

SACRED GROVES IN GOA

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BHAGYASHRI TUKARAM NAIK

Seat Number: 22P00001

ABC ID: 840044718515

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Under The Supervision of

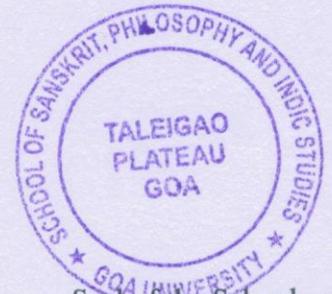
DR. MARIA NORMA MENEZES

School of Sanskrit, Philosophy and Indic studies



GOA UNIVERSITY

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DECLARATION BY STUDENT

I, **Bhagyashri Tukaram Naik** hereby declare that the data presented in this Dissertation report entitled, “**SACRED GROVES IN GOA**” is based on the results of investigations carried out by me in the MA Philosophy at the School of Sanskrit, Philosophy and Indic studies, Goa University under the Supervision of **Dr. Maria Norma Menezes** and the same has not been submitted elsewhere for the award of a degree or diploma by me. Further, I understand that Goa University or its authorities will not be responsible for the correctness of observations / experimental or other findings given the dissertation.

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Bhagyashri Tukaram Naik

Seat no: 22P00001

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Place: Goa University

COMPLETION CERTIFICATE

This is to certify that the dissertation report "SACRED GROVES IN GOA" is a bonafide work carried out by Bhagyashri Tukaram Naik under my supervision in partial fulfilment of the requirements for the award of **Master of Arts in the Discipline MA. Philosophy** at the School of Sanskrit, Philosophy and Indic Studies, Goa University.



A handwritten signature in blue ink, appearing to be "Dr. Maria Norma Menezes".

Dr. Maria Norma Menezes

Supervising Teacher

Date: 02/05/2024

A handwritten signature in blue ink, appearing to be "Dr. Adaly".

Dean of the School

Date: 2/5/2024

Place: Goa University

Dean
School of Sanskrit, Philosophy and Indic Studies

PREFACE

Undertaking this dissertation has been a profound exploration into the intricate relationship between culture, environment, and tradition, specifically focusing on the sacred groves of Goa. This work delves into the rich tapestry of beliefs, traditions, and ecological significance embedded within these sacred spaces.

Chapter 1 lays the foundation by introducing the concept of sacred groves, elucidating their cultural and ecological importance, and highlighting their uniqueness in the Goan context. It sets the stage for a deeper examination of these sacred sites and their relevance in contemporary environmental discourse.

Chapter 2 delves into the existing research on sacred groves, documenting Goa's unique sacred sites, and discussing the role of religious and cultural practices in biodiversity conservation. It provides a comprehensive overview of the study area and profiles specific groves, such as Nirankarachi Rai of Bambar and Purvatali Rai's Surla Bicholim.

Chapter 3 delves into the impact of sacred groves on environmental protection, exploring the socio-cultural practices associated with these sites, their ecological services, and the challenges they face, including degradation and the looming threat of climate change and mining activities.

Finally, Chapter 4 draws together the findings of this dissertation, offering conclusions and insights gleaned from the research conducted. It underscores the significance of sacred groves as vital components of both cultural heritage and environmental conservation efforts.

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I also thank Goa University Library for providing me with the required material for the completion of my dissertation.

I would like to express my deep gratitude to my parents for their moral support, help and encouragement throughout my dissertation.

Above all, I thank the almighty for making this possible.

CHAPTER 1

SACRED GROVES IN GOA

INTRODUCTION

Sacred groves are tracts of forest which are regenerated around the places of worship. Sacred groves are found in Rajasthan Western Ghats of Karnataka and Maharashtra Meghalaya and Madhya Pradesh . Sacred groves help in the protection of many rare and endemic species. Sacred groves are sacred tracts which are held in high esteem by local communities. Sacred groves or sacred woods are groves of trees that have special religious importance within a particular culture. Sacred groves are dedicated to local deities or ancestral spirits and are protected by local communities through social traditions and taboos that incorporate spiritual and ecological values. Sacred groves represent vegetation in natural or near natural state and are thus rich in biodiversity and harbour and many rare species of plants and animals .

The other word for sacred grove is “lucas” . Lucas meaning in general is a Forest or Woodland. But unlike the other it was primarily used as a religious designation meaning sacred groves. Lucas is a large number of trees with a religious significance, distinguished from a natural forest that is not consecrated. It implied a wilderness area with varied topographical features. A lucas was a cultivated place, more like a wooded park than a forest and might contain a building that housed the image of God or other landscape features that facilitated or gave rise to ritual. Sacred groves of Goa harbour several rare species of flora and fauna, including numerous medicinal plants. Thus they also served as traditional means of conservation of biodiversity of the forest. Sacred groves are highly productive ecosystems with a thriving population of insects, lichens and microorganisms. The abundance of vegetation offers an assortment of habitats, which attracts birds and animals and creates a robust food web.

Sacred groves: Beliefs and traditions

The institution of sacred groves is an ancient tradition in Goa. From time immemorial, trees have been worshipped by the Goans. In Goa, as well as in many parts of India, care and nature have been influenced for centuries by religious beliefs and traditions. While coastal parts of Goa have been experiencing significant changes there exists some fascinating examples of sacred groves mainly in western Ghat region of Sattari, Sanguem, and Canacona. There was a time when sacred groves and sacred trees were a common

feature in every village. But today this tradition is being eroded due to changing socio-economic conditions and land use systems. Many sacred groves are now under threat and have been altered both in terms of size and vegetation structure. Sacred groves play a significant role in enhancing the glory of this land, conserving groundwater resources, and making the climatic conditions soothing. These sacred groves are a treasure of biodiversity and a unique example of in situ conservation of our genetic resources. Worshipping sacred groves is one method by which human beings express gratitude to the trees that sustained and supported life under a given agro-ecological condition. The sacred groves in Goa are known by different names at different places. In Sattari, they are called Devrais, in Ponda Devgal, in Sanguem Pann, and in Canacona they are known as Devran or Devadano. Sanguem and Sattari are the only two talukas in Goa having major forest cover and a heavy concentration of sacred groves.

Traditional societies in Goa associated a deity with local ecology. This deity was entrusted with the work of protecting a particular region, which included vegetation, natural flora and fauna, and people. People strongly believed that the deity protects those who protect the natural resources. These deities are named differently at different places. Certain activities are prohibited in these protected areas. A list to this effect has been made by the village communities and is specific to the local area and its ecology.

The other common feature of sacred groves is a water body locally known as Tali. The sacred groves and associated ponds or springs constitute a unique network of ecological systems that are intertwined with the life and culture of the Goan rural folk.

In most places, a complete ban is not in place, but control over certain activities is practised. Activities prohibited in and around the sacred groves include felling of trees, branches, or twigs; collecting of leaf litter; grazing or cattle; wearing shoes; urinating; spitting; etc. Entry is prohibited in some areas, during the menstrual period of four days. Certain activities such as collection of wood, fruits, and plant parts (for medicinal use) are permitted.

List of Sacred Groves in Goa

S.No.	Name of the Grove	Village Name	Taluk
1	Devachi Rai	Ibrampur	Pernem
2	Devachi Rai of Hankhane	Ibrampur	Pernem
3	Rashtriyachi Rai of Tembwada Hankhane	Ibrampur	Pernem
4	Pirapeth of Angodwada	Ibrampur	Pernem
5	Devachi Rai	Varconda	Pernem
6	Nagardeshwar	Virnoda	Pernem
7	Zalmiyachi Rai	Pallem	Pernem
8	Devachi Rai	Cudnem	Bicholim
9	Barazan	Cudchirem	Bicholim
10	Sidhdachi Rai of Vadaval	Latambarcem	Bicholim
11	Barazan	Mencurem	Bicholim
12	Dad Devachi Rai	Mulgao	Bicholim
13	Saterichi Rai	Sarvona	Bicholim
14	Nirankaryachi Rai of Vathadev	Sarvona	Bicholim
15	Kontinchya Aiyachi Rai	Surla	Bicholim
16	Pach Amyachi Rai	Ambeli	Sattari
17	Devachi Rai	Anjunem	Sattari
18	Devachi Rai	Birondem	Sattari
19	Devachi Rai	Buimpal	Sattari
20	Ajobachi Tali	Carambolim Brahma	Sattari
21	Devachi Rai	Carambolim Buzruco	Sattari
22	Holiyechi Rai	Caranzol	Sattari
23	Karalyachi Rai	Caranzol	Sattari
24	Devachi Rai	Choraundem	Sattari
25	Devacho Hudo	Codal	Sattari
26	Poshyachi Rai	Codvol	Sattari
27	Devachi Rai	Compordem	Sattari
28	Devachi Rai	Cudcem	Sattari
29	Devachi Rai	Dabem	Sattari
30	Nirankarachi Rai	Dabem	Sattari
31	Dhoopachi Rai	Derodem	Sattari
32	Sidhdachi Rai	Golauli	Sattari
33	Devachi Rai	Gonteli	Sattari
34	Devachi Rai	Gululem	Sattari
35	Mharinganachi Rai	Ivrem Buzruco	Sattari
36	Nirankaryachi Rai	Maloli	Sattari
37	Devachi Rai	Mauzi	Sattari
38	Sidhdachi Rai	Morlem	Sattari
39	Ghotgachi Rai	Morlem	Sattari
40	Devachi Rai	Naguem	Sattari
41	Vandevatechi Rai	Naneli	Sattari
42	Devachi Rai	Nanorem	Sattari
43	Devachi Rai	Pale	Sattari
44	Mharinganachi Rai	Pissurlem	Sattari
45	Pezali Devichi Rai	Pissurlem	Sattari
46	Devachi Rai	Ponsuli	Sattari
47	Devachi Rai	Poriem	Sattari
48	Devachi Rai	Queiaudem	Sattari
49	Ajobachi Rai	Querim	Sattari
50	Pishachi Rai	Querim	Sattari
51	Maulichi Rai of Vagheri	Querim	Sattari
52	Baldyachi Rai	Querim	Sattari
53	Comachi Rai	Querim	Sattari
54	Bheryachi Rai	Rivem	Sattari
55	Sidhdachi Rai	Saleli	Sattari
56	Thevanyachi Rai	Saleli	Sattari
57	Devachi Rai	Satrem	Sattari
58	Devachi Rai	Surla	Sattari
59	Zunya Gaokadchi Rai	Surla	Sattari
60	Pach Amyachi Rai	Surla	Sattari
61	Devachi Rai	Xelopo Buzruco	Sattari
62	Devachi Rai	Xelopo Curdo	Sattari
63	Devachi Rai	Zarani	Sattari
64	Devachi Rai	Zormen	Sattari
65	Paika Pann	Bati	Sanguem
66	Paika Pann	Cumbari	Sanguem
67	Paika Pann Khachkon	Molem	Sanguem
68	Paika Pann	Narquinim	Sanguem
69	Paika Pann	Netorli	Sanguem
70	Devachi Rai of Brahmani Maya	Surla	Sanguem
71	Paika Pann	Tudou	Sanguem
72	Bhui Pann	Veriem	Sanguem
73	Jaita Pann of Salgini	Veriem	Sanguem
74	Devadongor	Rivona	Sanguem
75	Vaghrya Pann	Rivona	Sanguem
76	Paika Pann	Morpilla	Quepem
77	Paika Pann	Cazur	Quepem
78	Betala Pann	Barcem	Quepem
79	Vaghrya Pann	Barcem	Quepem
80	Gadgya Pann	Barcem	Quepem
81	Shiva Pann	Barcem	Quepem
82	Sidhda maddi	Barcem	Quepem
83	Devi Pann	Barcem	Quepem
84	Mahadeva Pann	Barcem	Quepem
85	Durgadevi Pann	Barcem	Quepem
86	Devati Pann	Bendordem	Quepem
87	Paika Pann	Mangal	Quepem
88	Par tagal	Poinquinim	Canacona
89	Nasa Pann	Gaodongarim	Canacona
90	Availi Dano	Cotigao	Canacona
91	Kuske Dano	Cotigao	Canacona
92	Badde Dano	Cotigao	Canacona
93	Paika Pann	Tudal	Canacona

Source: Rajendra Kerkar – Sacred Groves in Goa

Ecological significance of sacred groves

In situ conservation of biodiversity by serving as repositories of germplasm of a number of wild varieties of plants

- Help groundwater recharge
- Provide perennial source of water
- Maintain cooler temperatures, preserve soil moisture
- Carbon sequestration functions
- Prevent soil erosion and nutrient leaching
- Maintain soil fertility through nutrient enrichment

It is commonly reported that many of the rare plant species are found in sacred groves. In situ conservation of biodiversity seems to be the most important ecological function performed by the institution of sacred groves.

Freshwater streams and springs are common features of the grove

These were the prime sources that supplied water for drinking and agricultural purposes to the villages located downstream. Also these trees prevent soil erosion and help in conserving water. It is believed that the water of these springs have medicinal properties. Even today in the remotest parts of Goa locals who are still away from any rural health services go to these sacred groves for herbal medicines . Finding a cure which treatment centres can't heal some sacred groves cure skin diseases and other forms of illness. Human beings relied on sacred groves for the supply of various medicinal plants, shrubs and creepers.

