

Biodiversity of sacred groves in Ratnagiri, Maharashtra

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SUMMARY

Sacred Groves is a well protected piece of forest, which was preserved traditionally by attaching religious values to it. In today's method of conservation it is classified under *in-situ* conservation. The present paper gives an account of the biodiversity of plants and birds of the sacred groves in the vicinity of Dapoli. A study of the floristic and avifauna composition and its use by the local people is also incorporated. In the present study one grass species, fifteen climber species, fifteen herb species, twenty three shrubs species, fifty-one trees are reported. Ten endemic and eight threatened plants are also reported in this paper. When the vegetation found outside the sacred groves was compared to one found inside it, it was found that only *Teciona-Terminalia* species were common. Though man is reaching a modern era having knowledge of many scientific conservation techniques, the traditional conservation practice is endangered. Nearly all of the species found inside the sacred groves were used and exploited for their uses by the *Katkari* tribes living around the sacred groves. Due to the use of the sacred grove by local people for their daily needs, the depletion of the plants was on a rise and it is feared that if this continues at the same pace, many of the rare and endangered plants would be extinct. With the new inventions in the conservation techniques it is necessary that restrictions must be placed on the use of the sacred grove. It must be preserved as they serve as a potential gene bank.

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Sacred groves are the products of conservational practices. These are patches of forest land reserved and thus well protected. The success behind the reserved nature of sacred groves is the attachment of religious value to it. They were believed to be the abode of gods. These are locally known as 'Devrai' in Maharashtra. A 'Devrai' is a forest in which there are restrictions towards felling, hunting, encroachment, collection of minor forest products etc. thus serving as a virgin forest.

The biodiversity status of sacred groves is very high rated. They are rich in flora, fauna and avifauna. Most of the wild relatives of plants, rare, threatened and endemic plants are found in abundance. Since this part of the forest is untouched many of the rare bird species and arthropods find refuge in them. It therefore, indirectly helps in the balance of the ecosystem. It averts the problems of soil erosion, humidity, reduces temperature of the atmosphere. It serves as a perennial source of water. It also helps in watershed protection. The sacred groves have thick humus and litter layer enhancing water retention, root system development and gaseous exchange. The soil moisture retention characteristics of the sacred groves are higher when compared to the

adjacent area (Prasad and Mohanan, 1995).

Hughes and Chandran (1998) illustrated that the sacred groves served as a refugia and possible centers of dispersal and restoration. Gadgil and Vartak (1975, 1976) reported the sacred groves in Raigad district of Maharashtra harbored solitary specimen of the gigantic liana *Entada phaseloides*. A study on the sacred groves of Maharashtra was done by Deshmukh and Gogate (1997).

This paper assess the biodiversity of plants and birds present in the sacred grove.

MATERIALS AND METHODS

For the proposed study, the study area was visited 3-4 times during each of the three seasons. Explorations were undertaken from one end through the center of the forest area to the opposite end and back. Quadrants of 10m x 10m for trees, 5m x 5m for shrubs and 1m x 1m for herbs were laid. The plant species were identified with the help of the herbarium sheets and books. The unidentified plants were collected and a herbarium sheet was prepared and identified with the help of local floras. The prepared herbarium sheets were then submitted to the College of Forestry, Dapoli.

For avifauna, point count method was used. In this the observer stood at random and

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recorded different species of birds seen from that point. A total of twenty points were sampled and twenty minutes were spent at each point. All the point counting was done at the same time of day preferably 7.00 A.M. to 9.00 A.M.

Six villages viz, Kudawale, Gimhavne, Chandranagar, Matwan, Vadavali, and Pachavali were selected randomly from the Dapoli tahsil. 10 sample respondents were selected randomly from the revenue record of each village. Thus the final sample consisted of one tahsil, six villages and sixty respondents. A questionnaire was prepared and was distributed among the respondents. The answers were fed into the computers and were screened. As per the result of the screening, the most frequently occurring answers were relied up. The collected data were analyzed for arriving at useful conclusions and other information as documented in (Table 1).

