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PLANT DIVERSITY OF KANSARI MAVLI SACRED GROVE OF SONGADH FOREST RANGE IN TAPI DISTRICT, GUJARAT, INDIA

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Sacred groves are forest patches being conserved by tribal people. Sacred groves are closely associated with religious practices, social duties and taboos. The present study attempts show a key role play to conserve plant species by Kansari Mavli sacred grove. The sacred grove is situated in songadh range of vyara division, Gujarat state. Due to excess use of forest resources for timber, fodder and food, forest cover areas are rapidly decreasing. This forest patch has rich plant diversity and is protected by local people. Total 149 plant species are recorded, studied and collected

ABSTRACT

Keywords: Plant diversity, Sacred grove, Songadh forest, Gujarat, India.

INTRODUCTION

Sacred groves are forest patches of rich vegetation traditionally been protected on the ground of religious beliefs and are dedicated to many gods, goddesses, holy spirits etc. As described by Vartak (1983), sacred groves are natural museums of living giant trees, treasure house of rare, endemic and endangered species, dispensary of medicinal plants, recreation centre for urban life, garden for botanists, gene bank of economic species, paradise for nature lovers and laboratory for environmentalists. They are considered as repository of local biodiversity

The sacred groves play an important role in ecosystem services by providing clean air, soil and water, conservation of flora and fauna, temperature control and conservation of traditional knowledge. Being a biotype in a rural landscape, the sacred groves performs a critical role in the maintenance of ecological and hydrological balance of an area, and also help to compensate for carbon emissions of polluting industries and thereby offers economic benefits to the communities besides other ecological benefits (Chandrashekara, 2011).

In India the sacred groves are found scattered all over the country especially in the Khasi and Jaintia hills of Northeastern Himalayas, Aravalli Hills, Central India and Western Ghats. They are known under different names in different states like Dev van in Himachal Pradesh, Oransin Rajasthan, Sarnasin Bihar, Lai Umangin Manipur, Ki Law Kyntangin Meghalaya, Devor Sarnain Madhya Pradesh, Deovani, Devrai or Devrahati in Maharashtra, Devarabana, Devarakadu or Pavitravana in Karnataka, Kavu or Kovilkadu in Tamil Nadu, and Kavuin Kerala (Muruganet al., 2008).

Several Sacred Groves are seen throughout



Fig. 1 Map showing Kansari Mavli Forest area

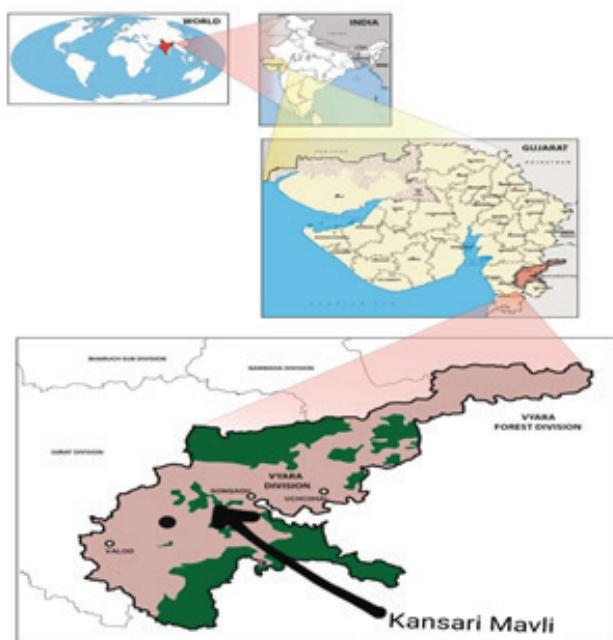
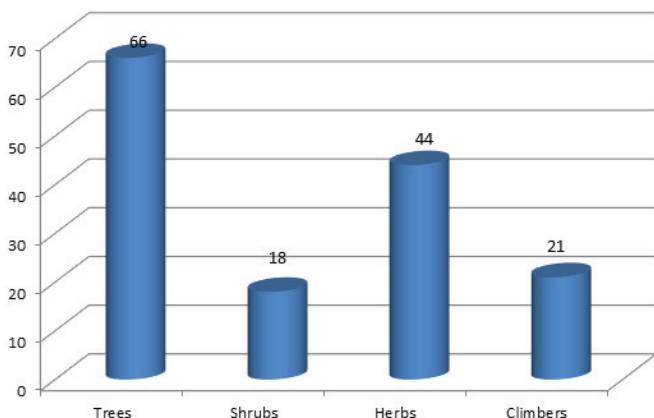