Sacred groves are called "virgin". They are the tracts of virgin forest that are left untouched by local inhabitants and are protected by local people due to their culture and religious beliefs , sacred groves are relic vegetation of once dominant flora. They are

repositories of our rich biodiversity; they are also the last bastion where the rich culture and customs of indigenous people are still preserved.

In Goa sacred groves are known by various names Devrai, Devraan or pann or paika pann. However, thanks to our ancestors and the sacred groves. Before it was banned in 1972. The practice of slash and burn agriculture was prevalent on the hill slopes of Goa. Every year a new patch of forest land would be cleared in order to cultivate millets and other crops. This form of agriculture was called kumeri. What we see today is actually the secondary forest grown after the ban of kumeri in 1972. While the entire forest land was converted into kumeri ground, our ancestors had conserved some important patches of forest and devoted it to certain gods and goddesses. These tracts of forest land are called sacred groves. Goan sacred groves are often associated with temples, monasteries, shrines, pilgrimage sites or with burial grounds. Goa is said to possess 93 sacred groves. They are patches of pristine forest area which are dedicated to local deities or forest spirits in Goa. It is said that each village in Goa has at least one such grove, which is protected in the name of a local deity or devchar (Rakhandar) . Traditional worship of these patches as well as of plants and animals has been carried out since ancient times. Tribal communities who first inhabited Goa like the Kunbis or the Gavdas have protected these areas which can range from a small cluster of vegetation to 10 acres of land seen in places like Keri and Verlem. Sattari and Sanguem taluka have the highest area preserved under forests. And the presence of sacred groves is probably one of the main reasons for this protected green cover.

Keri village in sattari Taluka has one of the highest numbers of sacred groves. It has one of the largest sacred groves called Holiyenche rai in Karanjol village which is the largest sacred grove in Goa spread across 27 hectares of land and also another largest sacred grove called Ajobachi rai which is spread across 10 hectares of land.

“ Once through various taboos related to them, the sacred groves have been completely immune from human interference on grounds of religious beliefs.” - stated Rajendra Kerkar .

So this statement is given by Rajendra Kerkar the renowned environmentalist of Goa through his research and analysis he found that the protection tradition originally forbade any interference with the biota of the grove in any way whatsoever. And not even the leaf litter would be touched . These patches are governed by strict rules and regulations, which the local community adheres to even today. Nobody dares to defy or disobey these rules . Not a single leaf or dead wood has taken out of these groves for hundreds of years. Grazing or hunting is not allowed within the grove for fear that the divine wrath would cause great illness or a horrific death. This has kept these patches of virgin forest near a natural state in Goa. In order to pluck these plants they have to perform certain rituals to

please the forest God. Therefore the biodiversity thriving inside this forest is the original one . The components found in these forests are not found anywhere else and not even in the vicinity of these groves.

Uniqueness of sacred groves in Goa

Some sacred groves are a abode of unique ecosystems which will not be found anywhere else in the world. For example, in Goa we have mangrove ecosystems in estuaries, and we also have fresh water swamps, often termed as mystical swamps. These forests are unique stages of floral components. As these are basically swamps, the tree species growing in these forests show unique adaptation to the environment with more benefits. Sacred groves in Goa vary in size from a few trees to dense forests covering vast tracts of land . These groves are important today as they serve as banks of genetic and plant diversity in dire need of being preserved and sustained.

Sacred groves are highly protected because of religious and cultural traditions they are of religious importance to communities. Undisturbed forest areas that are surrounded by highly decorated landscapes. Many such forest patches are found in biodiversity rich areas. They worked as a repository for various ayurvedic medicines. They have a significant role in conservation.

It also provides vital ecosystem services to local people. Direct and indirect contributions ecosystems provide for human well-being and quality of life. This can be in a practical sense providing food and water and regulating the climate, as well as cultural aspects such as reducing stress and anxiety. They are the last refuges for a large number of rare and threatened plants and animals species, where they are safe sheltered from danger and difficulty.

Importance of all natural resources

It was impossible to have culture and religion without water and hence springs became respected waters. Many such springs emerge into a river and the systems of culture, language, and religion. People believed the ponds and their waters were sacred places where the Gods resided and hence these waters had significance in their lives. A water body in the form of a tank was created for every temple and hence water was part of its holiness and a sign of its prosperity. People maintained these waters with great regard. In some parts of Goa, a lake is considered as a representation of a God. In some areas before ploughing of the soil, the lake is worshipped and only then the farming is begun. Since the fertile soil along the rivers was more suitable for crop cultivation, humans started to settle along the riverbeds called Kulager farming.

Once upon time the concept of sacred forest was apparent in all the parts of Goa. Worship of springs , trees , ponds, and animals was a custom of the Goan societies during the Neolithic age. Neolithic age the humans carved drawings of deer, antelope, and other wild animals on the rocks, a great importance was given for worship of trees like ficus. . Still today , if we observe the religious traditions and other customs of tribes of Goa then we can comprehend the love and respect they have for the forests and the wild animals. In Goan folk culture, the banyan tree (Ficus Bengalensis) has immense importance. This tree situated mostly in the central part of the village was witness to various happenings. The tree imparted an identity to the village and it was looked upon as member by people rather than just a tree . Whether it was a tired farmer seeking solace in its shade or the village elders gathering there , the tree served as a constant support to the people. In the days when the modes of entrainment were limited the banyan tree would serve as a point for discussions which ranged from the daily happenings to State and national events. It was an example of faith in local culture and people would often worship it like a deity. Sacred groves were since nature and regard for the Earth as mother and sky as father is a prehistoric relationship developed when humans and cave animals like the tiger and the bear lived side by side and learnt the art of self defence by forming their own groups . With the help of stones instruments human hunted for animals and dig out wild roots to eat. At the same time , humans were dependent on Nature for food and shelter. Some of sacred forest still exist . Some of them can give an idea of how the ancient humans maintained and protected these forests. Ancient humans had maintained these sacred groves based on religious beliefs keeping their need importance for future . In the historic literature of Buddha or epics of Ramayana or Mahabharata, evidence of the concept of sacred groves can be found. Still today , if we observe the religious traditions and other customs of Gawda, Kunbi Velip, and Gawali tribes , in Goa then we can comprehend the love and respect they have for the forests and the wild animals.

Sacred groves are tracts of virgin forest with rich floral and faunal 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 extricable link between present society and past in terms of biodiversity, culture, religious and ethnic heritage exists in sacred groves. Sacred groves act as an ideal centre for biodiversity conservation. Several plants and animals that are threatened in the forest areas 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 areas 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 utilisation and conservation of flora and fauna of the region. However, with the passage of time, considerable changes have taken place in the extent of sacred groves, in their vegetation structure, people's perception towards

them and the religious beliefs and taboos. Therefore, a holistic understanding of the current status, structure and function of sacred groves is essential for assessing their ecological role and formulating strategies for their conservation.

Goa since the hoary past has been known as the tropical paradise, due to the favourable climatic condition and environment. The beaches of silvery sands and blue water of the sea are a source of attraction for the tourists and hence very few are aware that Goa has most imposing and pleasing green sahyadri mountain ranges. Like other parts of India , Goa too has rich and varied Indian cultural heritage. The Goans are nature worshippers par excellence , and extend protection to various forms of living nature like any other culture in India. Gavda , Kunbi, Velip and Dhangar- Gawli, the tribals of Goa have worshipped various forms of nature. They have a tradition of sacred cow, sacred goat, sacred banyan tree , sacred hill, sacred stone, sacred pond, and also sacred groves. By considering them sacred, they have protected them for many generations. Sacred groves are indeed very old nature sanctuaries where not only living but also non living beings are afforded protection through the grace of any one deity or spirits from traditions. In Goa, there are instances in some sacred groves where the entire biological wealth receives total protection on account of their association with some deity. Forests have been the lifeline for tribals and other forest dwelling communities since the distant past. Goa , a beautiful land nestled amidst the western Ghats and the Arabian sea; though it remained for hundreds of years under Portuguese rule has maintained its linkage with the Indian culture even after the religious persecution. Nature conservation is a part and parcel of the ancient Indian tradition which can also be seen among the Goans. The tribals of Goa and other forest dwelling communities have excellent knowledge of the floristic wealth of their surroundings who make use of these plants for satisfying their daily needs by maintaining their relationship with biodiversity rich areas . There existed among them a symbiotic relationship between the local community and biodiversity who with a wealth of knowledge on the utilisation and conservation of food and medicinal plants have guarded it.

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CHAPTER 2

RESEARCH ABOUT SACRED GROVES

According to my studies and personal visits I have gathered detailed information about some sacred groves in Goa through personal analysis and deep research.

The deity that is most frequently found while traversing the forests or sacred groves is Gajalakshmi. She is uniquely depicted carved in relief on a trapezoidal or semicircular slab mostly of the schist stone where the goddess Lakshmi is shown seated holding lotus buds in her hands. She is flanked on either side by two elephants, which shower her with pitchers of water. Musicians and devotees are shown in the lowermost portion of the icon. The elephants give the prefix Gaja to the goddess Lakshmi, and the icon becomes Gajalakshmi. In different localities, one finds minor variations in the panels that show different sculptors and perhaps time periods. This deity is mostly referred to as Kelbai, Bhauka, and sometimes as Mahamaya or Sateri. Earlier a semicircular stone, an iconic representation of Bhauka that was worshipped by the devotees have perhaps determined the shape of the Gajalakshmi panels. Scholars suggest that this goddess is a celebration of nature and consider the elephants on the icon as a depiction of a monsoon cloud and that through the worship of Gajalakshmi, a relationship is created between the sky and the earth.

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Gajalakshmi is worshipped to get success, fortune enjoy as goddess Gajalakshmi is considered as the goddess of elephant symbolising grace, power, strength fertility. This puja blessed with prosperity, wealth, and fortune. It brings the favour of luck and fortune in the life of the worshipper and removes all the negativity and evil effects of the planets from life.



Bhui pann:-

The Bhui pann of Verle situated inside the Netravali wildlife sanctuary is one of the biggest sacred groves of Goa which is characterised with the trees having tall, towering canopy. In some areas, even the sunlight finds it's difficult to reach down . There are some unique Species of the trees with their long gated roots which feed on the decomposing litter around, providing SAP to the entire ecosystem. A number of perennial streams originate mostly in the sacred groves.

Shidhdachi Rai

Shidhdachi Rai of Vadawal of Latambarce in Bicholim is the only refuge for the Wild animals in the area since the area is under the scourge of deforestation. It is the abode of Pangolin, the crested serpent eagle, the Malabar pied Hornbill and other faunal biodiversity.

Ajobachi Tali

The Malabar gliding nymph butterfly is known for hovering . This endemic butterfly is found inside the sacred grove of Ajobachi Tali near Brahma Karmali inside the Mhadei

Wildlife Sanctuary. In the autumn spring seasons the undergrowth plants are laden with hundreds of butterflies of striped tiger, blue tiger species. The swampy area has the typical crabs locally known as 'Belde'.

Paika Pann

Near the waterfalls of Baman-budi on the border of the Cotigao Wildlife Sanctuary, there is a sacred grove known as the Paika pann which is rich in faunal diversity.

Some sacred groves in Goa taluka and their importance

HoliyENCHI Rai in karanjol Village

Goa's first largest sacred grove which is spread across 27 hectares of land in Keri Village in Sattari Taluka. Situated at some distance from caranzol in sattari. The Ranes of Sattari and their supporters, before initiating the revolt against the Portuguese, would worship a sacred stone slab within the grove.(15 kms from Valpoi township in Karanjol). The access path to this sacred grove involves a very narrow path uphill of approximately 45 minute climb. The sacred grove cannot be accessed during the rainy season due to the strong currents from a seasonal stream. The trees found within the grove are *Vateria indica* (dhup trees) which are believed to be around 200 years old, *Pterocarpus marsupium*(kino), *Dalbergia latifolia* (Shiso), *Terminalia paniculata*(Kindal), *T.tomentosa*(Matti), *Syzygium Cumini* (jambhul) etc. The temple in the village where all the festivals are conducted.

Ajobachi Rai

The second largest sacred grove in Goa and which is in Keri Village sattari Taluka. It is spread across 10 hectares of land. Ajobachi Rai is a sacred grove as very peaceful place in the middle of mountains and the village located downstream in kulagers. This entry in this sacred grove is strictly prohibited and also the information about this sacred groves is not given to others by this local people, as they think that the sacred groves are secret places where only Gods reside and we should not disturb them. People travel to these holy groves for herbal remedies in the most isolated areas of Goa, where there are few access points for rural health care. The temple has one of Goa's largest sacred groves and the forest in this groove is hampered till date. This groove called Ajobachi Rai has a rich variety of woody creepers, trees, birds, animals and reptiles. The other deities worshipped are Goddess sateri and kelbai and purush Dev of which carved icons can be seen. As all this information is provided to be by one of the village local. And down near this mountain of Ajobachi Rai there is one temple of sateri Devi but people call it as Ajoba

sateri. This grove is 15 kms from Valpoi township in caranzol. The access path to this sacred grove involves a very narrow path uphill of approximately 45 minute climb. The sacred grove cannot be accessed during the rainy season due to the strong currents from a seasonal stream. The trees found within the grove are Vateria Indica(dhup trees) which are believed to be around 200 old, Pterocarpus Marsupium (kino), Dalbergia latifolia (shiso), Terminalia Paniculata (kindal) , T.Tomentosa(Matti) , Sigizum Cumini (Jambhul) etc. The temple in the village where all the festivities are conducted like Shimgo, Shirgao Jatra and Machimurkar jatra are celebrated in the month of February.