Observation:

As per the classification of the forests by Champion and Seth, the forests of Dapoli tehsil fall in the Tropical Moist Deciduous Forest. With most common components were *Terminalia*, *Bridelia*, *Syzygium*, *Lagerostromia*, *Dillenia*, *Careya*, *Bombax*, *Lannea*, etc.

The dominant families like Euphorbiaceae (*Macaranga*, *Bredelia*), Sapindaceae (*Schleichea*, *Sapindus*), Leguminosae (*Pterocarpus*, *Dalbergia*, *Acacia*), Rubiaceae (*Ixora*, *Mitragyna*, *Haldina* and *Morinda*), Anacardiaceae (*Spondias*, *Lannea*) were found. The tall trees like *Antaris toxicaria*, *Schleichera oleosa*, *Terminalia crenulata*, *Bombax ceiba*, *Xylia xylocarpa* etc. were present. The moderately tall trees like *Grewia tilifolia*, *Garuga pinnata*, *Macaranga peltata* were observed.

The shrubs like *Leea indica*, *Clerodendrum viscosum*, *Murraya paniculata*, etc. were found. In the ground flora, undergrowth comprises members of Fabaceae (*Crotolaria*, *Indigofera*, *Desmodium*), Acanthaceae (*Justicia*), Euphorbiaceae (*Phyllanthus*, *Euphorbia*), Lamiaceae (*Ocimum*, *Pogostemon*). Climbing shrubs like *Molluva spicata*, *Calycopteris floribunda*, *Mucuna pruriens*, *Jasminum malabaricum*, *Entada pursaetha* etc were found. Top canopy was composed of *Sterculia guttata*, *Holigaina grahamii*. The middle canopy consisted of *Memecylon umbellatum*, *Ixora nigricans*. Shrubs like *Leea indica*, *Conarus wrightii*, *Grewia umbellifera* are present. The parasites like *Dendrophthoe*, *Loranthis*, *Viscum* etc. were present on the host like *Syzygium*, *Terminalia*, *Ficus*, *Acaica* etc.

Fifty-one species found were classified under the

category of trees and therefore this category was the dominant. The next dominant group was of shrubs having twenty-three species under it. The next group was of the climbers and herbs having fifteen species under them. There was one grass species found that was of *Themeda triandra*.

It was found that weeds like *Argemone mexicana*, *Phyllanthus niruri* and *Lantana camara* grow on cultivated and wastelands. *Calotropis gigantea* grows on wastelands. *Oxalis corniculata* is a weed which was commonly found in the grasslands. *Begonia crenata* and *Woodfordia fruticosa* was grown on rock crevices. *Calophyllum-inophyllum*, *Drimia indica*, *Homonoia riparia*, *Ipomea pes-car pre* and *Thespesia populnea* was grown on sandy shores. *Clitoria ternate*, *Hemidesmus indicus*, *Justicia adhatoda* and *Vitex negundo* grew on hedges. *Hygrophila auriculata* was grown in fresh water. Most of the other species found were of evergreen and moist deciduous habitat. The rare and threatened species like *Frerea indica*, *Gnetum scandens*, *Glorioosa superba*, *Entada rheedei*, *Ceropegia attenuata*, *Zingiber neesatum*, *Drosera indica* and *Rauvolfia serpentina* were found. The endemic species like *Amorphophallus commutatus*, *Erinocarpus nimmonii*, *Jasminum malabaricum*, *Terminalia paniculata*, *Zingiber neesatum*, *Drosera indica*, *Frerea indica*, *Gnetum scandens*, *Entada rheedei*, *Ceropegia attenuata* etc. were found in the sacred groves.

All of the climbers, herbs, grasses, shrubs and trees found were used by the tribals for their medicinal, fodder, veterinary medicine, floss, fibre, oil, tan, dye, species, fruits, vegetable, aromatic, resin yielding purposes. (Table 1).

