhi: Concept Publishing Company, 2006.
- [2] Jamir, S.A. and Pandey, H. N (2003). Vascular plant diversity in sacred groves Jaintia Hills in northeast India. Biodiversity and conservation 12: 1497- 1510.
- [3] Jayarajan, M. 2004. Sacred groves of north Malabar. Discussion Paper No. 92. Kerala Research Programme on Local Level Development Centre for Development studies, Thiruvananthapuram.
- [4] Malhotra, K. C., Gogkhle, Y., Chatterjee S and Srivastava, S. (2007). Cultural and Ecological Dimensions of Sacred Groves in India. India National Science Academy and Indira Gandhi Rashtriya Manav Sangrahalaya, Bhopal.
- [5] Neff, Deborah, L. "Aesthetics and Power in Pambin Tu. A Possession Ritual of Rural Kerala." Ethnology 26 (1987): 63–71.
- [6] Osella Filippo and Caroline Osella. Social Mobility in Kerala: Modernity and Identity in Conflict. London: Pluto, 2000. Religions 2016, 7, 38 14 of 14.
- [7] Panikkar, T. K. Gopal. Malabar and Its Folk. New Delhi: Asian Educational Services, 1995.
- [8] Parayil, Govindan. Kerala: The Development Experience: Reflections on Sustainability and Replicability. London: Zed Books, 2000.
- [9] Prakash, B. A. "Gulf Migration and its Economic Impact." Economic and Political Weekly 33 (1998): 3209–13.
- [10] Radhakrishnan, P. Peasant Struggles, Land Reforms and Social Change: Malabar 1836–1982. New Delhi: Sage, 1989.
- [11] Raj, K. N., and Michael Tharakan. "Agrarian Reform in Kerala and its Impact on the Rural Economy: A Preliminary Assessment." In Agrarian Reform in Contemporary Developing Countries. Edited by Ajit Kumar Ghose. London and New York: Groom Helm and St. Martin's Press, 1983, pp. 31–42.
- [12] Ramachandran, K. K. and Mohan, C. N. 1991. "Studies on Sacred Groves of Kerala". Final report submitted to Ministry of Environment and Forests, Government of India.
- [13] Rao, P., Barik, S. K., Pandey, H. N., and Tripathi, R. S. (1996). Tree seedling germination, establishment in tree

fall gaps and understory in subtropical forests of northeast India. Australian Journal of Ecology 22:136-145.

- [14] Subhash, M. D. Chandran, Madhav Gadgil, and J. Donald Hughes. "Sacred Groves of the Western Ghats of India." In Conserving the Sacred: For Biodiversity Management.

Edited by P. Sivaswamy Ramakrishnan, K. G. Saxena and U. M. Chandrashekara. Enfield: Science Publishers, 1998, pp. 211-32.

- [15] Unnikrishnan, E. 1997. Utharakeralathile Vishudhavanangal (mal.) Samskruthi, Kannur.

IJIRAS