



Floristic Diversity of Sri Sri Dhara Paidithalli Gangamma Ammavaru Sacred Grove, Vizianagaram District, Andhra Pradesh, India

M Sankara Rao*, P Harikrishna

Department of Botanical Survey, Deccan Regional Centre, Kendriya Sadan, GPOA, Sultan Bazar, Koti, Hyderabad, Telangana, India

Abstract

Sacred groves, remnants of ancient ecological practices, are vital repositories of biodiversity and cultural heritage. This study investigates the floristic diversity of the Sri Sri Dhara Paidithalli Gangamma Ammavaru sacred grove in Kothavalsa Mandal, Vizianagaram District, Andhra Pradesh, India. A comprehensive survey revealed 46 plant species belonging to 44 genera and 25 families, indicating significant floristic richness within the 3-acre grove. The grove's ecological and cultural significance is highlighted, emphasizing the need for effective conservation strategies to address threats such as invasive alien species and anthropogenic pressures.

Keywords: Sacred groves, Floristic diversity, Vizianagaram, Andhra Pradesh, Conservation, Ethnobotany, Cultural ecology.

Introduction

Sacred groves are patches of forests or natural vegetation dedicated to local deities or spirits, reflecting a long-standing tradition of nature conservation across various cultures (Dudley *et al.*, 2005) ^[1]. These groves serve as refugia for biodiversity, maintain ecological balance, and preserve traditional ecological knowledge (TEK) (Bhagwat & Rutte, 2006) ^[2]. In India, sacred groves are particularly significant, often harboring unique floral and faunal assemblages (Anonymous, 1996) ^[1]. The Sri Sri Dhara Paidithalli Gangamma Ammavaru sacred grove in Vizianagaram district is a testament to this tradition, holding both ecological and cultural importance. This study aims to document the floristic diversity of this grove, assess its conservation status, and provide recommendations for its sustainable management.

Methodology

1. Study Area

The study was conducted in the Sri Sri Dhara Paidithalli Gangamma Ammavaru sacred grove, located in Kothavalsa Mandal, Vizianagaram District, Andhra Pradesh, India (17.90158° N, 83.22819° E; 168 m altitude, Fig 1). The grove spans approximately 3 acres and is surrounded by settlements such as Appanadorapalem, Banthu-meraka, Jodimeraka, and Ramavaram.

2. Floristic Survey

A comprehensive floristic survey was conducted during the month of January, 2024. Plant species were identified based on their morphological characteristics and confirmed using standard floristic literature and regional floras (Pulliah *et al.* 2018). The habit (tree, shrub, herb, climber) of each species was recorded. The IUCN Red List status of each species was determined using the IUCN Red List database.

3. Cultural and Ecological Assessment

Information on the historical, cultural, and spiritual significance of the grove was gathered through interviews with local community members, particularly the Manne Dora community, who are the traditional custodians of the

grove. Observations on the ecological significance and existing threats were also recorded.

Results and Discussion

1. Floristic Diversity

A total of 46 plant species belonging to 44 genera and 25 families were documented in the sacred grove (Table 1). The most represented families were Fabaceae (6 species), Poaceae (4 species), Rubiaceae (3 species), Convolvulaceae (3 species) and Malvaceae (3 species). This indicates the grove supports a diverse range of plant life within a relatively small area.

2. Cultural and Spiritual Significance

The grove is dedicated to Dhara Paidi Thalli Gangamma Ammavaru and is a significant religious site for the Manne Dora community and local people. Approximately 2,000 people visit the grove every Sunday and Tuesday, highlighting its cultural importance. The grove is believed to fulfill prayers related to childbirth, employment, and marriage, reflecting the strong socio-cultural and spiritual connections between the community and the grove.

3. Ecological Significance

The grove functions as a refuge for local flora, contributing to habitat preservation and maintaining ecological balance. The traditional ecological knowledge associated with the grove, passed down through generations, plays a vital role in conserving biodiversity. The grove also aids in water conservation and serves as a source of medicinal plants.

4. Threats and Conservation Status

The primary threats to the grove include:

- **Invasive Alien Species:** *Mesosphaerum suaveolens* and *Sida acuta* were identified as significant threats to the native flora.
- **Anthropogenic Activities:** Grazing, encroachment, and the accumulation of plastic waste pose challenges to the grove's integrity.