It was found that the people depended on the medicinal plants of the sacred groves for curing some of the diseases. The edible plants available in the forests were used in the times of drought or special occasions. The grasslands were used for grazing their cattle and in the dry seasons some of the forest plants were used to provide fodder to their cattle. The medicine for their cattle was also obtained from the forests on some occasions. The plants yielding aroma were used to prepare perfumes. The fibre, floss, tan, resin, oil, dye, gum yielding plants found place in their day to day activities and occupation.

Most of these species are being used by the local people living around the scared grove threatening the existence of these species. Therefore, the threatened species are now on average of extinction and many other species will enter the threatened list soon. When the species outside the sacred grove was compared to the species found inside it, it was found that *Tectona* -

Table 1 : Plants and trees found within the six sacred groves

Sr. No.	Plant name	Common name	Habit	Habitat	Used for
1	<i>Abrus precatorius</i> L.	Gunj	Climber	Moist deciduous forest	Medicine
2.	<i>Acacia catechu</i> (L. f.) Willd.	Khair	Tree	Scrub forest in plains	Medicine, Fodder, Dye, Gum-Yielding
3.	<i>Acacia nilotica subsp. Indica</i> (Benth.) Brenan	Babhul	Tree	Dty scrub forest in plains	Tan-yielding
4.	<i>Aegle marmelos</i> (L.) COIT.	Bel	Tree	Deciduous forest of slopes	Medicine
5.	<i>Anacardium occidentale</i> L.	Kaju	Tree	Cultivated in deciduous forest	Medicine, Gum- Yielding
6.	<i>Argemone mexicana</i> L.	Piwla-Dhotra	Herb	Weed of cultivated and wastelands	Veterinary medicine
7.	<i>Artocarpus heterophyllus</i> Lamk.	Phanas	Tree	Moist deciduous forest	Edible fruits, Veterinary medicine, Dye- yielding
8.	<i>Asparagus racemosus</i> Willd.	Shatavari	Climber	Open deciduous forest	Medicine, Veterinary medicine
9.	<i>Bambusa arundinacea</i> (Retz.) Willd.	Bamboo	Shrub	Deciduous forest in slopes	Medicine
10.	<i>Bauhinia purpurea</i> Linn.	Kanchan	Tree	Deciduous forest in slopes	Medicine, Tan, gum-yielding
11.	<i>Bauhinia racemosa</i> Lam.	Apta	Tree	Deciduous forest of slopes	Gum-Yielding
12.	<i>Begonia crenata</i> Dryand	Kapru	Herb	Rock crevices in hills and slopes.	Medicine
13.	<i>Boerhavia diffusa</i> L.	Punamava	Herb	Dry grasslands	Medicine
14.	<i>Bombax ceiba</i> L.	Shevar	Tree	Hilly parts	Medicine, fibre, Gum-Yielding
15.	<i>Bridilia retusa</i> (L.) Spreng.	Asana	Tree	Deciduous forest	Fodder
16.	<i>Butea monosperma</i> (Lamk.) Taubert.	Palas	Tree	Deciduous forest	Fibre, tan, dye, gum yielding
17.	<i>Calophyllum inophyllum</i> L.	Undi	Tree	Sandy shores	Medicine, Oil- yielding
18.	<i>Calotropis gigantea</i> (L.) Ait.	Rui	Shrub	Waste places.	Medicine, Fibre and Floss yielding
19.	<i>Calycopteris floribunda</i> (Roxb.) L.	Ukshi	Climber	Moist deciduous forest in hilly areas	Medicine
20.	<i>Careya arborea</i> Roxb.	Kumbha	Tree	Deciduous forest	Medicine, Gum- Yielding
21.	<i>Carissa congesta</i> Wight.	Karvand	Shrub	Scrub forest	Edible fruits
22.	<i>Caroyta urens</i> L.	Bherlimad	Tree	Evergreen forest in hills	Fibre-yielding
23.	<i>Cassia fistula</i> L.	Bahawa	Tree	Deciduous forest	Human and animal medicine, Aromatic Plant, Tan yielding
24.	<i>Cassia tora</i> L.	Takla	Herb	Grassland in slopes	Medicine, vegetable preparation
25.	<i>Catunaregam spinosa</i>	.Gela	Tree	Open forests in hills and slopes	Medicine
26.	<i>Ceiba pentandra</i> (L.) Gaertn.	Shalmali	Tree	Deciduous forests in hills and slopes	Medicine, Floss- yielding
27.	<i>Celastrus paniculatus</i> Willd.	Mal Kangni	Climber	Deciduous forest in hills	Medicine
28.	<i>Celosia argentea</i> L.	Kurdu	Herb	Dry wastelands and cultivated lands	Medicine

