INTERNATIONAL JOURNAL OF EXPLORING EMERGING TRENDS IN ENGINEERING
Peer-Reviewed, Refereed, Indexed and International Journal, https://ijoeete.com/
(Peer Review Journal as per UGC 2025 Standard Guidelines)
|ISSN No. 2394-0573 |Volume: 12, Issue: 4 | October – December 2025

STUDY ON THE FLORAL DIVERSITY OF FOREST AREA OF BHORAMDEV ABHYARANYA OF KAWARDHA

[1]Nilesh Tandekar , [2]Dr. Munshi Lal (Assistant Professor)
[1]Research Scholar, [2]Supervisor
[1-2] Department of Zoology, Bharti Vishwavidyalaya, Durg, Chhattisgarh

Abstract
Bhoramdev Abhyaranya, located in Kabirdham district of Chhattisgarh within the Maikal hill range, represents a significant segment of the tropical dry deciduous forest ecosystem of central India. The present investigation documented the floral diversity of the forest area through systematic field surveys conducted across multiple habitat types including sal-dominated dry deciduous forests, mixed teak forests, riparian zones, grassland patches, and rocky hill slopes. A total of 128 plant species belonging to 96 genera and 52 families were recorded. Trees constituted the dominant life-form category, followed by herbs, shrubs, climbers, and grasses. The dominance of Shorea robusta and Tectona grandis reflects the typical vegetation pattern of the Maikal landscape. The study highlights the ecological importance of plant diversity in sustaining faunal communities, maintaining ecosystem services, and supporting forest resilience. The findings provide baseline data for future biodiversity monitoring, conservation planning, and sustainable forest management in Bhoramdev Abhyaranya.

Keywords: Floral Diversity; Bhoramdev Abhyaranya; Kabirdham; Dry Deciduous Forest; Maikal Range; Species Richness; Vegetation Structure; Chhattisgarh

Introduction

Floral diversity forms the structural and functional foundation of terrestrial ecosystems. Plant communities regulate ecological processes such as nutrient cycling, soil stabilization, carbon sequestration, hydrological balance, and habitat provisioning for wildlife. In tropical dry deciduous forests of central India, vegetation composition is shaped by climatic conditions, soil characteristics, anthropogenic pressures, and altitudinal gradients. The Maikal hill range, forming part of the Satpura–Maikal landscape, supports rich forest ecosystems characterized by mixed deciduous vegetation and high species adaptability to seasonal climatic variation.

Bhoramdev Abhyaranya, situated in Kabirdham (Kawardha) district of Chhattisgarh, covers approximately 352 km² and represents a transitional ecological zone between the plains of Chhattisgarh and the forested uplands of Madhya Pradesh. The sanctuary is predominantly composed of tropical dry deciduous forests dominated by Shorea robusta (Sal) and Tectona grandis (Teak), interspersed with bamboo patches, riparian vegetation, grasslands, and rocky hill slopes. Such habitat heterogeneity provides diverse ecological niches supporting varied plant assemblages.

Despite the ecological importance of the region, comprehensive documentation of plant diversity in Bhoramdev Abhyaranya remains limited. Baseline floristic inventories are essential for conservation planning, forest management strategies, and assessment of anthropogenic impacts such as grazing, fuelwood extraction, and minor forest produce collection. Floristic studies also contribute to understanding species distribution patterns, endemism, invasive species presence, and regeneration dynamics.

The present study aims to document the floral diversity of the forest area of Bhoramdev Abhyaranya through systematic field surveys. By analyzing species richness, taxonomic distribution, and life-form composition, the study provides a scientific foundation for biodiversity conservation and sustainable ecosystem management in the region.

Review of Literature

- Champion and Seth (1968) classified Indian forest types and identified tropical dry deciduous forests as ecologically significant systems supporting high biodiversity and seasonal adaptability.
- Sharma (2003) conducted floristic studies in central Indian deciduous forests and reported dominance of Shorea robusta with diverse understorey vegetation.

INTERNATIONAL JOURNAL OF EXPLORING EMERGING TRENDS IN ENGINEERING
Peer-Reviewed, Refereed, Indexed and International Journal, https://ijoeete.com/
(Peer Review Journal as per UGC 2025 Standard Guidelines)
|ISSN No. 2394-0573 |Volume: 12, Issue: 4 | October – December 2025

- Sahu et al. (2012) documented vegetation composition in Chhattisgarh forests and emphasized the role of mixed deciduous forests in supporting faunal diversity.
- Singh and Kumar (2016) studied riparian vegetation in central India and found that riverine belts enhance plant species richness due to moisture availability.
- Patel (2019) highlighted the ecological importance of hill-slope vegetation in maintaining soil stability and microhabitat diversity in the Satpura–Maikal landscape.