Documentation of Goa's sacred groves

Ajobachi Rai , Baldyachi Rai , Comachi Rai ,Birmanyachi Rai, panvelichi Rai, Hornyachi Rai of Vagheri are the sacred groves of Keri Village, situated between Vagheri and Morlegad hills of Sahyadri. Today, however, only a few of these groves are well protected. Among these, Ajobachi Rai is unique and is considered to be the biggest known sacred grove of Goa. A large track of forest that is evergreen is the Uniqueness of Ajobachi Rai. There are a number of beliefs associated with this grove, and the villagers, irrespective of their caste and religion, have guarded this grove that covers the forested area of about 10 hectares. The grove is about 1 km(kilometre) away from the temple of Sateri Kelbai and is situated on the hill. This primary forest is composed entirely of trees of about 20-40m (metres) tall with little shrub or herbaceous undergrowth. The dominating tree species are Karmal, khast, kivan, kosamb, amo, ghosting, marat, nano, satvin, panas, shidam, bhillo-mad, pav, gol and kharvat. Faunal diversity of this sacred grove is rich and the area offers ideal habitat and protection to all faunal components from insects to mammals. The floral diversity has helped attract and retain various faunal components of the grove. As the area remains undisturbed from human activities, dead wood, fruits, and undergrowth acts as breeding and roosting ground for different animals. Ajoba is regarded as an unseen holy spirit, and all the villagers respect him wholeheartedly. As he is the presiding deity of this grove, no one dares to cause any harm to this forest as all consider it as his abode. Activities like urinating, spitting, smoking, and using bad words(foul language) in the sacred grove are strictly disallowed. Livestock grazing and collection of dry twigs for fuel are allowed sometimes. In special cases when timber is needed for community purposes, permission is sought from Ajoba for extraction. Those who don't adhere to the taboos connected with this Devrai are believed to face ill health or misfortune. Hence, no one dares to break these taboos. Caranzol Village of Sattari, which is under the shadow of Hulan Dongor, has four sacred groves, namely Karalachi Rai, Gavalachi Rai, Hunulyachi Rai, and Holiyechi Rai. Among these four groves , Holiyenchi Rai is one of the biggest sacred groves and is well protected. This grove is about 3 km away from the village itself and is situated on the hill.

A large portion of the grove appears to be in its primeval condition. This primarily forest is composed entirely of trees about 20-30 m tall with little shrub or herbaceous undergrowth. The forest is rich in woody climbers. There are magnificent trees with large girth. It has a water-hole that attracts a variety of wild animals. The sweet chirping of innumerable birds makes one happy inside the grove. In 1740, the Ranés revolted against the Portuguese when they occupied Sanquelim and the Sattari Mahal. During these revolts, the Ranés used to enter this grove and worship an age-old stone slab. If the stone slab change position, it was believed that the mutineers would achieve success in the revolt. Due to this, Holiyenchi Rai is also popularly known as Ranyachi Rai.

Sacred grove of Brahma Karmali is situated at a distance of about 4km from the temple of Brahmadev and is locally known as Ajobachi Tali. The Holy spirit Ajoba is regarded as the protector of this grove . The grove has very tall and evergreen trees and a perennial spring . Due to the continuous flow of water, there is undergrowth of turmeric -like plant. Under the roots of this plant , a local variety of crab called belde is found. The uniqueness of this grove is that is it the habitat of varied colourful butterflies like common birdwing, striped tiger, common crow, blue Oak leaf, common grass yellow, and glossy tiger. A greyish white large butterfly called the ‘ Malabar tree nymph’ is the main attraction of this grove. It is the slowest flyer among the Indian butterflies and is occasionally seen hovering effortlessly at one spot, flying with its large wings. The sacred grove of Bambar-Nanoda of Sattari is the abode of rare medicinal plants. The forest of this grove is classified as ‘ Myristica swamp forest’ and is unique in Goa. The forest inside this grove has a great ecological significance. The trees have unusual aerial roots that are analogous to pneumatophores roots of mangroves. Nirankar is the presiding deity of this grove and is worshipped by the villagers of Malosis, Uste, and Nanode. The perennial spring of this grove has sweet, cool, potable water, which also feeds a number of coconut and banana plantations and other agricultural produce.

Nagve Village , which is 3km from Valpoi, also has a sacred grove. Though, this grove is not densely forested, it has a varied species of trees. This grove is famous for the rivers of the old temples, for the beautifully carved stone icons of Brahmani , for the two-handed Goddess standing erect in the boat, and also for a panel of Gajlaxmi, covered with lichens. There are not many restrictions with regard to this grove.

Coparde, which is on the way to Valpoi, Thane road, has four sacred groves. Of these , Devachi Rai has the largest area under well – protected forest. This grove is near the old temple of Brahmani Maya. There are huge Shidam trees with elongated woody climbers. Some of the climbers are so long that they cover several trees. Inside the grove, there is stream that flows till December. Both sides of the stream are lined with thick undergrowth of kevada(pandanus furcates). These kevada retain moisture and help the grove remain lush green throughout the year. This village is well known all over Goa as people from

various parts of the state come here for treatment of skin diseases. On the outskirts of the grove, there is a pond, which is known as Devachi Tali. The water of this pond is believed to possess medicinal properties, which acts as an antidote for snake poison. The patients who are dissatisfied with the allopathic treatment come here to get rid of their skin diseases. They reside in the Dharamshala, eat vegetarian food, and observe sagacity. Everyday they put the holy water of Devachi Tali, known as tirth, on the affected part until it is cured. This grove is easily accessible except during the mansoons.

Beside these groves , there are also many places in sattari where one can come across the well-conserved forests by the community in the name of religion and cultural heritage. Rive village once had about more than 25 sacred groves; however, today only a few sacred groves are known here as Pann and most of these Pann are dedicated to the folk deity Paik. Iconographically, the folk deity Paik is shown sitting on the horse back with a sword and ready to attack. In curdi-vade Village, there is one Paikapann. Inside the grove, there is a roofless stone idol of paik, which is worshipped by the locals with devotion. This grove also has ruins of an old temple with the idol of Durga and a well in total neglect. The paikdev is an important deity of the forest dwellers of sanguem. Small statues of clay are offered to deity. Salgini – verlem comes under the newly declared Netravali wildlife sanctuary. In this village, there is a temple dedicated to lord Shiva and this temple has a sacred grove Mahadevachi Rai. This grove is surrounded by three magnificent mountains: Endapali dongor, Goddi Dongor , and Madiraichi Gas.



Sacred Grove at Mharinganachi Rai

Kumbhari village, which is famous for the 800-m high Kumbhari hill, has a sacred grove called Kalasdev spread over 4.04 hectares of land and consisting two temples. The sacred grove has a beautiful forest cover that is well protected by the forest dwellers.

Sanguem taluka, which has the maximum forest cover in Goa, is also gifted with high range of mountains that have socio- religious significance for the local communities. Due to the traditional and cultural practices of protecting the forests around a folk deity of the village, an estimated 60 or more sacred groves are known to exist within this area.

Quepem taluka too has sacred groves. The Velip community is mainly responsible for guarding these places for centuries. In Morpila village, there is a well protected sacred grove, which is the repository of ancient, untouched biodiversity. This grove is rich in flora and fauna, and is responsible for protecting the water resources of the area. Inside the grove, there is stream called ‘ Paikacho Vhal’ . There are a number of norms associated with this groves. One has to climb the steep gradient of the grove barefoot. After passing through a long tunnel of bushes, Due to certain strong beliefs, biodiversity inside the grove is undisturbed and well protected.

Cazur village of Quepem is known for the prehistoric rock carvings discovered on the granite rock called ' Dudhaphator' near the temple of Paikdev. The velip community of this village has protected a sacred grove on the hill slope as a mark of respect to the ancestors of the village. Nobody is allowed to lift a leaf or flower from the pann without the permission of the deity.

Informal institutions operating at local level greatly help in environmental conservation. Traditional societies in most part of the world worship trees and sacred groves. Certain activities like felling of trees are prohibited within the jurisdiction of sacred groves, resulting in biodiversity conservation. Some of the rare species of plants have been reported from sacred groves. Cultural beliefs and faith are largely associated with tree worship and the resulting conservation practices. This paper aims at examining the role of these religious and cultural institutions operating at local level in the conservation of biodiversity.

Institutions, defined as a set of rules, are of great importance in safeguarding natural resources. Those operating at local level play a pivotal role in the conservation of natural resources. Statements of intent on global environmental problems issued following the 1992 Earth Summit, including Agenda 21 and the Desertification convention, strongly advocate as solutions a combination of government decentralization, devolution to local communities of responsibility for natural resources held as commons, and community participation.

Conservation of common resources has always been challenging. Local communities have guarded such common resources in the past. An understanding of the institutions embedded in traditional societies for access and control of these resources would serve as a basis for formulating effective interventions. An insight into the role of diverse institutions operating at local level will greatly help in mediating the environment and community relationships.

· Biodiversity conservation through religious and cultural practices :-

Protected areas are a well-accepted approach in NRM(natural resource management). Involving local communities in NRM and conservation of such reserved areas are now gaining importance worldwide . However, in traditional societies of some countries, such as India, the concept has been practiced for centuries by local communities through religious and cultural institutions. This paper documents the existence of sacred groves, locally known as Devrai (trees of God), in Goa.

Sacred groves are widely prevalent in the traditional societies all over India. These are the reserved forests preserved by traditional societies that embed cultural beliefs. These are believed to be under the control of deities or holy spirits, thus revered and respected. Literature review by Bhandary and Chandrasekhar (2003) suggests that in India, about 13 720 sacred groves have been enumerated so far from 19 states. They further add that in South India, about 2000 groves occur in Kerala, 1600 in Maharashtra, 800 in Andhra Pradesh, and 448 in Tamil Nadu. No efforts have been made to document sacred groves of Goa, although there have been some attempts for regeneration of some sacred groves.

· Brief description of study area

Loss of biodiversity is an issue that deserves immediate attention. Sacred groves are pioneer institutions in the conservation of biodiversity. This information is based on the case study of sacred groves existing in Goa. The State is situated on the west coast of India along with the Arabian sea. There are 11 talukas – smaller administrative units in the state. The State can be divided into three regions: the coastal land, hinterland plains, and hilly areas. Sacred groves are mainly present in the hilly areas followed by other parts of the hinterland.

Discussion

The forest dwellers of Goa, realizing the significance of the forest in maintaining the ecological balance, have sanctified their forests, but today the needy and greedy people are gradually breaking the taboos. This has eventually led to the erosion in the strong belief and faith that people have in the powers of God.

There is an ascent of atheism leading to a waning of cultural and religious practices across the state. Ownership of groves and the belief that Gods or Holy spirit live in them are the two factors that have played significant role in the conservation of groves. From many villages, this tradition has disappeared and the new generation is hardly aware of it. There is an urgent need of creating awareness among them along with initiating a movement for maintaining this rich heritage. Many small groves today are in need of protection not only for their high biological value but also to perpetuate cultural values, which are unique to each grove. These sacred groves are a rich treasure of ecological and biological wealth and hence we have to protect them for posterity. These miniature biosphere reserves harbour a number of endemic and endangered species of flora and fauna, hence their conservation is the need of the hour!

Traditional societies in most part of the world worship trees and sacred groves. In most societies, some deities are associated with these groves. For example, the Celts did not

build temples but worshipped their Gods in sacred groves or 'Nemeton' amongst the trees of the natural landscape. 'Nemetona' was a Celtic Goddess particularly associated with these open-air places of worship. She was the guardian of the sacred grove worshipped in regions located as far as Lein-winterheim near Maintz, Altripp near Speyer, and Bath in the British west country. Religious and cultural institutions have largely helped in the conservation of natural resources. These institutions can guide us in formulating policies for local ecology. While most institutions have helped in conservation of resources, certain practices, and distortion of same, have also created erosion of biodiversity. A word of caution is needed for effective decision making processes.

Nirankarachi rai of Bambar

The sacred grove located at Bambar in Sattari Taluka is the abode of rare medical plants. The forbidden spot is a refuge for a unique forest community and it is classified as Myristica swamp forests have great ecological significance. The trees have unusual aerial roots which are analogous to pneumatophores or stilt roots of mangrove forests. The area of the grove is about 0.25 ha of undulating terrain and is situated 11kms from the Goa-Karnataka border. Historical perspective this grove is known to exist for the last 250 years and the reigning deity is the God 'Nirankar' who is worshipped by the people of the three villages namely Maloli, Ustem and Nanode. Their deep rooted religious belief strengthened by the cult of nature worship, has ensured that the vegetation remained more or less untouched for the last 40 to 50 years. People of these three villages used to assemble at the site during the years gone by to venerate the lord 'Nirankar' who is considered the 'Rakhandar' (protector) of these villages. After the sacrifice, the ritual is performed and food is cooked, but only the male members eat the preparation. These customs and ritual have now been neglected due to the changing lifestyle of the people, and other preoccupation for their material gains. The natural vegetation of the area is of tropical hill forest dominated by evergreen broad leaves species. The floral composition of the grove shows the presence of the following plant species: *Alstonia scholaris*, *artocarpus hirsuta*, *calamus thwaitesii*, *calophyllum inophyllum*, *combratum sp.*, *canarium strictum*, *holigarna arnottiana*, *holigarna grahamii*, *hydnocarpus laurifolia*, *lophopetalum wightianum*, *machilus macrantha*, *Myristica malabarica*, *Piper nigrum* etc. In addition, there are several species of algae, lichens, epiphytes and undergrowth plants which are yet to be identified. One of the unique features of the trees in this habitat is the presence of numerous aerial roots in the shape of 'U' arching over the mud. These roots assemble a knee when the leg is folded. The ecological significance of these peculiar knee roots is an adaptation or reaction to environmental stress.