Table 1 Contd...

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29.	<i>Centella asiatica</i> (L.) Urban.	Brahmi	Herb	Moist ground in	Medicine
30.	<i>Chlorophytum tuberosum</i> L.	Kuli	Herb	Forest undergrowth in slopes	Vegetable preparation
31.	<i>Cinnamomum verum</i> P. resl.	Dalchini	Tree	Evergreen forests	Spice
32.	<i>Cissampelos pareira</i> L.	Pahadvel	Climber	Deciduous forest in slopes	Medicine
33.	<i>Clerodendron serratum</i> (Blume.)	Bharangi	Shrub	Deciduous forest	Medicine, Vegetable Preparation
34.	<i>Clitoria ternatea</i> L.	Gokarna	Climber	Hedges	Medicine
35.	<i>Cochlospermum religiosum</i> (L.) Alst.	Sonsawar	Tree	Dry deciduous forests in hilly areas	Floss-yielding
36.	<i>Costus speciosus</i> (Koen.) J. E.Sm.	Koshta	Shrub	Moist places	Medicine, Vegetable Preparation
37.	<i>Datura metel</i> L. -	Kala Dhotra	Herb	Scrub forest	Medicine
38.	<i>Dichrostachys cinerea</i> (L.)	Sigam-kathi	Shrub	Dry stony hills of plains	Medicine
39.	<i>Drimia indica</i> (Roxb.) Jessop.	Ran-Kanda	Herb	Sandy shores and rocky places on slopes.	Veterinary medicine
40.	<i>Eclipta prostrata</i> (L.)	Maka	Herb	Wet grasslands in slopes	Medicine
41.	<i>Embelia ribes</i> Burm.	Wawding	Climber	Evergreen forest	Medicine
42.	<i>Embllica officinalis</i> Gaertn.	Avla	Tree	Deciduous forest in hills	Medicine, Tan yielding
43.	<i>Ficus benghalensis</i> L.	Vad	Tree	Evergreen forest	Medicine, Fodder
44.	<i>Ficus recemosa</i> L.	Umbar	Tree	Evergreen forest	Fodder
45.	<i>Ficus religiosa</i> L.	Pimple	Tree	Evergreen forest	Fodder, fibre- yielding
46.	<i>Garcinia indica</i> Choisy.	Kokum	Tree	Evergreen forest	Medicine, Oil- yielding
47.	<i>Garuga pinnata</i> Roxb.	Kakad	Tree	Forest in hilly areas of hills and slopes	Resin-yielding
48.	<i>Gloriosa superba</i> L.	Kalavi	Climber	Forest in hilly areas	Medicine, Veterinary medicine
49.	<i>Gmelina arborea</i> Roxb.	Shivan	Tree	Deciduous forest	Medicine, Fodder
50.	<i>Grewia abutiiifolia</i> Vent. ex A. Juss.	Kharphalsa	Shrub	Evergreen forest	Fodder
51.	<i>Grewia tiifolia</i> Vahl.	Dhaman	Tree	Deciduous forest in hills and slopes	Fodder
52.	<i>Gymnema sylvestre</i> (Retz.) R. Br. ex Schult.	Pitani	Climber	Deciduous forest in hills	Medicine
53.	<i>Helicteres isora</i> L.	Murudsheng	Shrub	Moist deciduous forest in slopes and hill.	Medicine, Fibre- yielding
54.	<i>Hemidesmus indicus</i> (L.) Schult.	Anantvel	Climber	Scrub forest and hedges	Medicine, Veterinary medicine
55.	<i>Holarrhena pubescens</i> (Buch - Ham.) Wall.	Pandhra- kuda	Shrub	Hilly areas	Medicine, Veterinary medicine
56.	<i>Homonoia riparia</i> Lour.	Shemi	Shrub	Sandy beds of flwers	Poisonous plant
57.	<i>Hygrophila auriculata</i> (K. Schum.) Heine	Talimkhana	Herb	Fresh water swamps	Medicine
58.	<i>Hyptis suaveolens</i> Poit.	Rantulas	Shrub	Roadside weed	Medicine, Aromatic plant, Veterinary medicine
59.	<i>Ipomea pes-car pre</i> (L.) R. Br.	Maryada-wel	Climber	Sandy sea-shores	Medicine, Veterinary medicine

