Sacred Grove - Naga bana at Kudupu Anantha Padmanabha Temple, Mangalore, Karnataka

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Abstract

Sacred groves includes various types of protected forest areas worships by different groups of people throughout India and other places with reference to different types of Gods/goddess. Indian continent this is considered as much protected patched of forest area now forms a typical conserved forest area with wide varied floral biodiversity. In the present investigation South Canara's serpent temple Shree Kudupu Anantha Padmanabha temple, next to Shree Subramanya temple where a small Sacred gove-naga bana existed and its floral diversity was explored. Here the biodiversity was retained as nobody intended to enter or exploit the floral component as the sacred grove is very close to the temple situated. The presence of many endemic ,endangered and rare plant species have been reported in the premises of Kudupu Temple. The plant species specimens were collected and identified based on the plant characters. The floristic diversity and importance of the sacred groves are recorded.

Keywords: Biodiversity, conservation, floristic diversity, Kudupu, naga bana, sacred groves

Introduction

Sacred groves are community based repositories of biological diversity and got protected on the basis of religious practices and faith. The practice of assigning a patch of forest as the abode of Gods or Goddesses is not new. The societies of Greece, Roman, Asia and Africa had long preserved sections of the natural environment as sacred groves to God and Goddesses (Gadget and Vatic, 1975; Khiewtam and Ramakrishnan, 1989; Hughes, 1994; Ramakrishnan, 1996).

Sacred groves in India are known under different names in different parts of the country, Various communities worship the nature based on the premises, Sacred groves still possess a great heritage of diverse gene of many forest species having socio religious attachment. The

importance of sacred grove in nature conservation has been increased manifold in recent time especially after the declaration of convention on biological diversity. Thus the role of natural sacred sites, particularly sacred groves, is attracting increasing interest in international organizations and conservation organisations such as UNESCO, the WWF and has significant relevance for the implementation of article 8j of the Conservation of Biological Diversity which stresses more on the use of traditional wisdom and practices for conservation and sustainable use of biological diversity.

Examination of the contribution of the sacred forests to biodiversity conservation offers perspective on the sacred forests as a model for environmental protection (Camara, 1994). The wide distribution of sacred grooves observed all over the country there are 14 thousand grooves were reported in India. Himachal Pradesh (5,000) in the north and Kerala (2,000) in the south are known for their large number of their sacred grooves. The number of sacred grooves in Karnataka is 1,424 across 62,999 acres, here it is cultural practice and believe system.

Types of sacred forests: The Hindu tradition considers forests to be of three types - *Tapovan*, *Mahavan* and *Sreevan*. *Tapovan* are forests associated with penance (*Tapas*), and are inhabited by saints and *rishis*. *Mahavan* refers to the grand natural forests. *Tapovan* and *Mahavan* are considered to be a *Raksha* ("sanctuary") for flora and fauna as ordinary human beings are not allowed to enter these forests. *Sreevan*, which means, "forests of the goddess of prosperity", consists of dense forests and groves. From the former, people would collect dry wood, leaves, forest produce and a limited amount of timber, though natural ecosystem would not be unnecessarily disturbed. Groves were considered as spaces of forests from where harvesting could be done. Sometimes, specific trees like mango trees could be planted and nurtured here. Groves were associated with religious rites, festivals and recreation. Typical recreational activities associated with these groves included *jhoola*/ *jhoolan*. In the villages, *Panchavati*, or a cluster of five trees that represented the forests, were maintained. These trees represented the five elements of Earth, Water, Fire, Air and Space (Ranchor Prime, 2002).

Sarpa Kavu: A Sarpakkavu or Snake Grove is a kind of holy grove found in Kerala. Kavu is the traditional name given for Sacred groves across the Malabar Coast in Kerala, South India. Kavus are notable for Theyyam, the centuries-old ritual dance (Prasad and Mohanan, 1995).

Umang Lai (literally, "Forest Deities"): A form of holy Sacred grove found in Manipur. There are more than 365 Umang Lais, affiliated to the ancient religion of Sanamahism, which exists in various regions scattered across the Himalayan state of Manipur since ancient times. The holy as well as religious festival of Lai Haraoba is celebrated especially in regards of these holy sacred groves. The accounts of these holy sacred groves are found in the ancient Manipuri Manuscript named Karthong Lamlen. Interestingly, Manipur stands 8th rank among all the Indian States and 1st rank for North East India, for having highest number of sacred groves across the country (Tiwari *et al*., 1995).