- **Visual Disturbance:** Increased visitation and associated activities contribute to visual disturbance.

The grove is primarily conserved by the Manne Dora community, who conduct cleaning and development activities twice a year. The Forest Department also plays a role in conservation, especially in managing plastic waste. Tree worship, particularly of *Ficus religiosa* and *Azadirachta indica*, reinforces the cultural significance and protection of these species (Fig 2).

5. IUCN Red List Status

Among the documented species, 13 were categorized as Least Concern according to the IUCN Red List, while *Aegle marmelos* was classified as Near Threatened (Table 1). This highlights the importance of the grove in conserving species of conservation concern.

Recommendations for Conservation and Management

- **Scientific Research:** Conduct detailed ecological studies to understand the grove's biodiversity, ecological functions, and the impact of threats.

- **Invasive Species Management:** Implement targeted strategies for the eradication and control of *Mesosphaerum suaveolens* and *Sida acuta*.
- **Community Empowerment:** Enhance the involvement of the Manne Dora community in conservation and management through capacity-building programs and knowledge-sharing initiatives.
- **Threat Mitigation:** Implement measures to control grazing, prevent encroachment, and manage waste.
- **Enhanced Awareness Programs:** Conduct extensive awareness programs to educate local communities and visitors about the ecological and cultural significance of the grove.
- **Long term monitoring:** Implement a long term monitoring plan to assess the health of the grove, and the impact of implemented conservation strategies.