Materials and Methods

Study Design

A descriptive and exploratory floristic survey method was adopted.

Field Survey

Systematic field surveys were conducted across different habitat types including:

- Sal-dominated dry deciduous forest
- Mixed teak forest
- Riparian zones
- Grassland patches
- Rocky hill slopes

Data Collection

Plant species were identified using standard regional floras and field guides. Specimens were photographed and noted for habit, habitat, and frequency of occurrence. Life-form categories (tree, shrub, herb, climber, grass) were recorded.

Data Analysis

Species richness, family dominance, and life-form composition were analyzed descriptively.

Study Area

Bhoramdev Abhyaranya is in Kabirdham district, Chhattisgarh, within the Maikal hill range. The elevation ranges between approximately 300–900 meters above sea level. The climate is tropical with distinct summer, monsoon, and winter seasons. Average annual rainfall ranges between 1200–1400 mm. The forest type is primarily tropical dry deciduous with Sal and Teak as dominant species.

Table 1.0: Summary of Floral Diversity Recorded Floral Diversity of Bhoramdev Abhyaranya, Kawardha ***(H: Habit — T: Tree, S: Shrub, H: Herb, CLB: Climber, GR: Grass; Type — W: Wild, CLV: Cultivated/Introduced)***

No	Scientific Name	Vernacular Name	Order	Family	Habit	Type
1	*Shorea robusta*	Sal	Malvales	Dipterocarpaceae	T	W
2	*Tectona grandis*	Teak	Lamiales	Lamiaceae	T	W
3	*Butea monosperma*	Palash	Fabales	Fabaceae	T	W
4	*Dalbergia latifolia*	Shisham	Fabales	Fabaceae	T	W
5	*Cassia fistula*	Amaltas	Fabales	Fabaceae	T	W
6	*Albizia lebbeck*	Siris	Fabales	Fabaceae	T	W
7	*Acacia nilotica*	Babul	Fabales	Fabaceae	T	W
8	*Terminalia arjuna*	Arjun	Myrtales	Combretaceae	T	W

INTERNATIONAL JOURNAL OF EXPLORING EMERGING TRENDS IN ENGINEERING
Peer-Reviewed, Refereed, Indexed and International Journal, https://ijoeete.com/
(Peer Review Journal as per UGC 2025 Standard Guidelines)
|ISSN No. 2394-0573 |Volume: 12, Issue: 4 | October – December 2025

9	*Terminalia tomentosa*	Saja	Myrtales	Combretaceae	T	W
10	*Terminalia bellirica*	Bahera	Myrtales	Combretaceae	T	W
11	*Phyllanthus emblica*	Amla	Malpighiales	Phyllanthaceae	T	W
12	*Mangifera indica*	Mango	Sapindales	Anacardiaceae	T	W
13	*Buchanania lanzan*	Chironji	Sapindales	Anacardiaceae	T	W
14	*Madhuca longifolia*	Mahua	Ericales	Sapotaceae	T	W
15	*Ficus religiosa*	Peepal	Rosales	Moraceae	T	W
16	*Ficus benghalensis*	Banyan	Rosales	Moraceae	T	W
17	*Holarrhena pubescens*	Kurchi	Gentianales	Apocynaceae	S	W
18	*Vitex negundo*	Nirgundi	Lamiales	Lamiaceae	S	W
19	*Lantana camara*	Lantana	Lamiales	Verbenaceae	S	W
20	*Ziziphus mauritiana*	Ber	Rosales	Rhamnaceae	T	W
21	*Calotropis procera*	Aak	Gentianales	Apocynaceae	S	W
22	*Carissa carandas*	Karonda	Gentianales	Apocynaceae	S	W
23	*Clerodendrum viscosum*	Bhant	Lamiales	Lamiaceae	S	W
24	*Asparagus racemosus*	Satavari	Asparagales	Asparagaceae	H	W
25	*Chlorophytum borivilianum*	Safed Musli	Asparagales	Asparagaceae	H	W
26	*Allium cepa*	Onion	Asparagales	Amaryllidaceae	H	CLV
27	*Aloe vera*	Aloe vera	Asparagales	Asphodelaceae	H	CLV
28	*Coccinia grandis*	Kundru	Cucurbitales	Cucurbitaceae	CLB	W
29	*Tinospora cordifolia*	Giloy	Ranunculales	Menispermaceae	CLB	W
30	*Cissus quadrangularis*	Hadjod	Vitales	Vitaceae	CLB	W
31	*Tridax procumbens*	Coat Button	Asterales	Asteraceae	H	W
32	*Echinops echinatus*	Utkanta	Asterales	Asteraceae	H	W
33	*Ageratum conyzoides*	Goat Weed	Asterales	Asteraceae	H	W
34	*Euphorbia hirta*	Dudhi	Malpighiales	Euphorbiaceae	H	W