Presumably this is two fold- one in which the plant overcome poor anchorage in a soft bed; and two ensuring root aeration when oxygen is not available in the soil. In either

case it is analogous to the adaptations found in mangrove swamps. Bambar is located approximately 60kms. From panaji on the valpoi-Nanode road and is easily accessible.

This Myristica trees , are the most primitive of the flowering plants on earth. The evergreen, water-tolerant trees have dense stilt roots helping them stay erect in the thick, black, wet alluvial soil. The swamps are typically found in valleys, making them prone to inundation during monsoon rains. The trees form a fairly dense forest with a closed canopy. Studies have shown that the swamps, which would have occupied large swathes of the thickly wooded Western Ghats in the past , are now restricted to less than 200 hectares in the country. As per the information available on Wikipedia Myristica Swamps are found in the Karnataka and in the southern parts of Kerala. “This is the first natural heritage site identified by the Government of Maharashtra through state biodiversity board by studying ecological, social and cultural elements. The Director of Sahyadry Tiger Reserve Maharashtra, Samadhan Chawhan said this is a unique ecosystem which his department will conserve by involving local villagers.

Interview at Devachi Rai of Kopardem

According to the information gathered from villagers of Kopardem, Vithal Sawant of age 55 who is associated with the Brahmani Mahamaya temple told that “ A fire broke out in the sacred grove 30 years ago. Apart from destroying a major portion of the grove we found 100 tortoises and other creatures dead” .

Also a local Vasu Sawant of 67 year old told that the Brahmani Mahamaya temple that lies near Devachi Rai is no less intriguing. Housing stone sculptures of various deities, villagers believe the main deity, Brahmani Mahamaya, protects the village from all evil, including snake bites. Vasu Sawant says that “ our village has never experienced a death due to the bite of a venomous snake. Our goddess holding cobras in both hands blesses villagers and accords protection from creatures like snakes.

During the jatra (part of the temple jatra celebrations) the upaar prepared from rice, Jaggery and grated coconut is made and which is kept under the locked temple . It is served to devotees the next day . Similarly, those suffering from skin infections come all the way to the Kopardem temple for its sacred water -tirth. It is believed to act as an antidote for snake poison too. Meanwhile, returning to Devachi Rai, its natural bounty aside the sacred grove also houses archaeological treasures the beautifully carved sculptures of Mahishasurmardini and a warrior riding a horse. Apart from the fauna it protects, the lush green cover also offers “ natural air-conditioning” on hot summer days. According to studies and research made on this grove it is found that the temperature

within the grove at 2.15pm in May 2022 and found it up to five degrees cooler than outside.

‘PURVATALI RAI’ SURLA BICHOLIM

The process of declaring BHS area in Surla is based on section 37 of Biodiversity Act 2002, which states that

- 1) Without prejudice to any other law for the time being in force, the State Government may, from time to time in consultation with the local bodies notify in the Official Gazette, areas of biodiversity importance as biodiversity heritage sites under this Act.
- 2) The State Government, in consultation with the Central Government, may frame rules for the management and conservation of all the heritage sites.
- 3) The State Government shall frame schemes for compensating or rehabilitating any person or section of people economically affected by such notification. Hence after completion of State level validation of Surla peoples Biodiversity Register the local Biodiversity Management Committee requested Goa State Biodiversity Board (GSBB) to guide and subsequent actions have led to the creation of this report. The sacred groves already represent heritage areas which are conserved since many decades due to protocols set by village ancestors and conservation efforts taken by age old generations. The bio-cultural protocols associated with sacred groves along with the deep sense of holistic and theological approach by local people has led to the preservation of ecological intactness of these areas. The process of scientific documentation of flora and fauna by understanding their scientific importance is very interesting. GSBB has extended its technical support in preparing scientific report by involving its experts.

Significance and objectives of Biodiversity Heritage Sites

1. To strengthen the biodiversity conservation in traditionally managed areas and to stem the rapid loss of biodiversity in intensively managed areas, there is a need for identification of these areas of significance. These

areas also represent a positive interface between nature, culture, society, and technologies, such that both conservation and livelihood security can be achieved, and positive links between wild and domesticated biodiversity are enhanced.

2. To have a BHS in and around a community should be a matter of pride and honour to that community and this virtuous act of community may work as an example to the entire nation apart from ensuring availability of the resources to their own future generation. The areas/sites that are like existing sacred groves in general and those existing in Eastern Ghats and in North East India and Western Ghats in particular can be straight away be declared and notified as BHS.

3. It is also necessary instill and nurture conservation ethics in all sections of the society, The creation of BHS will ensure bringing home these values in the society and thereby put an end to overexploitation of natural resources and avoid environmental degradation.

4. The biodiversity Heritage site (BHS) may not put any restriction on the prevailing practices of and usages by the local communities, other than those voluntarily decided by them. The purpose is to enhance the quality of life of the local communities through this conversation measure.

DEFINITION OF BIODIVERSITY HERITAGE SITE;

Biodiversity Heritage sites (BHSs) are well defined areas that are unique, ecologically fragile ecosystems. They are spread across terrestrial, coastal and inland and marine waters having rich biodiversity. The BHSs are endowed with richness of wild as well as domesticated species or intra-specific categories, high endemism, presence of rare and threatened species, keystone species, species of evolutionary significance, wild relatives/ancestors of domestic/cultivated species or their varieties. These areas are also represented by fossil beds and having significant cultural, ethical or aesthetic values and are important for the maintenance of cultural diversity, with or without the long history of human association with them.

PHYSICAL FEATURES OF SURLA VILLAGE

The village is situated in the northern part of the Goa and have elevation of about 44 meters from MSL(confirmed with Google Earth). The eastern parts of the village is covered with mountains and the western part of the village is delimited by Mandovi river. Local people use ferry to cross the river. Mandovi river in the village area is lined with mangrove growth. It was observed that no fishing in the river is done by the villagers of Surla though few people enjoys fishing by hooks and lines in the area near Mosque. This kind of fishing is mainly for recreational and sometimes for consumption of local people. The web of seasonal nallahs and springs is spread all over the village. The flow of springs is higher in certain area due to the slopes of the mountain. Considerable are of the village is under cultivation of betel nuts and coconut . These fields are home to many mammals like Giant Squirrel, palm civet, small Indian civet etc. Proofs of existence of these animals are recorded during the documentation of PBR. Forested area is spread over the elevated region and Devrai areas. Most of the large trees are present in the Devrai and are conserved due to the religious importance of that area. Forest area shows grassland which provides ideal habitat for stray cattle. South East part of the village is influenced by the mining activities and the heap of the mined waste is now converted into the plantation of Australian acacia which shows distinct landscape from that of the other parts of the village. Two ponds near this hillock are seasonal and provide shelter to the Marsh Crocodile. Hilly areas of the village have dense forest with sparse grassland openings. Grassland is present on the rocky areas of hills. These forested areas have provided ideal situation for the presence of Leopard in this area. Villagers have reported occasional sightings of the same and indirect signs obtained during the survey also prove the presence.

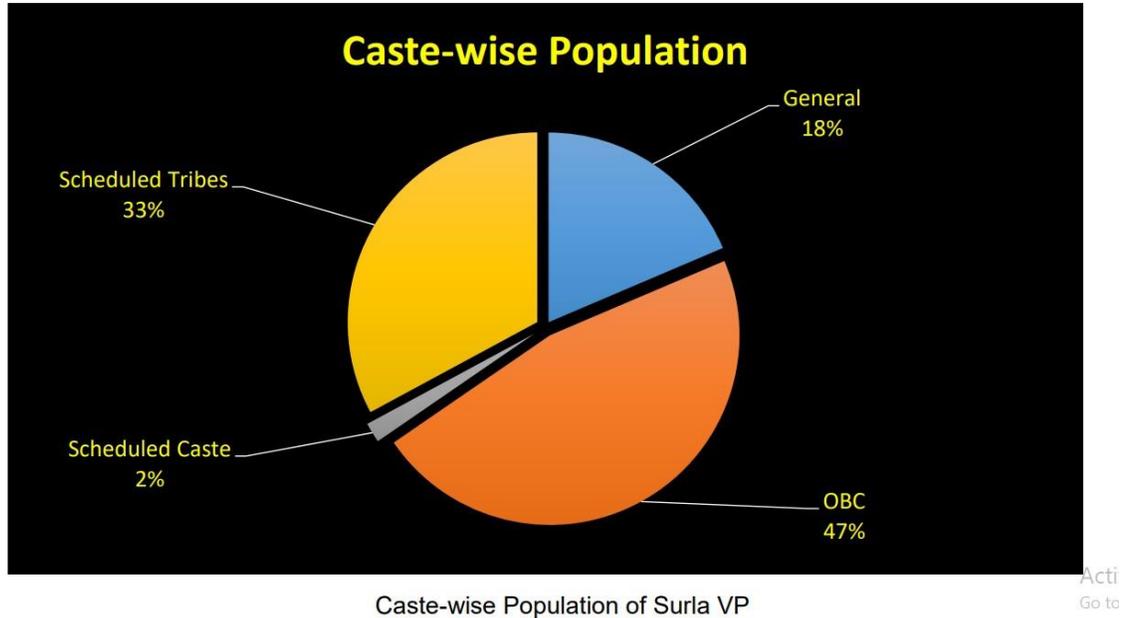
5. PURVATALI RAI – SACRED GROVE

On the receipt of proposal for the declaration of ‘purvatali Rai’ – Sacred Grove as Biodiversity Heritage Site from Village panchayat Surla through its Biodiversity Management Committee (BMC) the office Goa State Biodiversity Board had conducted the site visit on 16.08. 2019 along with Shri. Rajendra Kerkar, Expert Member, GSBB; Dr. Sangram Keshari Das, Member, TEC on PBR& it’s Validation; Dr. Varad Sabnis, Directorate of Archives and Archaeology; Mrs. Reshma Kerkar, scientific Officer, GSBB Sarpanch & Village Panchayat Members; Members of Surla BMC & Villagers of Surla.

Surla with the presiding deity Siddheshwar has rich and varied history and heritage. The man made rock cut cave known as Siddeshwarachi hourly has the Linga with Shalunka installed in the laterite cave having the history of more than thousand years. Situated just 1km away from new building of Village Panchayat of Surla in Bhile hamlet, the Purvatali sacred grove has been protected and conserved by the locals with the intense degree of devotion and respect.

Though, the grove is just 100 metres away from the tar road going to Barazan from Bhile; Villagers sparingly visit the area.

6. People Scape of Surla Village:



However, a small shrine is constructed near the road to pay respect to the folk deity Betal or Vetal, the presiding deity of the grove. Village has the population of Brahmin, Non-Brahmin as well as tribal and other backward communities, who always express their gratitude to the grove. There are various taboos associated with this grove which eventually led to the protection and conservation of the grove.

After Goa's liberation, the eco-cultural heritage inherited by Surla was threatened for very long time, as the excavation and transportation of the iron ore had badly affected environment, wildlife and ecology. As the mining activities in Goa, presently have been stopped, some of villagers although they have lost their livelihood are taking interest in protecting the ecological heritage.

Shri. Uday Natekar, horticulturist and a member of Surla Biodiversity Heritage Committee says, "During the hoary past, villagers who were living under the terror of Betal, requested the presiding deity Siddheshwar to provide protection from him.

Siddheshwar directed Mallikarjun to help the villagers. The deity Mallikarjun kept the big bunch of ripe bananas into a well and told Betal to relish on bananas without using hands or legs. Betal, when entered into the well head first to fetch bananas, a huge boulder was kept to close the well along with Betal. Villagers were freed from the terror of Betal and since then, have protected this area as a sacred grove.”

During the Dasara festival when Tarangas or insignias of village deities are taken into procession from the road, they wait for a while to bless the sacred grove. When agriculture is done during the autumn season after the crop is reaped villagers assemble at the lower side of the grove and offer pan-cake prepared from newly rice without adding common salt. This annual ritual is known as khal. Also a small cradle made from bamboo is tied to the creeper for the child of spirit residing in the grove.

As, Surla earlier had forested areas and sacred groves, there were perennial sources of water bodies flowing. Today, the nallah flows but it lost its old glory. The villagers also offer new fruit and even non-vegetarian item to the deity.

Interview taken ;

Shri. Uttam Valvoikar, 62 years of age from Surla said, “Spitting, urinating are prohibited in the grove. Nobody dare to cut a tree or a twig. All forms of life have been offered protection. Villagers always pay respect when , they are entering the grove or passing from nearby road. Though, the fear of Betal has been eliminated, we express our gratitude.”