Fig. 2 Location map of Kansari Mavli Sacred Grove

**Fig. 3** Graph showing habit wise distribution of plant species

Gujarat in various forms. Sacred Groves are of much significant in indigenous people's religious and cultural practices. In Gujarat indigenous people inhabit in eastern forests belt. Over 42 Sacred Groves have been documented in Banaskantha, Sabarkantha, Dahod and Kutchh districts.

MATERIALS AND METHODS

Study Area: Kansarimavli is the goddess of grain which corresponds to the gods and goddesses of the settled tribal agriculturists. The sacred grove is located at the foot of a steep hill of highly forested area between the Nishana and Kavla villages of Tapi district. The study area is situated between N $21^{\circ}11'12''$ E $73^{\circ}28'32''$. KansariMavli sacred grove is one of the many sacred groves situated in Songadh forest range of Vyara division. Vyara Forest Division is located in South Gujarat, a region in Indian State of Gujarat. Vyara forest division covers mainly the eastern part of Surat district and major area in the western part of Tapi district. The study area is situated between latitude $20^{\circ}46' N$ and $21^{\circ}27' N$ and longitude $73^{\circ}27'E$ and $73^{\circ}59'E$. Forests are mostly confined to the eastern hilly region of the district. The Forest area of Vyara Forest Division is 907.60 km^2 which covers 28.02 % of total geographic area (*GFD report data 2016).

METHODOLOGY

Kansari Mavli sacred grove is in the Gamit tribal dominant Songadh forest range of vyara division. The study area was identified and frequently visited by help of local villagers. The GPS location was also been taken by Google Earth. The flowering plants were explored and collected during several field visits. The study was carried out during September 2017 to August 2019. Plant species were studied and identified with the help of local flora and taxonomy expert, photographs were also been captured of the sacred grove and flowering plants. The collected specimens were stored in a form of herbarium.

RESULTS AND DISCUSSION

Several plant species trees, shrubs, herbs and climbers have been protected by tribal people in this area. A total of 149 species of plants under 66 families and 121 genera including 66 species of trees, 18 species of

shrubs, 44 species of herbs and 21 species of climbers are recorded. Fabaceae is the most dominant family having 13 genera and 14 species. In the present study, Kansari Mavli sacred grove has been documented of Songadh forest range in Vyara division. The sacred grove is dedicated to Kansari Mata which is goddess of grain. Mainly Gamit and Chaudhari tribes of surrounding areas offer grain seeds to her before monsoon in June months every year. The thanks giving ceremony is also been performed after the preparation of new

Fig. 1 Map showing Kansari Mavli Forest area crop.

CONCLUSION

The present study helps to understand the direct or indirect close relation between indigenous people and sacred groves. Therefore, has important to explore the plant wealth of the area and dependence of tribal on it. It also contributes to know the ecological significance of such sacred forests in order to preserve its rich diversity of flora and fauna.

Photographs of Sacred Grove and plants



Kansari- Mata Sacred Grove

*Tephrosia purpurea* (Linn.) Pers.