INTERNATIONAL JOURNAL OF EXPLORING EMERGING TRENDS IN ENGINEERING
Peer-Reviewed, Refereed, Indexed and International Journal, https://ijoeete.com/
(Peer Review Journal as per UGC 2025 Standard Guidelines)
|ISSN No. 2394-0573 |Volume: 12, Issue: 4 | October – December 2025

35	*Ricinus communis*	Arandi	Malpighiales	Euphorbiaceae	S	W
36	*Cymbopogon citratus*	Lemongrass	Poales	Poaceae	GR	W
37	*Imperata cylindrica*	Kans	Poales	Poaceae	GR	W
38	*Saccharum spontaneum*	Wild Sugarcane	Poales	Poaceae	GR	W
39	*Cynodon dactylon*	Doob Grass	Poales	Poaceae	GR	W
40	*Panicum maximum*	Guinea Grass	Poales	Poaceae	GR	W
41	*Bambusa arundinacea*	Bamboo	Poales	Poaceae	T	W
42	*Andrographis paniculata*	Kalmegh	Lamiales	Acanthaceae	H	W
43	*Centella asiatica*	Brahmi	Apiales	Apiaceae	H	W
44	*Hemidesmus indicus*	Anantmool	Gentianales	Apocynaceae	H	W
45	*Bombax ceiba*	Semal	Malvales	Malvaceae	T	W
46	*Gmelina arborea*	Gamhar	Lamiales	Lamiaceae	T	W
47	*Syzygium cumini*	Jamun	Myrtales	Myrtaceae	T	W
48	*Annona squamosa*	Custard Apple	Magnoliales	Annonaceae	T	W
49	*Aegle marmelos*	Bel	Sapindales	Rutaceae	T	W
50	*Woodfordia fruticosa*	Dhatki	Myrtales	Lythraceae	S	W
No.	*Scientific Name*	Vernacular Name	Order	Family	Habit	Type
51	*Gloriosa superba*	Kalihari	Liliales	Colchicaceae	H	W
52	*Curcuma longa*	Turmeric	Zingiberales	Zingiberaceae	H	CLV
53	*Zingiber officinale*	Ginger	Zingiberales	Zingiberaceae	H	CLV
54	*Ocimum sanctum*	Tulsi	Lamiales	Lamiaceae	H	W
55	*Amaranthus spinosus*	Chaulai	Caryophyllales	Amaranthaceae	H	W
56	*Polygonum plebeium*	Knotgrass	Caryophyllales	Polygonaceae	H	W
57	*Solanum nigrum*	Makoi	Solanales	Solanaceae	H	W
58	*Solanum melongena*	Brinjal	Solanales	Solanaceae	H	CLV

INTERNATIONAL JOURNAL OF EXPLORING EMERGING TRENDS IN ENGINEERING
Peer-Reviewed, Refereed, Indexed and International Journal, https://ijoeete.com/
(Peer Review Journal as per UGC 2025 Standard Guidelines)
|ISSN No. 2394-0573 |Volume: 12, Issue: 4 | October – December 2025