Dr. Varad Sabnis, the archaeologist says, “The grove has seven steps carved in the laterite stone and also has a stone sculpture depicting carvings of two feet. The folklore associated throw light on the traditions and heritage of this grove.”

Dr. Sangram Kesari Das, Professor and Doctorate of Gomantak Ayurved Mahavidyalaya in Shiroda has helped villagers in documenting the ethnobotanical heritage of the grove, he told, “The sacred grove has more than hundreds of trees with the potentially of medicinal uses for human as well as other animals. As the villagers want to declare the grove as the biodiversity heritage site , I am helping them to document the floral wealth. The area has a variety of wild flowers, wild vegetables, orchids, herbal medicines and edible tubers.”

3. Belief and Bio cultural Protocols associated with Purvatali Rai- surla

· Locals have respectful fear for this place. In the times when there were no administrative systems, legal frameworks and local bodies, the villagers were bound by certain protocols which are based on the assurance of protection or fear of punishment

from the deities in which locals believe and worship. It is believed that God Mallikarjun had confined “Vetal” by burying him upside down with a trick which involved a challenge to remove banana bunch from bottom a pot or well. Hence it is believed that Mallikarjun is like overall caretaker of village and visits all prominent places of importance which include Bands, this sacred grove “Purvatali Rai” under consideration and other places. Hence it is out of respect and fear to this deity that these places are protected and preserved.

- Beliefs in this case have led to conservation and preservation of ecosystems. Hence the outlook to biocultural protocols is not whether they are blind beliefs, or what are the basis of the beliefs but what is end result of such beliefs? In this case it has resulted in prevention of important places in Surla even when the mining business was at its peak in this area.

- Existing protocols- Open defecation, urination, spitting and disposal of any kind of waste is prohibited in this area. No entry for menstruating women. Not allowed to take any item, bio-resource or anything from sacred grove. Foot-wears not allowed inside the area. Even the surrounding areas are to be kept free of any type of pollution.

- The historic belief about presence of supernatural forces in this area are still prevailing amongst the locals and hence they have kept this place undisturbed and free from encroachment of any kind.

- Uniqueness of this Purvatali Rai is due to presence of beliefs, protocols, taboos, sacrificial offering of buck, non-interference of people in this sacred grove, protection of trees, herbs, shrubs, creepers, insects, butterflies, damselflies, dragonflies, fungi spiders and other fauna.

7. Justification for Biodiversity Heritage Site

- Scientific study carried out by GSBB experts resembles presence of diverse species of medicinal plants within this small area of Puratali Rai(mention in this report) is self-explanatory and sufficient enough to prove the significance of this place for declaring BHS

- The main reason for preserving this place with ecological outlook is well justified not only with the presence of varied species of flora and fauna but the belief which is connected to presence of bands and other important places of diversity in the area are protected by Mallikarjun, the God who is believed to protect village under his guardianship on behalf of God, Siddheshwar and Goddess Navadurga present in the village of Surla.

Presence of species which are iconic of tropical forest ecosystem also prove that this ecosystem is untouched for many decades.

- Puratali Rai is a unique combination of eco-theological, socio-ecological and sacred beliefs leading to conservation even in force as on today in these modern times. This is exemplary not only to our state but to others.

8. precautions and protocols to be ensured at “purvatali Rai” after Notification:

- The name of the Purvatali Rai area as per Department of settlement and Land Records (DSLRL) . “Shri Dev Hirvat Vetal” (The name means green (Hirvat) itself resembles presence of greenery) hence it can be connected with conservation of green cover for posterity in as is where is form without even utilizing or accessing the resources from this area. Hence it’s existence value in its existing aesthetic form should be kept untouched and this area should not be interfered by beautification.

- Principle of conservation in this regard should be leave it to itself without management. Only outside areas near road could be provisioned with nominal arrangements for visitors for visitors without exceeding footfalls as per the resolution in local Gram Sabha. This area needs to be saved from the so called wave of development.

- Traditionally existing religious activities including sacrificial offerings performed by local communities shall remain unchanged.

- Entry only by permission. Not more than five persons shall be allowed to enter at a time in a group in this area. There is compulsory need of taking local recognized guide appointed by authorised local body.

- Mining or allied activity which interferes and alters ecological character of this area shall never be allowed in this area or its immediate vicinity.

- Important consideration- It is proposed that goat keeping of local varieties may be promoted in Surla village so as to provide for offering every year.

Chapter 3

Sacred groves and their impact on environmental protection

Sacred groves are repositories of rare, endangered species in comparison to adjoining landscape elements. Sacred groves are preserved on the basis of some religious belief. Due to modernization, industrialization, political situations and developmental activities, the sacred groves are at the stage of threatening. To fulfill the demand of local people, the priority should be given to indigenous plantation which can serve as a firewood, fodder, timber etc.

Sacred groves are the patches of forest which are the mainly are this source of germplasm conservation of medicinal plants, wild fruit plants, unusual vegetables and the related wild and cultivated plants, so these conserved plants grow in varied climatic conditions and they can be a source of material in breeding programme. Sacred groves conserve the biodiversity protected under sanctions and religious taboos (conservation practice) which keep check on overexploitation.

Flora and sacred groves creates suitable habitat and food for many other species on birds , insects, reptiles and mammals that is beneficial in controlling the population of organisms in the ecosystem. So sacred groves have their key role in homeostasis of ecosystem including agro system of the region.

Sacred groves have their great impact on the environment

In Goa , all the sacred groves play a key role in maintaining environment. The vegetation of sacred groves prevents soil erosion and improves soil fertility. Increases water holding capacity of the soil. There are evidences of sacred groves and the surrounding climate. They have their great role in improving microclimate. The leaves of the trees are lush or dark green which permits maximum absorption of sunlight and transpired large amount of water and transport moisture back into the air. The vegetation of sacred groves has their effect on the soil and water affecting micro climate. Sacred groves have their influence in regulating the temperature of the soil; maintain the cool and moist microclimate which is helpful in regulating the low range of temperature in dry seasons. Extensively developed root systems of sacred groves absorb water from greater depth of soil and maintain the ground water level. Sacred grove have their role in environment protection. Goa has several examples of traditions that have promoted conservation through the ages. Temple tanks and sacred groves are two such traditional models practised to date across the state and have proven successful conservation models.

As world Environment Day is being celebrated on June 5 on the theme of living in harmony with nature, Goa has several examples of traditions that have promoted

conservation through the ages. Temple tanks and sacred groves are just two such traditional models practised to date across the state and have proven successful conservation models. The temple tanks in Goa have not only quenched human thirst, but also helped preserve the surrounding ecology, by keeping the temperatures down and supporting wild vegetation. “In Sattari, we had maintained and protected sacred groves, temple tanks and springs, in the names of gods once, by rationally developing and utilising the available resources. In villages nestled in the Western Ghats forests of Goa, the locals preserved patches of forest as sacred groves, keeping them untouched and pristine, away from haphazard developmental activities. However, the urban trend of building concrete structures has reached some villages now, where clearing of holy forests is seen to create an artificial place for the presiding deity.

Damodar Higher secondary, Margao, geography teacher Chandrakant Shinde said, “A decade ago, when sacred groves were visited in various parts of Goa, the status of some were satisfactory. But now these treasure troves of biodiversity, which were providing ecosystem services, are degrading at an alarming rate. These cases need to be protected by the people living in the vicinity.”

Once, the people were living in the forested areas and making judicious use of available natural resources. However, modernisation, industrialisation and urbanisation are seeing a shift from the traditional belief system, which is also resulting in discontinuation of practices that were in harmony with the environment.

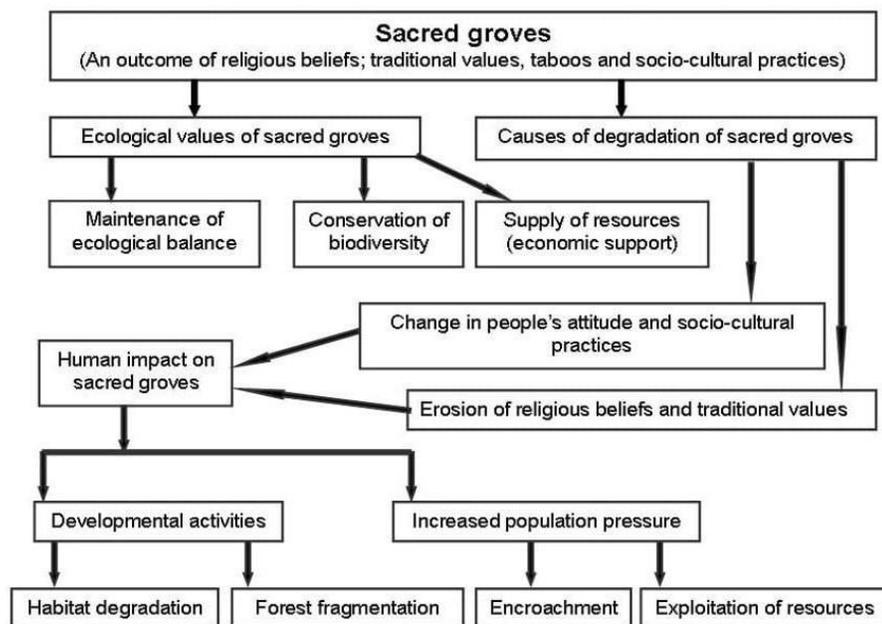
Sacred groves are tracts of virgin forest with rich diversity, which have been protected by the local people for centuries for their cultural and religious beliefs and taboos that the deities reside in them and protect the villagers from different calamities. Every sacred grove carries its own legends, 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 recognized them in different ways encoding various rules for their protection. Sacred groves occur in many parts of Goa where the indigenous communities live. These are known by different names given to them by ethnic people. Sacred groves act as an ideal centre for biodiversity conservation. Several plants and animals that are 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. However, with the passage of time, considerable changes have taken place in the extent of the sacred groves, in their vegetation structure, people’s perception towards them and religious beliefs and taboos. Therefore, a holistic understanding of the current status, structure and function of sacred grove is essential for assessing their ecological role and formulating strategies for their conservation. This paper briefly reviews the studies on sacred groves

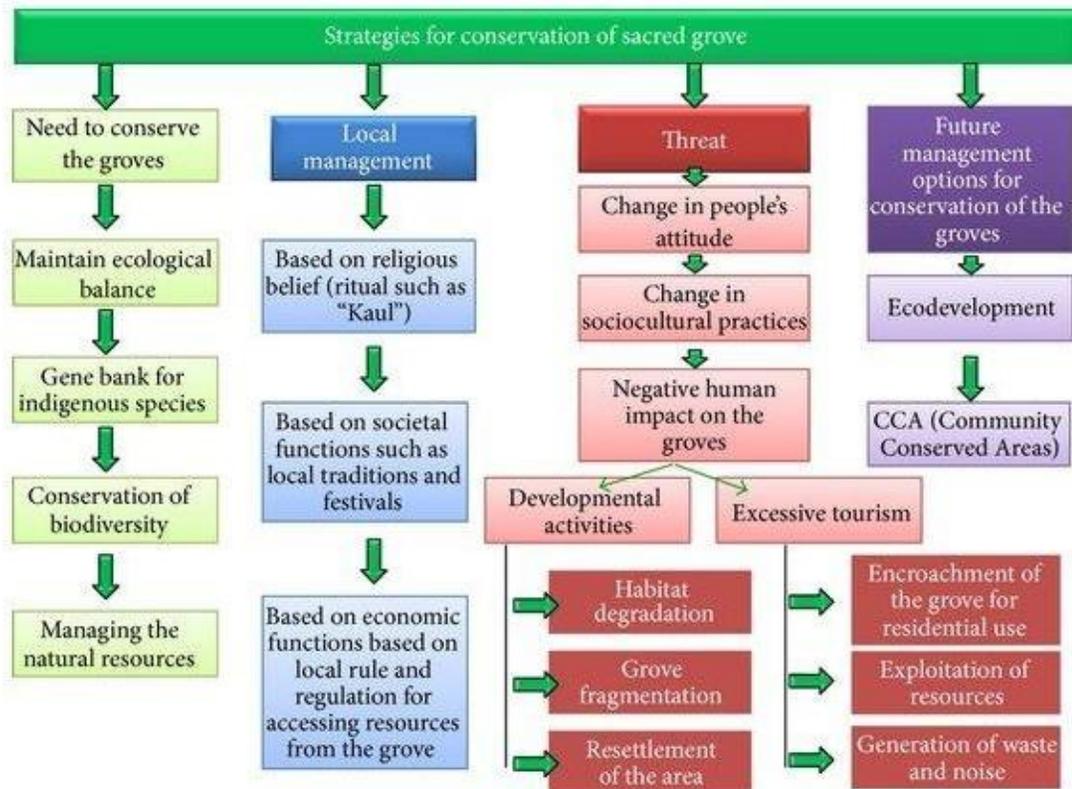
across the globe in general and India in particular, highlighting that the tradition of sacred groves could provide a powerful tool for ensuring biodiversity conservation through community participation. Since time immemorial conservation of natural resource has been an integral part of diverse cultures in different ways. The traditional practices show the symbiotic relation of human beings and nature. Indigenous communities all over the world lived in harmony with the nature and conserved its valuable biodiversity. In course of time, science and technology developed and industries were established and expanded to meet the increasing demands of the people.