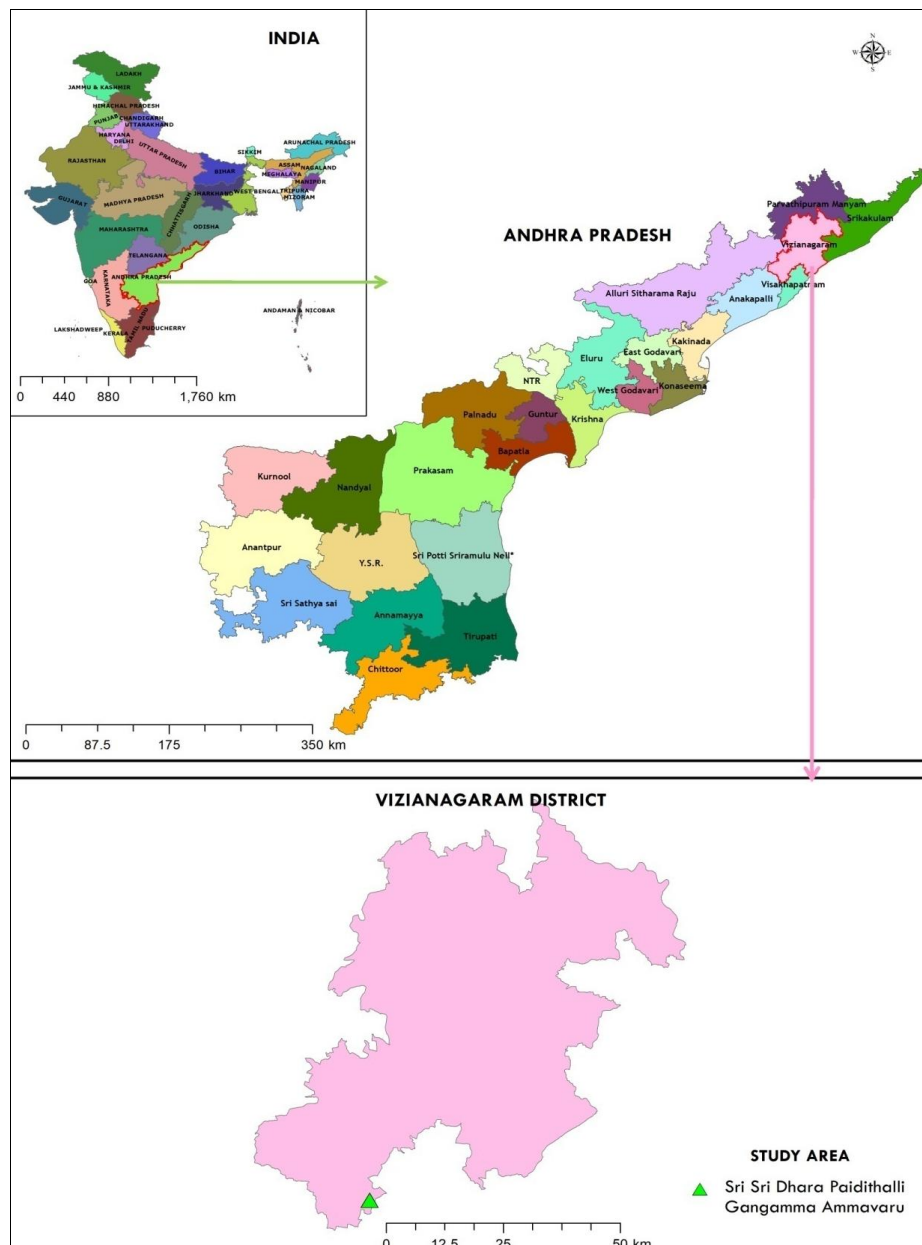


Fig 1: Study area- Sri Sri Dhara Paidithalli Gangamma Ammavaru sacred grove, Vizanagaram district, Andhra Pradesh.



Fig 2: A. *Azadirachta indica* Stem-trunk, B. *Ficus religiosa* L., C. Diety Idol, D. Data collection from local people, E. *Abrus precatorius* L., F. *Acacia auriculiformis* A. Cunn. ex Benth., G. *Clerodendrum chinense* (Osbeck) Mabb., H. *Mangifera indica* L.

Table 1: List of enumerated plant species with IUCN Red List status

Sl. No.	Botanical Name	Family	Habit	IUCN Red List Categories
1	<i>Abrus precatorius</i> L.	Fabaceae	Climber	-
2	<i>Acacia auriculiformis</i> A.Cunn. ex Benth.	Fabaceae	Tree	-
3	<i>Acalypha indica</i> L.	Euphorbiaceae	Sub shrub	-
4	<i>Achyranthes aspera</i> L.	Amaranthaceae	Sub shrub	-
5	<i>Aegle marmelos</i> (L.) Corrêa	Rutaceae	Tree	Near threatened
6	<i>Alangium salviifolium</i> (L.f.) Wangerin	Cornaceae	Tree	Least concern
7	<i>Alternanthera nodiflora</i> R.Br.	Amaranthaceae	Sub shrub	-