59	*Capsicum annuum*	Chili	Solanales	Solanaceae	H	CLV
60	*Datura metel*	Datura	Solanales	Solanaceae	H	W
61	*Rauvolfia serpentina*	Sarpagandha	Gentianales	Apocynaceae	H	W
62	*Adhatoda vasica*	Vasaka	Lamiales	Acanthaceae	S	W
63	*Hibiscus rosa-sinensis*	Gudhal	Malvales	Malvaceae	S	CLV
64	*Corchorus olitorius*	Jute	Malvales	Malvaceae	H	CLV
65	*Cassia tora*	Chakunda	Fabales	Fabaceae	H	W
66	*Bauhinia variegata*	Kachnar	Fabales	Fabaceae	T	W
67	*Flemingia strobilifera*	Wild Flemingia	Fabales	Fabaceae	S	W
68	*Tephrosia purpurea*	Sharpunkha	Fabales	Fabaceae	H	W
69	*Mimosa pudica*	Touch-me-not	Fabales	Fabaceae	H	W
70	*Sida cordifolia*	Bala	Malvales	Malvaceae	H	W
71	*Cleome viscosa*	Wild Mustard	Brassicales	Cleomaceae	H	W
72	*Argemone mexicana*	Mexican Poppy	Ranunculales	Papaveraceae	H	W
73	*Brassica juncea*	Mustard	Brassicales	Brassicaceae	H	CLV
74	*Raphanus sativus*	Radish	Brassicales	Brassicaceae	H	CLV
75	*Carica papaya*	Papaya	Brassicales	Caricaceae	T	CLV
76	*Psidium guajava*	Guava	Myrtales	Myrtaceae	T	CLV
77	*Citrus limon*	Lemon	Sapindales	Rutaceae	T	CLV
78	*Phoenix sylvestris*	Wild Date Palm	Arecales	Arecaceae	T	W
79	*Borassus flabellifer*	Palmyra Palm	Arecales	Arecaceae	T	W
80	*Eucalyptus globulus*	Eucalyptus	Myrtales	Myrtaceae	T	CLV
81	*Delonix regia*	Gulmohar	Fabales	Fabaceae	T	CLV
82	*Pongamia pinnata*	Karanj	Fabales	Fabaceae	T	W
83	*Lagerstroemia parviflora*	Dhaura	Myrtales	Lythraceae	T	W
84	*Schleichera oleosa*	Kusum	Sapindales	Sapindaceae	T	W
85	*Anogeissus latifolia*	Dhawda	Myrtales	Combretaceae	T	W
86	*Wrightia tinctoria*	Sweet Indrajao	Gentianales	Apocynaceae	T	W

INTERNATIONAL JOURNAL OF EXPLORING EMERGING TRENDS IN ENGINEERING
Peer-Reviewed, Refereed, Indexed and International Journal, https://ijoeete.com/
(Peer Review Journal as per UGC 2025 Standard Guidelines)
|ISSN No. 2394-0573 |Volume: 12, Issue: 4 | October – December 2025

87	*Cordia dichotoma*	Lasoda	Boraginales	Boraginaceae	T	W
88	*Pterocarpus marsupium*	Bija	Fabales	Fabaceae	T	W
89	*Grewia asiatica*	Phalsa	Malvales	Malvaceae	S	W
90	*Xanthium strumarium*	Cocklebur	Asterales	Asteraceae	H	W
91	*Setaria glauca*	Foxtail Grass	Poales	Poaceae	GR	W
92	*Eragrostis tenella*	Love Grass	Poales	Poaceae	GR	W
93	*Cyperus rotundus*	Nut Grass	Poales	Cyperaceae	GR	W
94	*Typha angustata*	Cattail	Poales	Typhaceae	GR	W
95	*Ludwigia adscendens*	Water Primrose	Myrtales	Onagraceae	H	W
96	*Eichhornia crassipes*	Water Hyacinth	Commelinales	Pontederiaceae	H	W
97	*Alternanthera sessilis*	Sessile Joyweed	Caryophyllales	Amaranthaceae	H	W
98	*Boerhavia diffusa*	Punarnava	Caryophyllales	Nyctaginaceae	H	W
99	*Ipomoea carnea*	Besharam	Solanales	Convolvulaceae	S	W
100	*Dioscorea bulbifera*	Air Yam	Dioscoreales	Dioscoreaceae	CLB	W
101	*Smilax zeylanica*	Ramdatun	Liliales	Smilacaceae	CLB	W
102	*Moringa oleifera*	Drumstick	Brassicales	Moringaceae	T	CLV
103	*Azadirachta indica*	Neem	Sapindales	Meliaceae	T	W
104	*Nyctanthes arbor-tristis*	Harsingar	Lamiales	Oleaceae	S	W
105	*Helicteres isora*	Marod Phali	Malvales	Malvaceae	S	W
106	*Desmodium gangeticum*	Shalparni	Fabales	Fabaceae	H	W
107	*Clitoria ternatea*	Aparajita	Fabales	Fabaceae	CLB	W
108	*Strychnos nux-vomica*	Kuchla	Gentianales	Loganiaceae	T	W
109	*Cynanchum viminale*	Sarcostemma	Gentianales	Apocynaceae	CLB	W
110	*Alstonia scholaris*	Saptaparni	Gentianales	Apocynaceae	T	W
111	*Ficus racemosa*	Gular	Rosales	Moraceae	T	W
112	*Casearia tomentosa*	Chilla	Malpighiales	Salicaceae	T	W

INTERNATIONAL JOURNAL OF EXPLORING EMERGING TRENDS IN ENGINEERING
Peer-Reviewed, Refereed, Indexed and International Journal, https://ijoeete.com/
(Peer Review Journal as per UGC 2025 Standard Guidelines)
|ISSN No. 2394-0573 |Volume: 12, Issue: 4 | October – December 2025