Various anthropogenic activities have altered the structure and function of different ecosystems all over the world. One of the most conspicuous effects of ecosystem perturbation has been the depletion of biodiversity. Disappearance of species due to habitat alteration, overexploitation, pollution, global climate change and Invasion of exotic species is so fast that many valuable taxa may vanish even before they are identified and their scientific value is discovered. In view of the adverse effects of biodiversity degradation, ecologists, environmentalists and conservationists has made conservation of biodiversity as an issue of global, national and regional significance. Many areas have been declared as protected areas and various in-situ and ex-situ conservation practices have also been undertaken in different parts of Goa. Many laws governing the biodiversity conservation have also been enacted from time to time including "The Biological Diversity Act 2002" enacted by the Government of India. Besides this formal laws, there were many traditional conservation practices of indigenous communities of the world. It is believed that this virgin forests date back to thousands of years when human society was in the primitive state. Gadgil and vartak have traced the historical link of the sacred groves to the pre-agricultural hunting and gathering stage of societies. Hence, these virgin forests are believed to be pre-vedic in origin. The area of sacred groves ranges from few square meters to several hectares. There exists some fascinating examples of forest patches harbouring native vegetation, which have been intertwined with various aspects of indigenous, cultural and religious practices along with the associated taboos. Physically, it is a piece of forest land, but culturally it is associated with deities, rituals and taboos. Sacred groves provide an inextricable link between present society to the past in terms of biodiversity, culture, religious and ethnic heritage. In the present day society, there are several endogamous populations that continue to practice many forms of nature worship.

Various traditional communities of our country follow nature worship in their own ethnic ways, based on the premise that all creations of nature have to be protected. The concept of sacred groves could be traced to such communities as have preserved several virgin forests in their pristine form by dedicating them to the ancestral spirits or deities. As a result, sacred groves still possess a great heritage of diverse gene pool of many forest species. Some of the species present in sacred groves are considered as sacred. These

‘sacred’ species have socio- religious concept of the sacred groves intertwines carefully with various socio-cultural and religious beliefs, and taboos, and ecological services of sacred groves. Peoples changing attitudes, erosion of traditional belief and human impact have caused degradation of sacred groves over the years. Various traditional approaches to conservation of nature require belief system which includes a number of prescriptions and prescriptions for restrained resource use. All forms of vegetation in the groves are supposed to be under the protection of reigning deity of that grove, and removal of small twigs is a taboo. Collection and removal of any material from the sacred grove is prohibited. Sacred groves can be used as indicators for potential natural vegetation and are vital for the well being of the society. Sacred groves or sacred trees serve as a home for birds and mammals, and hence, they indirectly help in the conservation of living organisms. Besides the sacred groves provide a number of ecosystem services such as reduction in erosive force of water, conservation of soil, maintenance of hydrological cycle, availability of water of desired quality and natural dispersal of seeds of useful species. The sacred groves also helps in maintaining the desirable health of ecosystem, reduce habitat destruction, conserve the viable population of pollinators and predators, serve as the potential source of propagules that are required for colonization of wastelands and fallows, conserve the indigenous flora and fauna and preserve the cultural and ethical practices developed through indigenous knowledge of generations . This traditional worship practices as followed in different parts of world do contribute to the promotion of the regional /national goals of conservation of biodiversity.





Existence of sacred groves.

In Goa care and respect for nature has been influenced by religious beliefs and indigenous practices. The existence of sacred groves have been reported in many Talukas. The positive role of sacred groves in the socio-economic and cultural lives of many rural folks has been possible because of the collective efforts of people to protect them.

Socio-cultural practices and sacred species

Descriptive accounts religious and cultural practices , and people's attitudes related to sacred groves, forests/ecosystems/ landscapes have been given by several workers. Religious and cultural importance of the species is a factor promoting their sustainable

utilization as well as conservation. Importance of the sociologically recognised plants which have linkage with the deities of the groves or other religious practices in maintaining the ecological balance. Sociologically recognised plants are the 'sacred species', the concept of 'sacred species' could be recognised as a social evolution through a process of condensation of sacred groves to the lowest level.

Ecological services of sacred groves

Biodiversity keeps the ecological processes in a balanced state, which is necessary for human survival. Therefore, the biodiversity -rich sacred groves are often immense ecological significance. They also play an important role in the conservation of flora and fauna. Besides, several rare and threatened species are found only in sacred groves, which are, perhaps, the last refuge for these vulnerable species. Several ecological studies have been carried out in these sacred forest patches. The vegetation of the sacred groves has certain distinctive ecological characteristics. The sacred groves of Goa have distinct tiers of trees, shrubs and herbs, climbers and stranglers, epiphytes, parasites, and many wild relatives of cultivated plants.

Ethnobotanical Importance of the Sacred groves

Sacred groves are the good source of a variety of medicinal plants, fruits, fodder, fuelwood, spices, etc. The study of interrelationship between the human beings and plants and animals in their surrounding environment is very revealing. The role of sacred groves in the conservation of the regional medicinal plants has been emphasized in several studies from different parts of Goa.

The butterfly (Insects : dae Dominated with a high number of species with maximum diversity) diversity of four sacred groves of Goa,

The butterfly diversity of four sacred groves in Goa, viz., Nirankarachi Rai, Alvatinihi Rai, Mharinginichi Rai and Ajobachi Rai was selected for study purposes. A Total of 33 species belonging to 31 genera were observed which accounts for about 13% of the

species recorded from Goa. the family Nymphali



in Mharinginichi Rai. It is concluded that further studies on grooves from different habitats will significantly increase this number.

The butterfly covered in the study where identified in the field visually with the help of the photographic guides. The four studied sacred Groves constitute about 15 ha area.

A total of 33 species belonging to 31 genera were observed which constitutes 13% of the butterfly diversity of the state. This included eighteen species of Nymphalidae and five species each from Papilionidae, Pieridae and Lycaenidae. The final elements were of interest in that it contained 2 endemic species. This indicates the importance of sacred groves. The family Nymphalidae was dominant in all the four sacred groves, as it is the largest family of butterflies. One of the reasons for its dominance might be the availability of their larval food plants .

From the study it is concluded that generally sacred grooves with high plant diversity hold a high number of butterflies. Presence of endemic and near threatened species viz., Southern Birdwing *Troides minos* and Malabar Tree Nymph *Idea malabarica* indicates the importance of these groves for the butterflies and their conservation. In spite of the high anthropogenic activities in Mharinginichi Rai, good diversity of flora and fauna, such groves become ecological harbours. Research efforts to gather basic information on final diversity, especially butterflies are needed for future effective management programmes as butterflies are good indicators of Environmental Quality and of ecological significance.

It is concluded that year round work in the sacred grooves of different habitats might throw some light with regard to butterfly diversity.

Degradation of the sacred groves

Belief and taboos are the constructive tools for conserving the sacred groves, the erosion of belief and taboos has led to deterioration of groves. It has been seen that religious beliefs that were central to the protection of sacred groves is rather precarious. Various anthropogenic pressures due to developmental activities, urbanization, exploitation of resources and increase in human population have threatened many sacred groves of the country. A study on the status of some sacred groves in the Himalayan region indicated that the economic forces are influencing the traditional communities to discard the community-oriented protection to these groves and they are now being exploited. Sacred groves located in some villages of Goa are becoming degraded due to change in peoples' attitude towards conservation of biodiversity, introduction of exotic species and concern for more income generation. It has been found that the cultural changes among the young people are so rapid they no longer believe in the methods their ancestors followed to maintain the fragile ecosystem. This is the global tragedy, because "with the disappearance of each Indigenous group, the world loses an accumulated wealth of millenia of human experience and adaptation'.

For ecologists, traditional ecological knowledge offers a means to improve research and also to improve resource management and environment impact assessment. One unfortunate matter that hinders the conversation of sacred grove is that the village people living nearby the sacred groves are poor and so they depend on the grove to meet their vital domestic necessities, such as fuel wood, vegetables, medicinal plants etc.

Rural poor depend upon biological resources for meeting 90% of their day-to-day needs. So, until and unless viable option is provided to these people for sustaining their economic condition, any step for the conservation of the sacred groves will not be successful.

Following significant points emerge from the following review:

- It is Very important to uphold traditions and beliefs in order to protect and conserve these unique forest patches which represent the relic vegetation of the concern area.
- These forest patches are no longer free from anthropogenic pressure. The disappearance or degradation of sacred groves not only symbolise the loss of the rich relict flora and fauna but also it's rich tapestry of culture associated with the grove.
- Management of sacred groves and sacred sites through the traditional local system is now being challenged by a number of economic and social issues, and thus the traditional methods are rendered less effective. This calls for external intervention taking the local people into confidence.
- Important sacred groves should be brought under the 'protected area network' to ensure their proper conservation.
- Ecological services rendered by sacred groves needs to be highlighted and people should be made to realise that the conservation of groves is crucial for their sustenance.

Biodiversity act Is a bridge between man in nature. Grooves helps to improve soil quality, replenish water resources an R5 oh tell for biodiversity conservation of plants and animals including rare, endemic, threatened, vulnerable species and at no botanical species.

Quality of air – it's impact on longitivity

From smog hanging over cities to smoke inside the home, air pollution poses a major treat to health and climate. The combined effects of ambient (outdoor) and household air pollution cause premature deaths, largely as a result of increased mortality from stroke, heart disease, chronic obstructive pulmonary disease, lung cancer and acute respiratory infections. More than 80% of people living in urban areas that monitor air pollution are exposed to air quality levels. When it comes to human health, clean air is the most basic amenity. Sadly, today , inadequate air quality is one of the major causes of a variety of acute health issues. Sacred groves acts as carbon sinks, absorbing carbon dioxide from the atmosphere and helping mitigate climate change's effects.

Sacred grove and it's scope in environmental ethics :-

They function as sites for several valuable crops and medicinal plants, which act as a gene pool. Sacred groves are large vegetative areas rich in biodiversity, protected by

community living around them, often harbouring some religious and cultural importance. They function as sites for several valuable crops and medicinal plants, which act as a gene pool. It also helps in wildlife conservation of vulnerable species. Sacred groves feature in various cultures throughout the planet. The vegetation of sacred groves has their effect on the soil and water effecting micro climate. sacred grooves have their influence in regulating the temperature of the soil, maintain the cool and moist micro climate which is helpful in regulating the low range of temperature in dry seasons.

It is now increasingly being recognised that nature and it's rich biodiversity still support , and in turn, are maintained by great diversity of ecosystem people and their cultures the world over. The hunter – gatherers and shifting cultivators throughout the world typically possessed a ‘weltanschauung’ in which man is considered an integral part of the ecosystem. Such a worldview does not process the concept of man-nature dualism, as emphasized in the Western philosophical thoughts of Descartes, Bacon , leibnitz, and many others. The ‘ organic cosmology’ of the indigenous societies shaped an ecological ethic that is undetermined by Western science and market oriented culture. Nevertheless, those indigenous cultures that are still surviving retain their traditional ecological ethic, which now seems to have profound conservation implications. The tribals groups can still said to attain their livelihood by exploiting their biomass resource requirements from a relatively small catchment area in which they have been living for a long time. Their cultures are still in perfect harmony with and spirituality tuned to nature. The religious practices, of most of these indigenous societies maintain a conservationist ethos in order to sustain their natural resource base.

Religious and traditional beliefs , cultural mores, and practices play a crucial role in the conservation of environment and biodiversity. Different festivals are organized , where the local communities reaffirm their commitment to the forest and the deity. Sacred groves in general are a valuable tool of biodiversity conservation. But peoples changing attitudes erosion of traditional beliefs and human impact have caused degradation of sacred groves over the years. Their conservation would not be possible without the active participation of the local people. By improving their living standards and by giving benefits of conservation to them, long term conservation goals in these SGs can be achieved.

Conservation of nature and natural resources has been an important part of cultural ethos, especially in remote rural and indigenous communities in many parts of the India , including Goa. These communities consider themselves connected with their biophysical environment in a web of spiritual relationship. These rural communities consider specific plants, animals, or even rivers and mountains as their ancestors and protect them. In Goa , nature worship dates back to the pre-Vedic period and it is based on the proposition that all creations of nature have to be protected. The forefathers of these communities were fully aware of the importance and significance of natural resources and the necessity of their conservation for the sustenance of future generations. They lived in harmony with nature and thereby played an important role in conservation of biodiversity. Sacred groves is one of the important traditions of nature reverence, they are the segments 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. In short SGs are the relic forest segments preserved in the name of religion and culture. These groves are mostly associated temples and are also culturally important. They manifest the spiritual and ecological ethos of rural indigenous communities . Various cultural and religious festivals are often arranged by local people within these patches , which is called jatra. As a way of conservation of nature, SGs have proven to be a well-trying and tested method over thousands of years. The sacred groves play an important role In ensuring smooth ecosystem services such as clean environment, that is , air ,soil, and water conservation, flora and fauna conservation, carbon sequestration, temperature control, and conservation of traditional knowledge. They are, therefore of central importance As far as the ecological conservation and policy regarding conservation and management of forest at state and national levels are concern. sacred groove serve as a home for birds and mammals, and hence they indirectly help in the conservation of biodiversity. there are several studies carried out by various researchers on the subject, highlighting significant role and potential of the sacred groves. Medicinally important plants have high importance for religious activities of communities that worship the plants in the form of God, goddess, and minor deities. those sacred grooves are the valuable repositories of medicinal and aromatic plants. most of the denizens residing in the vicinity of Groves are very simple,, illiterate, and poor and are almost without any access to modern medicine systems. but they do have conscientiously nourished their traditional knowledge, customs, rituals, and ceremonies with great potency. local traditional knowledge and the practise of plant based medicine are still widespread in the ruler areas off Goa. And these play an important role in Primary Health care. even the local people prefer to stick to the traditional herbal remedies, an it is due to a situation of having no alternative choices, as well as poverty and belief in the effectiveness of Herbal remedies. The denizens Living around these sacred Groves have conserved the medicinal plants of these regions for use in a sustainable way by themselves and by their future generations. Religious beliefs and traditional customs have played an important role in this conservation. they have deep

faith that if someone from outside the village uproots the medicinal plants from their village, it is treated as an evil act that may bring misery of great order to the village folks.