Table 1 contd.....

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60.	<i>Ixora coccinea</i> L.	Bakora	Shrub	Moist forest	Medicine
61.	<i>Jasminum malbaricum</i> Wight	Kusar	Climber	Deciduous forest	Fodder
62.	<i>Justicia adhatoda</i> L.	Adulsa	Shrub	Hedges	Medicine
63.	<i>Lantana camara</i> L. var. <i>aculeata</i>	Ghaneri	Shrub	Weed in scrub lands and waste places	Medicine, Aromatic plant, Veterinary medicine
64.	<i>Lawsonia inermis</i> L.	Mehendi	Shrub	Deciduous forest	Medicine, Dye- yielding
65.	<i>Madhuca longifolia</i> (Koen.) Muell.-Arg.	Moha	Tree	Deciduous forest	Medicine, Oil- yielding
66.	<i>Mal/otus philippinensis</i> (Lam.) Muell. - Arg.	Kunkuphal	Tree	Evergreen forest	Medicine, Tan, dye-yielding
67.	<i>Mangifera indica</i> L.	Amba	Tree	Cultivated in deciduous forest	Medicine, Gum- Yielding
68.	<i>Memecylon umbel/atum</i> Burm.	Anjani	Tree	Evergreen forest at highest elevation	Medicine Oil-yielding
69.	<i>Mesuaferia</i> L.	N agkesar	Tree	Evergreen forests	
70.	<i>Mimosa pudica</i> L.	Lajalu	Shrub	Moist grasslands	Medicine
71.	<i>Mimusops elengi</i> L.	Bakul	Tree	Evergreen forests in hills	Medicine, Edible fruits, Aromatic plant, Oil-yielding
72.	<i>Mucuna pruriens</i> (L.) DC.	Khajkui	Climber	Deciduous forest in slopes	Medicine
73.	<i>Murraya koenigii</i> (L.) Spreng	Kadhilimb	Shrub	Evergreen forest	Medicine, Spice
74.	<i>Oroxylum indicum</i> (L.) Vent	Tetu	Tree	Moist deciduous forest	Medicine
75.	<i>Oxalis corniculata</i> L.	Ambushi	Herb	Weeds in grasslands	Medicine
76.	<i>Phyllanthus niruri</i> non L.	Bhui A wali	Herb	Weeds in grasslands	Medicine
77.	<i>Pandanus fascicularis</i> (Lam.)	Kewda	Shrub	Undergrowth in deciduous forest	Aromatic plant, Dye-yielding
78.	<i>Pogostemon parviflorus</i> Benth.	Pangli	Herb	Hilly areas at high elevation in hills and slopes	Aromatic plant
79.	<i>Pongamia pinnata</i> (L.) Pierre.	Karanj	Tree	Banks of rivers and moist deciduous forest	Medicine, Oil- yielding
80.	<i>Rauwolfia serpentina</i> (L.) Bth.	Sarpagandha	Shrub	Evergreen forest	Medicine
81.	<i>Samanea saman</i> (J acq.) Merr.	Rain tree	Tree	Evergreen forest	Fodder
82.	<i>Santalum album</i> (L.)	Chandan	Tree	Dry deciduous forest of plains	F odder, Aromatic plant
83.	<i>Saraca asoka</i> (Roxb.) De Wilde	Sita ashok	Tree	Evergreen forest	Medicine
84.	<i>Schleichera oleosa</i> (Lour.) Oken.	Kusum	Tree	Deciduous forest	Oil-yielding
85.	<i>Semecarpus anacardium</i> L.	Bibba	Tree	Deciduous forest in slopes	Medicine
86.	<i>Solanum indicum</i> L.	Chinchurdi	Shrub	Deciduous forest	Medicine
87.	<i>Solanum nifl;rum</i> L.	Kangni	Herb	Grasslands in slopes	Medicine
88.	<i>Sterculia urens</i> (Roxb.)	Kulu	Tree	Hilly areas in slopes	Medicine, Oil, resin-yielding
89.	<i>Symplocos racemosa</i> Roxb.	Lenda	Tree	Evergreen forests in hills	Medicine
90.	<i>Syzygium cumini</i> (Linn.)	Jamun	Tree	Evergreen forest in hills	Medicine, Edible fruits
91.	<i>Tamarindus indica</i> L.	Chinch	Tree	Deciduous forest	Medicine, Spice
92.	<i>Terminalia arjuna</i> (Roxb.) W. &A.	Arjuna.	Tree	Deciduous forest	Medicine, Tan yielding
93.	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Behada	Tree	Deciduous forests in slopes	Medicine, Tan, gum-yielding