Table: 1 Plant diversity of KansariMavli Sacred Grove of Songadh range

Sr No	Scientific Name	Family	Common Name	Habit
1	<i>Rungia pectinata</i> (Linn.) Nees	Acanthaceae	Khadselio	Herb
2	<i>Achyranthes aspera</i> Linn.	Amaranthaceae	Anghedi	Herb
3	<i>Alternanthera paronychioides</i> St. -Hill.	Amaranthaceae		Herb
4	<i>Gomphrena celosioides</i> Mart.	Amaranthaceae		Herb
5	<i>Lannea coromandelica</i> (Houtt.) Merr.	Anacardiaceae	Moyno,Modal	Tree
6	<i>Mangifera indica</i> Linn.	Anacardiaceae	Amba, Mango	Tree
7	<i>Miliusato mentosa</i> (Robx.) Sinclair	Annonaceae	Umbh	Tree
8	<i>Cryptolepis dubia</i> (Burm.f.) M.R.Almeida	Apocynaceae		Climber
9	<i>Holarrhena pubescens</i> (Buch.-Ham.) Wall.	Apocynaceae	Kudo, Indrajav	Shrub
10	<i>Wrightia arborea</i> (Dennst.) Mabberley	Apocynaceae	Dudhi	Tree
11	<i>Wrightia tinctoria</i> R.Br.	Apocynaceae	DudhKudi	Tree
12	<i>Colocasia esculenta</i>	Araceae	Taro	Herb
13	<i>Calotropis procera</i> (Ait.) R.Br.	Asclepiadaceae	Akado	Shrub
14	<i>Tridax procumbens</i> Linn.	Asteraceae	Pardeshibhangro	Herb
15	<i>Balanites aegyptiaca</i> (Linn.) Del.	Balatinaceae	Ingorio, Hingoriyo	Tree
16	<i>Impatiens balsamina</i> Linn.	Balsaminaceae		Herb
17	<i>Oroxylum indicum</i> (Linn.) Vent.	Bignoniaceae	Tetu	Tree
18	<i>Tecomella undulata</i> (Sm.) Seem.	Bignoniaceae	Ragatrhoido	Tree
19	<i>Ceiba pentandra</i> (Linn.) Gaertn.	Bombacaceae		Tree
20	<i>Garuga pinnata</i> Robx.	Burseraceae	Kakad	Tree
21	<i>Bauhinia racemosa</i> Lamk.	Caesalpiniaceae	Ashitro	Tree
22	<i>Caesalpinia bonduc</i> (L.)Robx.	Caesalpiniaceae	Kantkaranj	Shrub
23	<i>Cassia fistula</i> Linn.	Caesalpiniaceae	Garmado	Tree
24	<i>Cassia occidentalis</i> Linn.	Caesalpiniaceae	Sundro	Shrub
25	<i>Cassia tora</i> Linn.	Caesalpiniaceae	Kuvadio	Herb
26	<i>Delonix regia</i> (Boj. ex Hk.) Raf.	Caesalpiniaceae	Gulmohar	Tree
27	<i>Tamarindus indica</i> Linn.	Caesalpiniaceae	Amali	Tree
28	<i>Capparis decidua</i> (Forssk.) Edg.	Capparaceae	Kerdo,Kera	Shrub
29	<i>Crateva tapia</i>	Capparaceae		Tree
30	<i>Cassine glauca</i> (Rottb.) O. Ktze.	Celastraceae	Bhut zad	Tree
31	<i>Celastrus paniculatus</i> Willd.	Celastraceae	Malkagani	Climber
32	<i>Maytenuse marginata</i> (Willd.) Ding Hou	Celastraceae	Vickdo, Vico	Shrub
33	<i>Cleome viscosa</i> Linn.	Cleomaceae	Pili-tilvan	Herb
34	<i>Anogeissus latifolia</i> (Robx. ex DC.) Guill.	Combretaceae	Dhavdo	Tree
35	<i>Anogiessus pendula</i> Edgew.	Combretaceae	Safed Dhav	Tree
36	<i>Terminalia crenulata</i> Roth.	Combretaceae	Sadad	Tree
37	<i>Terminalia arjuna</i> (Robx. ex DC.) Wight	Combretaceae	Arjun sadad	Tree
38	<i>Terminalia bellirica</i> (Gaertn.) Robx.	Combretaceae	Baheda	Tree
39	<i>Commelina benghalensis</i> Linn.	Commelinaceae		Herb
40	<i>Commelina diffusa</i> Burm.f.	Commelinaceae		Herb
41	<i>Ipomoea aquatica</i> Forsk.	Convolvulaceae	Nalinibhajil	Climber
42	<i>Ipomoea muricata</i> (Linn.) Jacq.	Convolvulaceae		Climber
43	<i>Ipomoea obscura</i> (Linn.) Ker.-Gawl.	Convolvulaceae	Vadfudardi	Climber
44	<i>Ipomoea pes-tigridis</i> Linn.	Convolvulaceae	Photial, Wagpadi	Climber
45	<i>Alangium salvifolium</i> (L.) Wangerin	Cornaceae	Ankol	Tree
46	<i>Coccinea grandis</i> (Linn.) Voight.	Cucurbitaceae	Tindoli	Climber
47	<i>Luffa aegyptiaca</i> Mill.	Cucurbitaceae	Galku	Climber
48	<i>Momordica charantia</i> Linn.	Cucurbitaceae	Karela	Climber