The Western Ghats consists of part of Uttara Kannada district, Udupi and Dakshina Kannada districts. consists of the Uttara Kannada, Shimoga, Chikmagalur, Hassan and Kodagu districts. Locally the whole region comprising the West Coast and the Western Ghats is referred as Malnad. The sacred elements (SEs) in the Malnad region can be described as follows: The most common SE in this region is sacred grove (SG). But the SGs vary in terms of size, ownership patterns and also with respect to the vegetation. These factors are influenced by the biogeography of the species harboured and the human influence on SGs. The groves broadly come under two classes. The smaller groves are entirely protected; no tree felling or other biomass extraction may be carried out. The smaller SGs are generally referred as devarbana, nagabana (serpent groves). Smaller groves: These SGs are the ubiquitous features of the landscape in the Uttara Kannada, Udupi and Dakshina Kannada districts. The size usually ranges from a gunthas (40 gunthas = 1 Acre) to few acres in rare cases. In Uttara Kannada the deities in SGs are mainly Bhutappa, Jatakappa, Mariamma, Chowdamma, Hulidevaru and occasionally Naga. The majority SGs are owned by the State Forest Department and managed by the local people. Siddapur taluk of Uttara Kannada district has about 100 SGs. Whole district could be a single unit culturally similar in terms of Areca nut economy, major land uses like Reserved forests, Soppinabettas, Paddy fields, Bena lands, minor forests and SGs. Hence, the Siddapur case study data can be extrapolated for the entire Uttara Kannada comprising of 11 taluks totally covering 10,291 sq. km. could suggest the existence of more than 1000 SGs in the district. Some of the rare ecosystems like Myristica swamps are often found as SG in the district. In many cases the present day smaller SGs amidst soppinabetta lands represent the smaller fragment of earlier

larger devarkans. The Nagabanas are abundant in Udupi and Dakshina Kannada districts. They are smaller in size ranging from few gunthas to few acres in rare occasions. The Nagabanas are mainly owned by families and occasionally are linked with the temple complexes in the districts. The number of Nagabanas will be very high in these two districts. Both these district form a single cultural unit based on the Coconut and Areca nut plantations, paddy fields, reserved forests, protected areas and family owned nagabanas. Larger groves: These groves function as resource forest also, offering both sustenance and ecological security. The people of the village may gather fallen deadwood, non-wood produce such as pepper, mango, jackfruit, etc., and tap toddy from a palm (*Caryota urens*). They tend wild pepper within the kans (Brandis and Grant, 1868). The SGs are referred by names such as devarkadu, devarkan, etc. These SGs are mainly reported from Uttara Kannada, Shimoga and Kodagu districts. Devarkans used to be an important landscape in Uttara Kannada, Shimoga and Chikmagalur districts about 150 years back. The forest management by the British regime in these districts altered the land use pattern substantially by either discontinuing the traditional practices or neglecting them for the revenue and timber. The substantial alterations in the traditional land use pattern in the Western Ghats have made the devarkans as historical sacred forests. Uttara Kannada was part of the erstwhile Bombay Presidency where British regime abolished the rights of local people over the devarkans. In the sacred kans timber felling became a taboo assuring their preservation as a traditional practice. But collection of various non - wood produce and in some cases fallen leaves for manure were carried out, if the community had no other source, without endangering the ecology of the kan. Obviously referring to such sacred kans (Chandran and Gadgil 1993a).

Shree Anantha Padmanabha Temple Kudupu dedicated to lord Vishnu and well known for serpent worship, Nagabana is situated in eastern portion of the temple, there are more than 300 serpent idols in this nagabana the holi pond (Bhadra Saraswathi) thirtha is situated on the left side of the temple (Figures 1,2). Since Water from temple tank was not utilised for daily chores.