Table 1 Contd....

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94.	<i>Terminalia chebula</i> Retz.	Harda	Tree	Evergreen forest in hills	Medicine, Tan yielding
95.	<i>Terminalia elliptica</i> Willd.	Ain	Tree	Deciduous forest in slopes	Medicine, fodder
96.	<i>Terminalia paniculata</i> Roth.	Kin jal	Tree	Deciduous forest in slopes	Fodder
97.	<i>Themeda triandra</i> F orssk.	Kusal	Grass	Grasslands	Fodder
98.	<i>Thespesia populnea</i> (L.) Soland. Ex Corr.	Paras bhendi	Tree	Sea shore and border of cultivated land	Fibre-yielding
99.	<i>Ventri/ago maderaspatana</i> Gaertn.	Lokhandi	Climber	Evergreen in hills	Medicine
100.	<i>Vitex negundo</i> L.	Nirgudi	Shrub	Moist locations and hedges	Medicine
101.	<i>Woodfordia jruiticosa</i> (L.) Kurz.	Dhayti	Shrub	Rock crevices in hilly areas of hills and slopes	Medicine, Dye- yielding
102.	<i>Zanthoxylum rhetsa</i> (Roxb.) Dc.	Tisal	Tree	Evergreen forest in hills	Medicine, Spice
103.	<i>Zizyphus mauritiana</i> Lam.	Bor	Tree	Scrub forest in Plains	Medicine, Edible fruits
104.	<i>Zizyphus oenoplia</i> (L.) Mill.	Burgi	Shrub	Deciduous forest	Fodder
105.	<i>Zizyphus rugosa</i> Lam.	Toran	Climber	Deciduous forest in slopes	Edible fruits

Terminalia species were found in common.

RESULTS AND DISCUSSION

The weeds were found everywhere. They were found on rocks, rock crevices, on cultivated places and in grasslands. Therefore weeds could grow well in any habitat without much of a problem. It was wide spread and nearly covered the whole vegetation sometimes. The weeds were of herb or shrub habit.