8	<i>Amnona squamosa</i> L.	Annonaceae	Tree	Least concern
9	<i>Azadirachta indica</i> A.Juss.	Meliaceae	Tree	Least concern
10	<i>Bambusa bambos</i> (L.) Voss	Poaceae	Bamboo	-
11	<i>Cassia fistula</i> L.	Fabaceae	Tree	Least concern
12	<i>Catunaregam spinosa</i> (Thunb.) Tirveng.	Rubiaceae	Shrub	Least concern
13	<i>Cissus quadrangularis</i> L.	Vitaceae	Climbing succulent	-
14	<i>Clerodendrum chinense</i> (Osbeck) Mabb.	Lamiaceae	Shrub	-
15	<i>Cocculus hirsutus</i> (L.) W.Theob.	Menispermaceae	Creepers	-
16	<i>Cocos nucifera</i> L.	Arecaceae	Tree	-
17	<i>Cuscuta reflexa</i> Roxb.	Convolvulaceae	Climber	-
18	<i>Cyanotis tuberosa</i> (Roxb.) Schult. & Schult.f.	Commelinaceae	Herb	-
19	<i>Dichanthium annulatum</i> (Forssk.) Stapf	Poaceae	Grass	-
20	<i>Eragrostis tenella</i> (L.) P.Beauv. ex Roem. & Schult.	Poaceae	Grass	-
21	<i>Evolvulus alsinoides</i> (L.) L.	Convolvulaceae	Herb	-
22	<i>Ficus mollis</i> Vahl	Moraceae	Tree	-
23	<i>Ficus religiosa</i> L.	Moraceae	Tree	Least concern
24	<i>Flacourtia indica</i> (Burm.f.) Merr.	Saliaceae	Shrub	Least concern
25	<i>Hemidesmus indicus</i> (L.) R.Br.	Apocynaceae	Climbing shrub	-
26	<i>Heteropogon contortus</i> (L.) P.Beauv. ex Roem. & Schult.	Poaceae	Grass	-
27	<i>Heteropogon fischerianus</i> Bor	Poaceae	Grass	-
28	<i>Holoptelea integrifolia</i> (Roxb.) Planch.	Ulmaceae	Tree	-
29	<i>Jatropha gossypifolia</i> L.	Euphorbiaceae	Shrub	Least concern
30	<i>Justicia glauca</i> Rottler	Acanthaceae	Herb	-
31	<i>Mangifera indica</i> L.	Anacardiaceae	Tree	Data deficient
32	<i>Mesosphaerium suaveolens</i> (L.) Kuntze	Lamiaceae	Shrub	-
33	<i>Mimosa pudica</i> L.	Fabaceae	Sub shrub	Least concern
34	<i>Neltuma juliflora</i> (Sw.) Raf.	Fabaceae	Tree	Least concern
35	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Sub shrub	-
36	<i>Phyllanthus amarus</i> Schumach. & Thonn.	Phyllanthaceae	Herb	-
37	<i>Rivea hypocrateriformis</i> (Desr.) Choisy	Convolvulaceae	Climber	Least concern
38	<i>Sida acuta</i> Burm.f.	Malvaceae	Sub shrub	-
39	<i>Sida rhombifolia</i> L.	Malvaceae	Sub shrub	-
40	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Tree	-
41	<i>Tamarindus indica</i> L.	Fabaceae	Tree	Least concern
42	<i>Tarenna asiatica</i> (L.) Kuntze ex K.Schum.	Rubiaceae	Shrub	-
43	<i>Terminalia paniculata</i> B.Heyne ex Roth	Combretaceae	Tree	-
44	<i>Vangueria parvifolia</i> Sond.	Rubiaceae	Shrub	-
45	<i>Wrightia tinctoria</i> (Roxb.) R.Br.	Apocyanaceae	Tree	-
46	<i>Ziziphus oenopolia</i> (L.) Mill.	Rhamnaceae	Tree	Least concern

Conclusion

The Sri Sri Dhara Paidithalli Gangamma Ammavaru sacred grove is a valuable repository of floristic diversity and cultural heritage. Its conservation is crucial for maintaining ecological balance and preserving traditional ecological knowledge. Implementing the recommended conservation and management strategies will ensure the long-term sustainability of this sacred grove and its continued contribution to biodiversity conservation.

Acknowledgements

We express our sincere thanks to Dr. A.A. Mao, Director of the Botanical Survey of India, Kolkata and Dr. L. Rasingam, Scientist-E & Head of Office, Botanical Survey of India, Deccan Regional Centre, Hyderabad, for providing facilities. Our sincere gratitude to the Andhra Pradesh State Biodiversity Board for providing generous funding towards the project "Survey and Documentation of Less Known Sacred Groves of Andhra Pradesh." and we are very grateful to the present Honourable Chairman Shri. N. Vijaya Kumar and Member secretary Shri. P. Rama Krishna, IFS of A.P. State Biodiversity Board besides former Member Secretaries and Chairman for their constant support and encouragement throughout the project period. Special thanks to PCCF and the Head of Forest Force of the Forest Department, Andhra Pradesh, for permission, and extended

thanks to DFO, Vizianagaram District and forest official for their support during the fieldwork and the local tribal communities that shared their knowledge in the vicinity of the sacred grove are sincerely acknowledged.

References

1. Anonymous. Sacred and Protected Groves of Andhra Pradesh. WWF,1996:1(1):1-96.
2. Bhagwat SA, Rutte C. Sacred groves: potential for biodiversity management. *Frontiers in Ecology and the Environment*,2006:4(8):379-386.
3. Dudley N, Higgins-Zogib L, Mansourian S. The links between protected areas, faiths, and sacred natural sites. *Conservation Biology*,2005:19(3):838-841.
4. Pullaiah T, Chennaiah E, Sandhya Rani S. *Flora of Andhra Pradesh Vol. 1-3*. Scientific Publishers, Jodhpur,2018:1(1):1-3.