Sr No	Scientific Name	Family	Common Name	Habit
49	<i>Cyperus esculentus</i> Linn.	Cyperaceae		Herb
50	<i>Cyperus iriaL.</i>	Cyperaceae		Herb
51	<i>Cyperus rotundus</i> Linn.	Cyperaceae	Chido	Herb
52	<i>Dillenia pentagyna</i> Robx.	Dilleniaceae	Karmal	Tree
53	<i>Dioscorea bulbifera</i> Linn.	Dioscoreaceae		Climber
54	<i>Dioscorea hispida</i> Dennst.	Dioscoreaceae		Climber
55	<i>Dioscorea pentaphylla</i> Linn.	Dioscoreaceae		Climber
56	<i>Diospyros melanoxylon</i> Robx.	Ebenaceae	Timbru	Tree
57	<i>Cordia dichotoma</i> Forst.f.	Ehretiaceae	Gundo	Tree
58	<i>Acalypha ciliata</i> Forsk.	Euphorbiaceae	Dadari	Herb
59	<i>Acalypha indica</i> Linn.	Euphorbiaceae	Dadari	Herb
60	<i>Bridelia spinosa</i> Willd.	Euphorbiaceae	Asan	Tree
61	<i>Euphorbia hirta</i> Linn.	Euphorbiaceae		Herb
62	<i>Jatropha gossypiifolia</i> Linn.	Euphorbiaceae		Shrub
63	<i>Phyllanthus emblica</i> Linn.	Euphorbiaceae	Aavla	Tree
64	<i>Phyllanthus erecta</i> (Medic.) Almeida	Euphorbiaceae	Bhonyamli	Herb
65	<i>Phyllanthus virgatus</i> Forst.	Euphorbiaceae	Moti bhonyamli	Herb
66	<i>Abrus precatorius</i> Linn.	Fabaceae	Chanothi	Climber
67	<i>Butea monosperma</i> (Lamk.) Taub.	Fabaceae	Khakhro, Kesudo	Tree
68	<i>Cajanus cajan</i> (Linn.) Millsp.	Fabaceae	Tuver	Shrub
69	<i>Crotalaria juncea</i> Linn.	Fabaceae	Shaniyu	Shrub
70	<i>Dalbergia sissoo</i> DC.	Fabaceae		Tree
71	<i>Dalbergia latifolia</i> Robx.	Fabaceae	Sisam	Tree
72	<i>Desmodium triflorum</i> (Linn.) DC.	Fabaceae		Herb
73	<i>Erythrina variegata</i> Linn.	Fabaceae	Pangaro	Tree
74	<i>Gliricidia sepium</i> (Jacq.) H.B.K.	Fabaceae	Undir-mar	Tree
75	<i>Mucuna pruriens</i> (Linn.) DC.	Fabaceae	khajkhujali	Climber
76	<i>Ougenia oojeinensis</i> (Robx.) Hochrest	Fabaceae	Tanas	Tree
77	<i>Pongamia pinnata</i> (Linn.) Pierre	Fabaceae	Karanj	Tree
78	<i>Pterocarpus marsupium</i> Robx.	Fabaceae	Biyo	Tree
79	<i>Tephrosia purpurea</i> (Linn.) Pers.	Fabaceae	Sharpankha	Herb
80	<i>Flacourtie indica</i> (Burm.f.) Merr.	Flacourtiaceae	Gargugal	Tree
81	<i>Enicostemma verticillare</i> (Retz.) Baill.	Gentianaceae	Mamejevo	Herb
82	<i>Curculigo orchoides</i> Gaertn.	Hypoxidaceae	Kali-musli	Herb
83	<i>Hyptisssu aveolens</i> (Linn.) Poit.	Lamiaceae		Herb
84	<i>Ocimum americanum</i> Linn.	Lamiaceae	Ran tvulasi	Herb
85	<i>Ocimum tenuiflorum</i> Linn.	Lamiaceae	Tulsi	Shrub
86	<i>Careya arborea</i> Robx.	Lecythidaceae	Kumbh	Tree
87	<i>Leea asiatica</i> (Linn.) Ridsd.	Leeaceae	Dindi	Shrub
88	<i>Asparagus racemosus</i> Willd.	Liliaceae	Shatavari	Shrub
89	<i>Gloriosa superba</i> Linn.	Liliaceae		Climber
90	<i>Lindernia crustacea</i> (L.) F. Muell.	Linderniaceae		Herb
91	<i>Dendrophthoe falcata</i> (Linn. f.) Ettingsh.	Loranthaceae	Vando	Shrub
92	<i>Lagerstroemia lanceolata</i> Wall. ex Wt.	Lythraceae	Nana bhondara	Tree
93	<i>Lagerstroemia parviflora</i> Robx.	Lythraceae	Bhondaro	Tree
94	<i>Azanza lampas</i> (Cav.) Alef.	Malvaceae	Ran-Behndi	Shrub
95	<i>Firmiana colorata</i> (Robx.) R.Br.	Malvaceae	Kaushi	Tree
96	<i>Hibiscus rosa-sinensis</i> Linn.	Malvaceae	Jasud	Shrub
97	<i>Kydia calycina</i> Robx.	Malvaceae	Warang	Tree