Sacred groves, in general, are Good instruments off biodiversity conservation. as already mentioned, our ancestors were aware that the natural resources that sustain them should be conserved for the future generations. But, in the course of time, science and technology developed and industries were established an expanded to meet the increasing demands of the people. people's changing attitudes the erosion of traditional beliefs and human impact have caused degradation of sacred groups over the years. The same is true for the studied sacred Groves. various anthropogenic activities have altered the structure and function of different ecosystems all over the world. One of the most noticeable effects of ecosystem perturbation has been the depletion of biodiversity. Many Vanishing of species due to different anthropogenic disturbances like alteration of natural habitats, excessive utilisation, pollution, universal climate change, and Invasion of nonnative species is so fast that many precious taxa may disappear even before they are documented and identified and their scientific value is discovered . Many scholars have worked on conservation of sacred groves through socio-cultural practices in different parts of Goa.

Lack of awareness in terms of long term future benefits has resulted in the destruction of sacred grooves. No legislative protection has been implemented so far in Goa. this has caused considerable ecological damage. Sacred Groves have become the victims of deteriorating faith. search religiously protected areas provide a comprehensive and reach ecological niche as repositories of genetic diversity. the increased threats to sacred groups can be related to the lack of an inbuilt conservation effort, higher demands, fuel wood collection, and decrease in the religious faith along with the reduced commitment of the present generation towards such natural sacred places. Encroachments of sacred Groves areas by various government departments for different developmental projects, as well as migration and immigration of people, also have contributed to the extinction of sacred Groves. these secret groups need to be protected and managed wisely as was done a few decades ago. For providing necessary protection to the sacred grooves and maintaining their natural identity and sanctity, it is imperative that the surrounding population is taken into confidence. the surrounding village communities need to be educated and guided for sustaining the sanctity of existing grooves and strengthening them. conservation of sacred grooves is impossible without the active participation of the local people. conservation without compensation is only conservation. by improving their living standards and by giving benefits of conservation to them, long term conservation goals in these sacred groups can be achieved. Goa has a very high number of sacred groves That play an important role in biodiversity conservation because of various myths and religious beliefs associated with them. the sacred grooves have been conserving the biodiversity for many

decades. but nowadays the attitude of people has changed and this along with the mistrust of traditional beliefs has caused degradation of sacred groups all over Goa. For improving their degraded condition, it is suggested that the local people living inside and around the sacred grooves need to be taken into confidence, so that long term conservation goals can be achieved.

From sacred Groves to a wasteland – journey of a forest

The Government has announced its plan of planting saplings in community land with the aim of increasing the green cover in the state. as laudable as it sounds, before we really applaud this initiative, Let us pause for a second to live through the book, ‘Sacred grooves of Goa’ by environmentalist Rajendra kerkar for a better perspective of what is happening in the state forests. In a book where he describes the sacred groups that dot the state, very explains their importance, not just their religious significance, but also the role they play in the ecological balance, the committed environmentalist laments that these areas within forests, that for ages have being considered sacred an been preserved,. Have now reduced in number.

Here’s an explanation of the sacred groves extracted from the book: “sacred groves are important forest ecosystems possessing high biodiversity and conservation value. They are Protected by the locals through deep religious and cultural sentiments. ecosystem services provided by them are perhaps the greatest and the most crucial contribution to the society and community.”

Get good argues in his book that the sacred groves, or conservation of forest patches, could probably date back to pre-epic period , as with the coming of the iron age new occupations of pastoralism and agriculture began to pose a threat to the forests. With each age, the forests began to get further denuded until we come to the present.

And for that here’s another extract from the book, of a passage when he refers to the disappearance of these sacred spaces: “wherever the sacred groves were degraded the equilibrium was breached, there soil-litter relation broke down. Before long the monsoon winds blew away the top soil nutrients and with no roots left to replenish the soil, the forest degraded into wasteland.”

As the state leaps into development mode, clearing greenery For concrete blocks, ?is it turning its forest into the wasteland? the early indications of these are certainly there, an we have been ignoring them. The otherwise silent forest of Goa are today crying out loudly, in pain. The cry a minutes whenever a felled tree crashes to the ground, but hardly a whimper of the cry reaches the city and the seat of power so as to protect the trees. What can be

done? We can look elsewhere for a solution and perhaps attempt to use it here.

On the other side of the globe, in April this year, a court gave a ruling that could change the way one looks at forests. Colombia's highest court, in a petition filed by a group of 25 youth from ages seven to 26, demanding that the government protect their right to a healthy environment, recognised Colombia's Amazon forest as an "entity subject of rights". This actually means that the vast rainforest of the South American Continent, for the part of it that falls within the boundaries of Columbia, has been granted the same legal rights as a human being. The judges who passed that order were of the view that the destruction of the Amazon would lead to "Imminent and serious" Damage to children and adults for the current generation and future ones. Here is a historical decision from the highest columbian here is a historical decision from the highest columbian court that sets a precedent and gives the entire world much to think about ,But just see how little coverage it received in the media. hardly anybody knows of the judgement.

The court found that the Colombian rainforest were being cleared to make way for more grazing an agricultural land, as well as coca crops-The raw ingredient for cocaine-Illegal mining and logging. the percentage of clearing forest rose by 44 in one year. The colt went on to order the Colombian government and the local ones, EDS also the environment and agriculture ministries an environmental authorities to present action plans within four months to combat deforestation in the Amazon.

Except for the path -breaking ruling of the court, How different is the situation of the rainforest here in Goa or India, and that of the Amazon in Colombia where forest are being denuded? B11 of the reasons for clearing vast swathes of forest in the two countries is the same- illegal mining.

Returning to Kerkar's book, he writes, " As mining activities in Goa are done without following many of the norms of environment, the institution like sacred groves established by the villagers are on the verge of extinction. In areas affected badly by haphazard mining activities, these community conserved areas are totally degraded."

The Sahayadris that border Goa are as important to us and our neighbouring States, as the Amazon is to South America and to the world. Trees cut in Goa, trees cut in Colombia have the same effect on the environment. A forest existing today and cut years from Now can help devastating consequences on the weather and the climate. conservation of the forest will play a major in countering climate change, and every tree grown will contribute positively to keeping temperatures in check. the problem of deforestation needs to be controlled. In Goa we are in the season of planting saplings. the government has planned to plant saplings. Can children and youth also plant some?

Alternatively, If go was adults are not responding to the cry of the forest, can go as children be sensitive to it, as the columbian youngsters did? The Colombian children and youth argued that the failure of their government to stop the Amazon from being destroyed 'jeopardised their futures And violated their constitutional rights to a healthy environment, life, food and water.'

Kerkar's book documents have the security groups have been killed by mining. "If go Gorman does not take stringent action against the forces responsible for destroying forest, these institutions protected by the community will become the thing of the past," He concludes. and with them will go the forest. climate change today is a direct consequence of deforestation that is leading to greenhouse gas emissions. saving the sacred groups take priority in this area, as they could well remain as Aussies of green in a land denuded of forest, if reforestation does not take place immediately.

An Analysis of Aldo Léopold's land Ethics

Since The 1970s, global ecological crisis has become increasingly serious and people have to rethink the relationship between man and nature. in this process of reflection, Leopold's Land ethics, which had been neglected, have been re examined and gradually accepted. based on the non anthropocentrism, Leopold's Land ethics puts forward the methodology of ecological holism to solve the problem of environmental crises.

With the continuous deterioration of the natural environment, human beings are already in a very serious ecological crisis. Faced with this situation, American scholar Aldo Leopold (1887-1948) puts forward the land Ethics from the View of constructing the relationship between human beings and nature in the 1930s. it has become an important theoretical resource to guide the contemporary environmental movement, an it is of great significance to guide people to correctly understand an alleviate the current ecological crisis. Aldo Leopold is a famous American ecologist And Environmental Protection pioneer, Known as "The founder of American new environment theory" , " the father of ecological ethics", and " The originator of wildlife management". His land ethics regard nature as a whole regard nature as a whole, Which including soil, water, air, animal and human. He things that human and other species in nature are the ordinary members of the

whole. his thoughts fundamentally expand the scope of ethical values in a form the intrinsic value of life, and greatly promote the emergence and development of ecology and environmental ethics. At the same time, The land ethics has changed the traditional concept of anthropocentrism, established a new concept of ecological holism, and promoted the rise of the American environmental movement in the 1960s and 1970s and became the important guiding ideology of its practise. From the social background of Leopold's Land Ethics, This paper explains the objective inevitability of this thought, and then discuss is the core notation of Leopold's Land Ethics, And finally makes a general evaluation of it.

The formation background of Leopold's Land Ethics

The formation and development of Leopold's land Ethics has a certain theoretical foundation, and is the product of a particular time. It makes Sharp criticism, to the traditional anthropocentrism, but at the same time it absorbed the western ecological view and previous advanced ecological thought. the transformation of his thought is closely related to the development of science and technology at that time,. And to the educational and family backgrounds he was subjected to.

social background

Leopold lived In the frenetic era economic development in the United states. the material resources needed for economic development were mainly extracted from the natural resources of the country. People deeply conquered nature and used natural resources,. And at the same time brought the ecological crisis., especially after the 1860s, American industry is increasingly developed industry is increasingly developed, And gradually replaced the British industry and acquired a monopoly in the world. the gross annual value of its industrial output accounted for 1/3 of the world, which ranked first in the world. However, these industries are based on the consumption off natural resources for development, resulting in the consequences of natural resources would severely damaged and wasted. The US government did not implement the related land protection policy while launching the market economy policy, which lead to the uncontrolled development of the land reclamation and resources exploitation. yet at that time, most Americans are naive to think that America has vast territory and abundant resources, and they did not realise that the consequences of the changes in the ecological environment will be extremely serious. until the late 19th century, some prescient Scientists and intellectuals had became aware of the changes in the ecological environment and expressed deep concern about its continued development.

The main Content of Leopold's land ethics

Land Ethics is the essence of Leopold's thought. According to the evolution of land ethic, he divided his content into the evolution order of ethics, the concept of community, the consciousness of ecology and so on.

The evolution order of ethics:-

Under the influence of anthropocentrism, people use to classify the species according to their own needs, and evaluate the merits and demerits, give different values to them and treat them with different attitudes. In practice, people often use the economic scale to measure the value of Environmental Protection. They only emphasized the contribution of natural environment to human beings, and completely ignore the harmonious relationship between human and nature. Leopold argued that individual characteristics are not considered in the existence of biological individual, and we must make people fully aware of the existence of each biological individual in the entire ecological chain are playing their respective functions, and we can't value them by their contributions to humanity. He believes that people should not completely from the economic point of view to consider how to use and protect nature, because the purely economic interest driven behaviour will leave the natural ecosystem in a shambles and destroy the integrity and functionality of the whole system. Through the combination of ethics and ecology thought, he puts forward the ecological evolutionary thought of human ethical relationship, and holds that the orderly evolution of human ethics can be divided into 3 stages, including the initial ethical stage of the relationship between human beings, the ethical stage of the relationship between men and society, and the ethical stage of the relationship between men and social community. The division of these three stages follows the evolving process of ecological evolution. He believes that ethics should not only be limited in human society to deal with the relationship between people or the between people and society, but also should be applied to deal with the relationship between human and nature. He advocated that we must hold an "Ecological conscience" To the natural environment and have a sense of moral responsibility for the management and maintenance of it, and we can't destroy ecology just because we must have technology to conquer and transform nature.

The concept of community:-

Leopold called sand the "land community" in sand county Almanac, The concept of land here does not simply refer to humans and other organisms live in the land, but also includes plant, animal, air and water etc. All these constitute an organic unity, but also can regard the organisms on the earth as an organ of ecosystem, and bear the function of the ecological system to play a normal role" land community" contains two meanings. First, the land is not only including the soil, but also includes the animal, plant and water, air, climate and so on. In essence, Leopold's land community has been extended to the whole

nature. Nature is a community ,But also a living Organism. The purpose of Leopold's extension of the concept of community is to let mankind know that nature has a life and that any living thing has the right to survive. Second, People are members of the land community, emphasising the equal relationship between men and nature is no longer a master servant relationship, but a partnership. Does the land ethics transforms the role of mankind from the Conqueror of the land community into the ordinary members and citizens therein. it contains respect for its fellow members and the community. in this way, it subverts the relationship between man and nature. by changing the status of men in nature, "land community" Concept gives the ethical code to all the existence in nature, so as to give them the right to exist.