The study area did not show uniform habitat. The species present were dominating the area as per their habitat requirement. The trees were found to dominate moist deciduous and evergreen habitat. The shrubs and climbers dominated the hedges and rock crevices.

The trees acted as indicators of their habitat. The trees like *Acacia catechu*, *Acacia nilotica* and *Zizyphus mauritiana* were indicators of dry scrub forests. Shrub like *Carissa congesta*, herb like *Datura metel*, climber like *Hemidesmus indicus* indicated scrub forest.

Pongamia pinnata, *Thespesia populnea*, *Ipomea pes-car pre*, *Homonoia riparia* etc indicate presence of water source nearby.

Climbers like *Abrus precatorius*, *Asparagus racemosus*, *Calycopteris floribunda* etc. shrubs like *Bambusa arundinacea*, trees like *Bauhunia purpurea*, *Bridilia retusa*, *Butea monosperma*, *Careya arborea* etc. indicate deciduous habitat.

Trees like *Caroyta urens*, *Cinnamomum verum*, *Ficus benghalensis*, *Ficus recemosa*, *Ficus religiosa*, *Garcinia indica* etc. herbs like *Centella asiatica* etc indicate evergreen habitat. *Chlorophytum tuberosum* are herbs that grow as undergrowth.

Table 2 : Birds found within the six sacred groves

Sr. No.	Common Name	Scientific name
1.	Jungle Crow	<i>Corvus macrorhynchos</i>
2.	Raven	<i>Corvus corax</i>
3.	House Crow	<i>Corvus splendens</i>
4.	Indian Myna	<i>Acridotheres tristis</i>
5.	Spotted Winged Stare	<i>Saroglossa spiloptera</i>
6.	Bank Myna	<i>Acridotheres ginginianus</i>
7.	Racket- Tailed Drongo	<i>Dicrurus paradiseus</i>
8.	Wiretailed Swallow	<i>Hirundo smithii</i>
9.	Bush Lark	<i>Mirafra assamica</i>
10.	Singing Bush Lark	<i>Mirafra javanica</i>
11.	Greenbreasted Pitta	<i>Pitta sordida</i>
12.	Great Pied Hombill	<i>Buceros bicornis</i>
13.	Whitebreasted Kingfisher	<i>Halcyon pileata</i>
14.	Pied Crested Cuckoo	<i>Clamator jacobinus</i>
15.	Roseringed Parakeet	<i>Psittacula krameri</i>
16.	Blue Rock Pigeon	<i>Columba /ivia</i>
17.	Red Junglefowl	<i>Gallus gallus</i>
18.	Common Peafowl	<i>Pavo cristatus</i>
19.	Large Egret	<i>Ardea alba</i>
20.	Little Cormorant	<i>Phalacrocorax niger</i>

All these habitats were found in the same sacred grove, showing that all the habitat were scattered in the sacred grove and the environment factors made one of the habitat and the associated plant life dominant.

The cultivated species like *Mangifera indica*, *Anacardium occidentale* and *Atrocarpus heterophyllus* were found inside the sacred groves.

The birds enlisted in the Table 2 were found to find

their food and shelter in the sacred groves. Most of the birds and plants association was found with the plants of tree habit. Therefore the survival of the trees played an important role in the survival and existence of the birds.

Conclusion:

It was found that many of the rare and endangered plants still exist in the sacred groves. As reported by the other scientists we can conclude that sacred grove was a good traditional way of conservation of precious species. Though, today man has made a steady progress in terms of science and has found new ways and means of conservation of plants through the gene bank, cryo-preservation technique, the old systems of conservation seems to be slowly eroding. Also as listed above most of the sacred groves are under the pressure of usage by the tribals and local people. They depend heavily on the survival of the sacred groves. The products obtained from the forest find place in their occupation and daily life. Therefore new techniques for sustainable extraction and use must be invented so that the forest and its products may be used in a sustainable manner. In this way the benefits of the forest can be reaped by the other generations to come.

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