Sr No	Scientific Name	Family	Common Name	Habit
98	<i>Sida acuta</i> Burm. f.	Malvaceae		Herb
99	<i>Sida cordata</i> (Burm.f.) Boiss	Malvaceae	Bhoyabala	Herb
100	<i>Urena lobata</i> Linn.	Malvaceae	Vagadau	Herb
101	<i>Martynia annua</i> Linn.	Martyniaceae	Vinchhudo	Herb
102	<i>Soymida fabrifuga</i> (Robx.) A. Juss.	Meliaceae	Royan	Tree
103	<i>Cissampelos pareira</i> Linn.	Menispermaceae	Venivel	Climber
104	<i>Cocculus hirsutus</i> (Linn.) Theob.	Menispermaceae	Vasanvel	Climber
105	<i>Tinospora cordifolia</i> (Willd.) Miers ex	Menispermaceae	Galo	Climber
106	<i>Acacia senegal</i> (L.) Willd.	Mimosaceae	Gorad	Tree
107	<i>Acacia tortilis</i> (Forrsk.) Hayne	Mimosaceae		Tree
108	<i>Acacia auriculaeformis</i> Benth.	Mimosaceae		Tree
109	<i>Albizia lebbeck</i> (Linn.) Benth.	Mimosaceae	Shirish	Tree
110	<i>Albizia procera</i> (Robx.) Benth.	Mimosaceae	Kilai	Tree
111	<i>Vachellia chundra</i> (Robx.)	Mimosaceae	Khair	Tree
112	<i>Vachellia nilotica</i> (Linn.) P. J. H. Hurter	Mimosaceae	Bavval	Tree
113	<i>Ficus arnottiana</i> (Miq.) Miq.	Moraceae	Khadakpayar	Tree
114	<i>Ficus hispida</i> Linn.f.	Moraceae	DhedhUmbaro	Tree
115	<i>Ficus racemosa</i> Linn.	Moraceae	Umbaro	Tree
116	<i>Musa paradisiaca</i> Linn.	Musaceae	Kela	Herb
117	<i>Syzygium cumini</i> (Linn.) Skeels	Myrtaceae	Jambu	Tree
118	<i>Boerhavia diffusa</i> Linn.	Nyctaginaceae		Herb
119	<i>Aeginetia indica</i> L.	Orobanchaceae	Ghost Flower	Herb
120	<i>Biophytum sensitivum</i> (Linn.) DC.	Oxalidaceae	Zarero	Herb
121	<i>Argemone mexicana</i> Linn.	Papaveraceae	Darudi,	Herb
122	<i>Cryptolepis dubia</i> (Burm.f.) Almeida	Periplocaceae		Climber
123	<i>Plumbago zeylanica</i> Linn.	Plumbaginaceae	Chitrak	Shrub
124	<i>Cynodon dactylon</i> (Linn.) Pers.	Poaceae	Darbh	Herb
125	<i>Dendrocalamus strictus</i> (Robx.) Nees	Poaceae	Narvans	Herb
126	<i>Oplismenus compositus</i> (L.) P.Beauv.	Poaceae		Herb
127	<i>Oryza sativa</i> Linn.	Poaceae	Bhat, Chokha	Herb
128	<i>Zea mays</i> Linn.	Poaceae	Makai	Herb
129	<i>Ventilago denticulata</i> Willd.	Rhamnaceae	Asi, Asvel	Climber
130	<i>Ziziphus jujuba</i> Mill.	Rhamnaceae	Bor	Tree
131	<i>Haldina cordifolia</i> (Robx.) Ridsd.	Rubiaceae	Haldu	Tree
132	<i>Hymenodictyon orixense</i> (Robx.) Mabb.	Rubiaceae	Alipagi	Tree
133	<i>Mitragyna parvifolia</i> (Robx.) Korth.	Rubiaceae	Kalam	Tree
134	<i>Morinda pubescens</i> Sm.	Rubiaceae	Ali	Tree
135	<i>Aegle marmelos</i> (Linn.) Correa	Rutaceae	Bili	Tree
136	<i>Schleichera oleosa</i> (Lour.) Oken	Sapindaceae	Kusum	Tree
137	<i>Madhuca indica</i> Gmelin	Sapotaceae	Mahudo	Tree
138	<i>Datura metel</i> Linn.	Solanaceae	Daturo	Herb
139	<i>Physalis minima</i> Linn.	Solanaceae	Popti	Herb
140	<i>Melochia corchorifolia</i> L.	Sterculiaceae		Herb
141	<i>Sterculia urens</i> Robx.	Sterculiaceae	Kadio	Tree
142	<i>Tacca leontopetaloides</i> (Linn.) Kuntze	Taccaceae		Shrub
143	<i>Grewia tiliaefolia</i> Vahl	Tiliaceae	Dhaman	Tree
144	<i>Triumfetta pentandra</i> A. Rich.	Tiliaceae	Zipti	Herb
145	<i>Holoptelea integrifolia</i> (Robx.) Planch.	Ulmaceae	Kanjo, Papda	Tree
146	<i>Gmelina arborea</i> Robx.	Verbenaceae	Sevan	Tree