The Kudupu temple known for the serpent worship a preliminary study carried out for the floristic diversity, in the present investigation population and dominance of the species were studied and it showed a contagious distribution pattern in tree diversity. A brief study carried on sacred grooves and sacred ponds including water and floral diversity of Shree Anantha

Padmanabha Temple, Kudupu is situated in Kudupu village which is 10 km away from Mangalore city towards Moodbidri in NH 66.

Objectives

- To understand the current status, distribution, structure and function of sacred groove.
- To study the floral diversity and population pattern.
- To evaluate the physical parameters of holy pond Badra Saraswathi thirtha.
- To enumerate the medicinal value of plant diversity.

Materials and Methods

A detailed survey has been carried out to record the plant diversity of sacred groove of Shree Anantha Padmanabha Temple Kudupu and regular field visits were conducted to Kudupu from during 2016-19 for survey and sample collections.

The plant species specimens were collected and identified based on plant key character and their populations were recorded. The collected specimens were preserved as herbarium in the laboratory.

The floristic diversity and the importance of the sacred groove have been recorded with respect to their uses.

Water samples were regularly collected physicochemical parameters like pH, EC, Temp, TDS and salinity were measured by standard protocols.

Results and Discussion

The sacred groove lies between 12°54`14.77°N latitude and 74°53`37.01°E longitude at Kudupu, Mangalore.

The temperature of the water lies between 20-30°C during study period. The pH is acidic and TDS as higher in November period, while salinity increase during summer (Table 1).

Table 1: Physical parameter of water from pond Bhadra Saraswathi thirtha

Parameters	Sept	Oct	Nov
p^H	6.05	6.98	6.56
Temperature (°C)	28	27	24
EC (S/m)	99.6	112	114
TDS (ppm)	70.4	81.4	85.8
Salinity (mg/L)	41.6	47.4	49.2

The floristic diversity of Kudupu Nagabana comprises twenty four species of flowering plants belonging to twenty families. Among them fourteen species were trees, four are woody climbers, four climbers, one each liana and herb. Altogether six species were endemic to the Western Ghats of India. The medicinal properties of different plants recorded were given in table 2.

Table 2: List of plant diversity found in the Kudupu temple sacred grove

SL No.	Name of the plant	Family	Habit/Local name	Medicinal uses/properties
1	*Adenanthera pavonina* L	Fabaceae	Tree Manjotti	Antidiarrhoeal, antiinflammatory, anticephalalgic
2	*Ampelocissus latifolia* (Roxb.) Planchon	Vitaceae	Climber Kaadu drakshe	Antidysenteric, theethache, antiulcer
3	**Artocarpus heterophyllus* Lam.	Moraceae	Tree Halasu	Antioxidant, antiinflammatory, tonic
4	*Caryota urens* L.	Arecaceae	Tree Yeend	Snake bite, migraine, laxative
5	*Cinnamomum verum* J.S. Presl	Lauraceae	Tree Chekke	Antitumor, anti-inflammatory, carminative, stimulant, antidiabetic, antiseptic
6	*Combretum latifolia* L.	Combretaceae	Woody Climber	Skin and veneral diseases, antidysenteric
7	*Costus specious* (J. Koenig) Smith	Zingiberaceae	Herb Nayi kabbu	Antihelmintic, antidiabetic, stimulant, astringent, purgative
8	*Dioscorea alata* L.	Dioscoreaceae	Climber Toona gadde	Febrifuge, antigonorrheal, antileprotic
9	*Diploclisia glaucescens* Blume	Menispermaceae	Woody Climber Bhoota kannu	Antigonorrheal, antisyphilitic, in biliousness
10	*Entada pusaetha* DC	Fabaceae	Woody Climber Palle kayi	Antiinflamatory, antihelmintic, antileprotic, antiulcer, antiemetic,
11	*Ficus hispida* L.f.	Moraceae	Tree/Pajovu	Antileprotic, antihemorrhagic, tonic, antiemetic, purgative
12	*Ficus racemosa* L.	Moraceae	Tree Athi	Antidiarrhoeal,liver and urinary disorders, antidiarrhoeal, in piles
13	**Garcinia tolboti* Raizada ex Santapau	Clusiaceae	Tree	Condiment
14	**Holigarna ferruginea* Marchand	Anacardiaceae	Tree Chere	Insecticidal, CNS depressant
15	**Ixora brachiata* Roxb.	Rubiaceae	Tree Koraji mara	Antidermatophytic, in toothache
16	*Mimusops elengi* L.	Sapotaceae	Tree Renje	Antidysenteric,antiasthmatic, liver complaints, vajradanthi