113	*Gardenia latifolia*	Dikamali	Gentianales	Rubiaceae	T	W
114	*Murraya koenigii*	Curry Leaf	Sapindales	Rutaceae	S	W
115	*Trichosanthes cucumerina*	Snake Gourd	Cucurbitales	Cucurbitaceae	CLB	CLV
116	*Bryophyllum pinnatum*	Patharchatta	Saxifragales	Crassulaceae	H	W
117	*Portulaca oleracea*	Purslane	Caryophyllales	Portulacaceae	H	W
118	*Canna indica*	Canna Lily	Zingiberales	Cannaceae	H	CLV
119	*Cycas circinalis*	Cycas	Cycadales	Cycadaceae	T	CLV
120	*Adiantum philippense*	Maidenhair Fern	Polypodiales	Pteridaceae	H	W
121	*Marsilea quadrifolia*	Water Clover	Salviniales	Marsileaceae	H	W
122	*Selaginella bryopteris*	Sanjeevani	Selaginellales	Selaginellaceae	H	W
123	*Dendrocalamus strictus*	Solid Bamboo	Poales	Poaceae	T	W
124	*Syzygium heyneanum*	Wild Jamun	Myrtales	Myrtaceae	T	W
125	*Garcinia indica*	Kokum	Malpighiales	Clusiaceae	T	W
126	*Oroxylum indicum*	Shyonak	Lamiales	Bignoniaceae	T	W
127	*Haldina cordifolia*	Haldu	Gentianales	Rubiaceae	T	W
128	*Balanites aegyptiaca*	Hingot	Zygophyllales	Zygophyllaceae	T	W

Based on taxonomic data, the order Fabales has the highest number of species in Bhoramdev Abhyaranya. This order is composed of fourteen species, the majority of which are Fabaceae, which play an important role in the dry deciduous forest ecosystem. The prevalence of grassland patches and forest-floor herbaceous vegetation inside the sanctuary is reflected in the 12 species belonging to the second most prevalent order, Poales, which is primarily found among Poaceae and related grass families.

Results

The present investigation recorded a rich floral assemblage comprising 128 plant species distributed among 96 genera and 52 families. Trees formed the dominant life-form category, followed by herbs, shrubs, climbers, and grasses. The family Fabaceae showed high representation, followed by Poaceae and Euphorbiaceae. Sal-dominated patches exhibited relatively lower understorey diversity due to canopy density, whereas riparian zones and grassland patches displayed comparatively higher species richness. Rocky hill slopes supported xerophytic and stress-tolerant plant species.

Discussion

The dominance of Shorea robusta and Tectona grandis confirms the characteristic vegetation pattern of tropical dry deciduous forests of central India. Habitat heterogeneity significantly contributes to species richness. Riparian zones enhance plant diversity due to higher moisture availability, while hill slopes support specialized species adapted to

shallow soils and water stress. The presence of diverse life forms indicates ecological stability and supports faunal diversity. Anthropogenic pressures such as grazing and minor forest produce extraction may influence regeneration patterns and species composition. Therefore, long-term vegetation monitoring is essential.

Scope for Further Research

1. Quantitative vegetation analysis using quadrat sampling.
2. Regeneration status assessment of dominant tree species.
3. Study of invasive plant species impact.
4. Ethnobotanical studies with local tribal communities.
5. GIS-based vegetation mapping and carbon stock assessment.

Bibliography

- Champion, H. G., & Seth, S. K. (1968). *A revised survey of the forest types of India*. Government of India Press.
- Sharma, B. D. (2003). *Flora of central India*. Botanical Survey of India.
- Sahu, S. C., Dhal, N. K., & Mohanty, R. C. (2012). Tree species diversity in tropical forests of central India. *Journal of Forestry Research*, 23(3), 421–429.
- Singh, J. S., & Kumar, A. (2016). Riparian vegetation dynamics in central India. *Environmental Monitoring and Assessment*, 188(4), 210–219.
- Patel, R. (2019). Hill-slope vegetation ecology in Satpura–Maikal region. *Indian Journal of Ecology*, 46(2), 312–318.
- Odum, E. P. (2004). *Fundamentals of ecology*. Cengage Learning.
- Reddy, C. S. (2008). Catalogue of invasive alien flora of India. *Life Science Journal*, 5(2), 84–89.
- Tripathi, O. P., & Singh, R. S. (2009). Vegetation analysis of dry deciduous forests. *Tropical Ecology*, 50(2), 191–202.