Ecological awareness

Leopold Advocated establishing an ethical sense of ecology, so that make people extend the social consciousness to the ethical consciousness, and extend the problem from the intellectual category to the inner emotional category. in his view, it's not difficult to let people produce a sense of resource protection, the difficulty is the real implementation and effectiveness. For example, in many cases, by strengthen the education of resource protection or by law, vote, And even by participate in some resource protection organisations. All of these cannot fundamentally solve the increasingly serious environmental and resource problems, and even has never achieved satisfactory results.. this is due to the lack of ecological awareness, so it becomes an empty talk.

Theoretical significance of Leopold's land ethics

Leopold's Planned ethics is of great significance in two aspects.

First, it broadens the field of ethical theory. The land ethics puts forward a kind of ecological ethic thought for mankind, ,It is a great revolution in the field of ethics, and promoted the development of environmental ethics at the same time. Leopold believed that human being should extend the boundary of moral ethics, and put the whole nature into the scope of human ethics. the land ethics has changed mankind's understanding of the relationship between men and nature. This knew thought has provided a new perspective for the exploration of nature, which led the foundation for the emergence and development of new environmental ethics, and affected a large number of scholars. For example, P.Taylor extends the ethical investigation of the relationship between man and nature to the whole biological world by referring to the extension of ethics in Léopold's land ethics;

Secondly, It constructs a new ecological worldview. You bold land ethics has broken through the thought that man is the biosphere leader, an as shown a kind of ecological world outlook. This ecological value focuses on all components of the ecosphere: human ,

non-human, mountains, rivers, forests, wetlands and everything on earth. Leopold believes that there is an interaction between species and environment within the ecosystem. On the one hand, the environment determines the existence and development of species, providing material, energy and space for the survival of species. On the other hand, the activities of the species will have an impact on the environment. Species and environment are interdependent. He emphasised the inter relationships between human and the natural environment. This is different from the mainstream ideas in human history. The mainstream ideas emphasize human ecology, human nature, and human world. And Leopold's land ethics advocated that the ecology is the existence of all the species' living conditions and their mutual relations. The establishment of the ecological world view of the coexistence of human and other non human beings in the whole ecological environment has found the way to alleviate the contradiction between economic development and environmental damage, not only points out the way to deal with the relationship between human and nature, but also the direction for the long term development of human beings.

Leopold's land ethics has remained the most extensive influence since the new environmental movement in the 1960s, and the influence has been increasing with time, fully demonstrating its intrinsic value and significance. It was in keeping with the values of the times, and so many people think that Leopold's land ethics was now more important than he conceived.

Sacred groves – climate change

Decline in biodiversity and climate variability are two major environmental issues faced by the world today. The rate of species extinction due to human activities is recorded to be 1000 times more than that of the natural rate. These warrant a revisit of the indigenous concepts of biodiversity conservation like sacred groves that emerged in the Megalithic times with the spread of shifting agriculture are one of the major forms of ancient local participatory conservation. These are virgin forest areas locally protected and conserved for biodiversity under the guardianship of a presiding deity. Sacred groves conserve flora, protect soil and water and also serve as a site for socio-economic events, religious festivals, social meetings. These integrate religious and cultural beliefs and taboos that interlink local deities or ancestral spirits into principles of conservation. They are believed to be the abode of local gods, ancestral spirits, and other supernatural powers. In fact, it was these beliefs and perceptions that supported the conservation of biodiversity in these natural habitats over the years.

Climate resilience

There is a tipping point though. “ In the deforestation process, we tend to lose tree cover. Trees from a structural framework in a forest community. When that is cut the system suffers. There is also a trade-off in terms of biomass and carbon sequestration. Wood biomass is always greater with trees.

Human activity

The increases could be attributed to the cumulative effects of natural and human disturbance, including small timber and fuel wood removal, the study notes. The human activity that most encourages Liana growth is encroachment at the forest edges. The abundance and distribution of lianas usually depend on abiotic factors including elevation, rainfall and seasonality, soil fertility and disturbance. The vegetation of sacred groves has their effect on the soil and water affecting micro climate. Sacred groves have their influence in regulating the temperature of the soil; maintain the cool and moist microclimate which is helpful in regulating the low range of temperature in dry seasons.

Preserving Goa’s sacred groves: The importance of the variety in biodiversity conservation and cultural heritage

Devrai, Also known as sacred Groves, are patches of forest that are considered sacred in Indian culture. these groups have been preserved and protected by local communities for generations and play an essential role in the conservation of biodiversity in the region. The term “Devrai” is derived from two words: “dev” which means God, and “Rai” which means a patch of land. Devrai , this, a Patch of land dedicated to God. These sacred Groves are found all over India. From the western guards too Himalayas, and are an important part of the cultural and religious heritage of the country. they are typically located near temples, and are considered to be the a board of the local deities. they are also associated with traditional beliefs and practises that are deeply rooted in the local culture. These beliefs and practises are often based on the idea that the group is home to spirits, ancestors and other supernatural beings that protect the local community and its environment. Devrai are important for the conservation of biodiversity in the region. The groves are of one home to a wide variety of plant and animal species, Including many that are endangered or rare. This is because the groups are often located in areas that have not been significantly impacted by human activities such as logging, grazing and cultivation. In addition, The groups are often maintained by local communities whoever deep understanding of the local ecology and traditional knowledge about sustainable resource management. this means that the groups are not only important for biodiversity

conservation but also for the preservation of traditional knowledge and practises. Devrai Also play an important role in the cultural and social life of local communities. they are often the site of religious and cultural festivals, where people gather to celebrate and perform traditional rituals. these festivals provide an opportunity for people to come together and strengthen their bonds of community and solidarity. they also serve as a reminder of the importance of nature and the need to preserve it for future generations. Despite the importance of Devrai, They are under threat from various human activities. the pressure on land for agriculture, logging and mining is increasing and many sacred groups have been destroyed or degraded. In addition the erosion of traditional knowledge and practises has led to a decline in the management of these groves. The pressure on land for agriculture, logging and mining is increasing and many sacred groves have been destroyed or degraded. To protect and conserve Devrai, It is essential to involve local communities in their management and conservation. this includes supporting traditional knowledge and practises, providing resources and training for sustainable resource management, and raising awareness about the importance of these groups for biodiversity conservation and cultural heritage. Efforts must also be made to address the root causes of the destruction and degradation of Devrai, Such as the pressure on land for agriculture and other forms of development.

Mining sends sacred groves on path to extinction: Environmentalist

Rajendra kerkar calls for government action to protect the disappearing patches of biological importance .

Environmentalist and National Wildlife board member Rajendra kerkar, Who has done an extensive study on sacred grooves in the state, Revealed that these Devrai or Vanrai, protected by locals Due to religious and cultural sentiments, are on the verge of extinction due to rampant mining activity. Areas like Naveli and sural in Bicholim, pissurlem in Sattari, Uguem in Sanguem , that have a number of sacred groves, are now crying for attention. “Mining activities are responsible for destroying the sacred groves. if government fails to take some stringent action, these institutions protected by the community for ages, will become things of the past,” kerkar said in his book “sacred groves of Goa” released by Goa state biodiversity board(GSBB).

“Ecosystem services provided by them are perhaps the greatest and the most crucial contribution with the society and community,” Kerkar said. “However, with rampant mining activities, these institutions are on the verge of extinction. In areas, Affected badly by haphazard mining activities, these community conserved areas are totally degraded, the green crusader added.

Giving examples, he said that the villages of Naveli had traditionally guarded the groves but now, With wealth from mining, they have forgotten the rich assets of natural and environmental heritage of the land. At Naveli and Kudne, currently, only one sacred grove remains at Palavar , and except for a few trees and vegetation cover, the forests have been degraded.

In surla, the Mhardanyacho Dongar sacred grove , in the forest was so thick and protected that it was a habitat for tigers. “However, mining activities have totally degraded the sacred groves, which were guarded as the tiger was associated with the holy spirit of Mhardano,” kerkar stated.

Other sacred groves on the verge of extinction are Mharinganachi Raj and Pejalidevichi Rai Pissurlem and Mhas Dongor near Peri Sard of Uguem. Purvatali Rai and Ajyachi Rai , are the only groves which remained untouched by mining .

Conclusion

The study reveals the strong local management strategies link between folk culture and their land for over idea of surrounding landscape elements. The management systems used at present in some groups permit a limited level of resource use to be extracted from the groves. This has permitted the sacred groups to develop into old growth forest of great antiquity. The resident interview during this study clearly brought out their deep Understanding of local forest resources as a life giving support system. However, they indicated that development has altered their perception due to the economic more ninja that land speculators have offered them over the last decade. the local myths, stories and religious rituals are gradually being homogenised by external influences and the influx of towns, people an formal school education. Those ceremonial rituals such as the “kaul” That had a strong controlling influence on resource extraction from sacred groves are not practised by the younger generation. The groves are slowly but surely being degraded over even severely damaged. Thus the local management systems of the sacred Groves are being gradually lost. The institutional local management structure based on respected priests and the integrity of the local village Panchayat government is now being altered through a widening

economic divide in the traditional community and through new societal changes. The traditional management of land and resource use patterns at the local level will be progressively lost as the farmland is converted to an intensively man modified urban landscape. Protection towards the grooves are absent. Their values are linked to economic considerations or to superficial aesthetic concerns or for holidays and picnics. There is no respect for nature as a supporter of livelihoods which was a part of the lives of traditional agro pastoral people. Finally appropriate Management Today must include identifying ways of using alternate conservation strategies for groves. Ecodevelopment , ecorestoration, and sustainable tourism, through registering local Biodiversity Management Committees, can prevent the destruction of the fragile and biologically rich ecosystems of the groves and their surrounds . Only strong local E relevant public opinion to conserve these regions fragile ecosystem and traditional cultural values can save the groups from ultimate annihilation. Devrai or Sacred groves add an essential part of India's cultural and natural heritage. they are important for biodiversity conservation, the preservation of traditional knowledge and practises, and the social and cultural life of local communities. to ensure their survival, it is crucial to involve local communities in their management and conservation, raise awareness about their importance, an address the root causes of their destruction and degradation. only then can we ensure that these groups continue to serve as a source of inspiration and spiritual connection for generations to come.

The human race in tune with nature contributes to a healthy, vibrant life. when humans have a close relationship with nature they can identify plants with medicinal properties, weather fruits are poisonous, have toxins, or are bitter. Just by observing vegetation, soils and fungi humans see where the land is fertile, where there is water, etc. By observing footprints, Humans can identify the animal, when it passed by, Its age and so on and so forth. from such gradual accretion of knowledge, Humans derive and involve culture. As you are aware, There is a slow transition toward exploiting the environment on which we depend. Our relationship with nature is deprived and as such we are spoiling the lives of generations to come. the phenomenon does not need to be. Gone are the days when we had a clean and safe environment to leave a healthy life. today in the name of development we can see the degradation of environment across the world. this is especially true in case of the states which were once known for its lush greenery, forests, beaches, untouched habitats and reach biodiversity. Goa is a beautiful, small state by area

and population. this state is on the verge of environmental crisis, experiencing the signs of destruction of the rich watersheds, pollution of traditional ponds and lakes, deforestation, cutting off the lush green hills, reclamation of the eco fragile floor plans of the major estuaries, destruction of the low lying Khazan ecosystem, levelling off the coastal sand dunes, Fragmentation of the natural habitats, interference in the natural migratory corridors of the wild animals, over use of chemical fertilisers, air pollution, dust pollution, impact of mining and quarrying, alluvial sand excavation, Plastic waste, mountains of municipal solid waste, human- wild animal(elephants, monkeys, panthers) conflicts, erosion of wild and agro-biodiversity, gene pools, etc. This has created the overall disturbance in ecological and cultural balance within the state. Goa is known as a tourist hub and attracts lakhs (thousands) of foreign and domestic tourists each year. There are many examples of how this disturbance causes an imbalance, destabilizing both the Nature and the people. Water is no longer of the quality it was once due to siltation, damming and other things which disturb the memory of the water. Trees are caught indiscriminately without care of the consequences to the balance of carbon in the atmosphere or in the soil. landslides and soil erosion occurs in many places causing harm to to the buildings constructed in place of the trees. there is no gain in these types of activities. it is not sustainable. and there is no end insight to the invasion of the industries, illegal mining, insensitive tourism, and plastic pollution which has already created irreversible disturbance in the natural ecosystems and biodiversity.

In Goa in the race of progress and development the green cover is forgotten and the sacred groves are destroyed, which has a great negative impact on biodiversity.

The study on sacred groves reminds us the importance of protecting our future and future planet contributes to healthy living longitivity. There are no substitute to this .

The scientific research and study made through all these years also points to the role of trees in controlling pollution and climate change. If we protect sacred groves quality of life will improve and the future of planet will be safe.

To protect and preserve our environment, progress and development has to go hand in hand protection of sacred groves, otherwise it will be one sided. Sensitizing the modern generation is the need of the hour.

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