17	**Moullava spicata* (Dalz.) Nicolson	Fabaceae	Woody Climber Gajjige kayi	Antipneumonial, skin diseases
18	*Pothos scandens* L.	Arecaceae	Lian Arke soppu	Antiasthmatic, epilepsy, snake bite, antiepileptic
19	*Piper longum* L.	Piperecae	Climber Kaalu menasu	Sedative, Epilepsy, insomnia, stimulant, astringent, expectorant
20	*Smilax zeylanica* L.	Lilliaceae	Climber Chenne booru	Antidysenteric,Abscesses,boils, Swellings,antirheumatic
21	*Sterculia guttata* Roxb.	Stercullaceae	Tree	Seeds edible. nutritive
22	*Tectona grandis* L. f.	Verbenaceae	Tree Saguvani	For anuria and bronchits
23	**Vateria indica* L.	Dipterocarpaceae	Tree Dhoopa mara	Bronchitis and throat troubles, in wounds, eruptions, antiulcer
24	*Zanthoxylum rhetsa* (Roxb.) DC	Rutaceae	Tree Kavate kayi	Antidiarrhoeal, antirheumatic, toothache, piles, cardiovascular

*Endemic plants

The nagabanas in Dakshina Kannada and Udupi district might not have reduced in number but the smaller sizes are still getting shrunk or sometimes encroached for platforms for the deity. The sacred groves are supposed to harbour near natural vegetation in the local area because of minimal anthropogenic impacts. Hence, in the Western Ghats the SGs are mainly evergreen in species composition as it is the natural vegetation type in the area.

Conservation - The traditional beliefs or practices of nature conservation could have two important characteristics which could be of use to modern day conservation programmes such as: biological information of species and ·thumb rule of sustainability or long term utility. According to the discussion regarding Current Status it is quite evident that range of organisms are associated with these cultural conservation practices, which are poorly documented. Lack of knowledge of these practices even at local could result in the loss of the information about species or at times loss of the species in itself. This also hinders the furtherance of local knowledge of biodiversity.

Strategies for conservation 1.Sacred groves – The tradition is reported from almost all parts of the State but it varies from region to region mainly with respect to species protected, size, ownership pattern and local taboos. In spite of having non-similarity in various aspects related to biodiversity conservation, the sacred groves share common problems all over the State. Removal of biomass - Mainly due to dwindling of local natural resources like firewood people have started exploiting the resources from the sacred groves as well. Hence, it is needed to work on the alternatives to stop the removal of biomass from the SGs. It mainly involves the alternatives

for firewood. Sanskritisation – In many places, local folk deities have been, and continue to be, replaced with Hindu gods and goddesses. This has resulted in the erection of temples in side the sacred groves by destroying the vegetation of the SGs. This process needs to be halted by conducting awareness programmes regarding the importance of vegetation of the SGs among the local people and mainly among the stakeholders of the SGs like SG committee members, priests, owners of SGs. The SGs owned by the Government department can prevent the destruction of the vegetation using the forest conservation laws. Ownership – Very diverse patterns of ownership from region to region. There is a need to have a statewide study to understand regarding various ownership patterns for concrete and region specific strategies for the conservation. Economic incentives to the sacred groves could not be the viable option for sacred groves in all situations considering the large number of groves all over the State. There could be a threat to rest of the groves, which would not receive the economic incentive. But the strategy of economic compensation could be considered in case of very unique habitats like *Myristica* swamps, which are basically getting converted to areca nut plantations. The economic incentives need not be given for sacred importance but for the ecological values. But there could be social recognition by publicizing such places in media lauding their role in conservation efforts. 2. *Ficus* species – Protection to species of *Ficus* like *F. benghalensis, F. glomerata, F. religiosa, F. retusa* is a common practice throughout the State for being sacred as well as a part of local culture. These protected trees have are even though not threatened, at some places in Tumkur district they are reported to be used as firewood for brick kilns. There should be proper record of all available individual of *Ficus* sp. In all the villages and towns with the respective Grampanchayats or Municipal corporations with a copy with the concerned Territorial Range Forest Office. Since these are trees on revenue lands mainly, they have legal protection under the laws applicable to tree protection (Gadgil and Chandran, 1992).