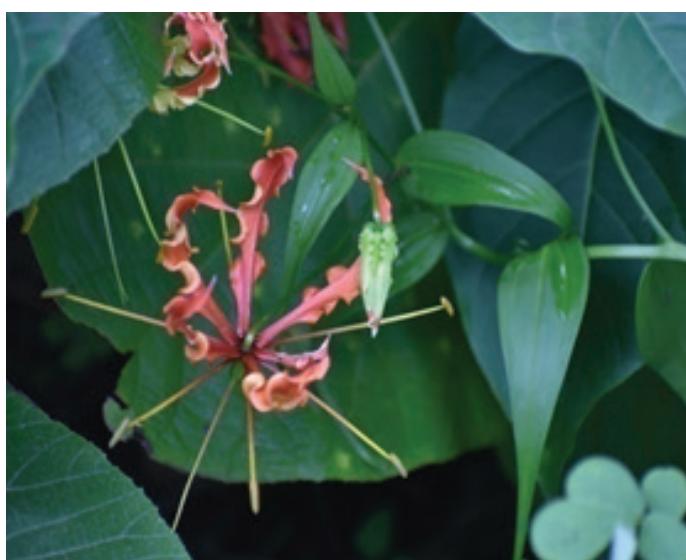
Sr No	Scientific Name	Family	Common Name	Habit
147	<i>Lantana camara</i> Linn.	Verbenaceae		Shrub
148	<i>Tectona grandis</i> Linn.f.	Verbenaceae	Sag	Tree
149	<i>Ampelocissus latifolia</i> (Robx.) Planch.	Vitaceae	JangaliDraksha	Climber



Dioscorea hispida Dennst



Post Monsoon ceremony



Gloriosa superba Linn.



Leea asiatica (Linn.) Ridsd.



Caesalpinia bonduc (L.) Roxb



Aeginetia indica L.



Dalbergia latifolia Robx.



Impatiens balsamina Linn.



Helicteres isora Linn.



Ficus hispida Linn.f.

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