One of the most important traditional uses of sacred groves was that it acted as a repository for various Ayurvedic medicines. Other uses involved a source of replenishable resources like fruits and honey. However, in most sacred groves it was taboo to hunt or chop wood. The vegetation cover helps reduce soil erosion and prevents desertification, as in Rajasthan. The groves are often associated with ponds and streams, and meet water requirements of local communities. They sometimes help in recharging aquifers as well (Unnikrishnan, 1995).

Of the 73 tree species recorded from the three sacred groves, 13 are endemic to Southwestern Ghats, three are endemic to Western Ghats and one is endemic to peninsular India. *Myristica malabarica*, *Nothopegia beddomei* and *Antiaris toxicariaare* rare and threatened species while *Aporosa bourdiloniiis* a vulnerable species (Nayar, 1996). Therefore, the pre-sent study supports the view expressed by various workers (Gadgil and Vartak, 1976; Unnikrishnan,1995) that sacred groves are the treasure houses of rare and endemic species.

Rajesh B. 2016. Recorded 30 plant species in a sacred goroves of Kunthoor village of Puttur taluk. Among them are endemic to the Western Ghats of Karnataka. These areas showed presence of number of sacred groves whichmaintained by the local/indigenous people from their ancestors timeitself. In this region, nature is worshipped mainly by the serpent god“Naga” . He also suggested possible role of local people in conservation of local forests and sacred groves and other restricted areas.

Modern uses

In modern times, sacred groves have become biodiversity hotspots, as various species seek refuge in the areas due to progressive habitat destruction, and hunting. Sacred groves often contain plant and animal species that have become extinct in neighboring areas. They therefore harbor great genetic diversity. Besides this, sacred groves in urban landscapes act as "lungs" to the city as well, providing much needed vegetation cover.

A large number of distinct local art forms and folk traditions are associated with the deities of sacred groves, and are an important cultural aspect closely associated with sacred traditions. Ritualistic dances and dramatizations based on the local deities that protect the groves are called *Theyyam* in Kerala and *Nagmandalam*, among other names, in Karnataka. Often, elaborate rituals and traditions are associated with sacred groves), as are associated folk tales and folk mythology (Rmakrishnan, 1996).

Conclusion

The sacred grove are the representative of climax vegetation and exhibits the diversity of species such as trees climbers and herbs which are of medicinal uses. The present papers revealed the floristic composition of lands in the sacred groove located in Kudupu which is natural forest, the

groove is entirely protected and there is no bio mass extraction is allowed even though visitors are allowed throughout the year. People with belief of serpent, nobody will attempt to enter the sacred groove, so it is conserved. The sacredness, religious beliefs and taboos play a significant role in promoting sustainable utilization and conservation of flora and fauna of the region. Sacred grooves act as natural habitat, a laboratory. Biodiversity is the life support system of our planet. Indigenous communities all over the world lived in harmony with the nature and conserved its valuable biodiversity.

Typically, sacred groves in Indian-origin religions are associated with the concept of a *presiding deity*. Often these sacred deities are numerous nature spirits and guardians associated with Hindu, Jain and Buddhist deities, such as nature spirits known as Yakshas (numerous nature spirits), Nāgas (serpent guardians) and guardian tutelary deities (like *ayyanar* and *amman*) are also known. There are over 1000 deities associated with sacred groves in the states of Kerala and Karnataka alone. Threats to the grove include urbanization, over-exploitation of resources (like overgrazing and excessive firewood collection), and environmental destruction due to religious practices. Other threats to the sacred groves include invasion by invasive species, like the invasive weeds *Chromolaena odorata*, *Lantana camara* and *Prosopis juliflora*.

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Fig: The Statue of Naga worshipped daily near Naga bana

Fig. 2: A view of the diversity of Naga bana