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DIVERSITY AND CONSERVATION OF WILD ORCHIDS IN THE FOREST REGION OF CHHATTISGARH, CENTRAL INDIA: A REVIEW

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ABSTRACT

Orchids represent one of the most diverse and ecologically significant families of flowering plant, yet they are highly vulnerable to habitat disturbance and climate variability. Chhattisgarh, situated in central India, supports a mosaic of tropical forests that harbor considerable orchid diversity. Based on an extensive review of published records and recent field investigation, a total of 38 orchid species belonging to 18 genera have been documented from the regions, including both epiphytic (22 species, 11 genera) and terrestrial (16 species, 7 genera) forms. This highest diversity is reported from Kanger Valley National Park and associated forest ranges, while rare and localized species occur in the Udanti-Sitanadi, Achanakmar Tiger Reserve and Surguja highlands. This review synthesizes current knowledge on species richness, habitat preferences, ecological associations and distributional trends. Major threats including deforestation, shifting cultivation, infrastructure expansion, and overharvesting for medicinal and ornamental purposes. Despite recent explorations, significant gaps remain in population ecology, reproductive biology, and conservation strategies. We highlight research priorities including long-term monitoring, ex situ conservation, molecular studies for phylogenetics, and integration of orchid conservation into community-based forest management.

Keywords: Orchidaceae, Epiphytic and terrestrial orchids, Biodiversity hotspots, Chhattisgarh, Conservation priorities, Research gaps

Introduction

Orchidaceae, with an estimated 30,000-35,000 Species in 750 - 800 genera worldwide, is among the largest and most diverse plant families. Orchids play critical ecological roles in forest ecosystems as pollinator-specific species, indicators of forest health, and contributors to biodiversity stability. India harbors over 1,300 species, distributed from sea level to alpine zones with remarkable concentration in the Eastern Himalaya Northeast, but also important pockets in central India. Chhattisgarh, covering 44 % forest area, lies within the Deccan biogeographic zone and encompasses moist and dry tropical forest, plateaus, and hill ranges. This ecological heterogeneity supports

a notable assemblage of orchids. Although scattered studies have reported orchid diversity from the state, no comprehensive synthesis exists to consolidate species distribution, ecological pattern, and research priorities. This review addresses that gap by (i) Compiling existing records, (ii) Assessing regional diversity and distribution, (iii) Evaluating conservation challenges, and (iv) Identifying future research direction.

Materials and Methods

This review integrates published literature, floristic surveys, and herbarium records primary reference classical works (Hooker, 1890; King and pantling, 1898), regional floras (Khanna *et al.*, 2005; Singh *et*

al., 2001), and recent orchid diversity studies in Chhattisgarh (Kotia *et al.*, 2013; Rajwade and Patel, 2023-2025; Mishra, 2018). Data on species occurrence, habitat preferences, host association, and flowering phenology were synthesized. Nomenclature was standardized using the plant list and recent revision. Comparative analyses were conducted across major forest landscapes: Kanger Valley National Park, Achanakmar Tiger Reserve, Udanti-Sitanadi Wildlife Sanctuary, Mainpat Plateau, Ramgarh Hills and Surguja blocks (Ambikapur, Lundra and Lakhanpur).

Results and Discussion

Species Richness and Distribution

A total of 38 orchid species from 18 genera were confirmed from Chhattisgarh. Epiphytic orchids dominated (22 species) with *Dendrobium*, *Habenaria*, *Luisia* and *Eulophia* being most species-rich genera. Terrestrial species (16) occurred mostly in moist deciduous and hill forests. Kanger Valley National Park emerged as the richest site (30 species, 17 genera), followed by Mainpat Plateau and Surguja blocks. Rare taxa such as *Epipactis veratrifolia* and *Odisha cleistantha* were highly localized.

Table 1 : List of Orchid Species and their Morphological Characteristics, Areas and Location, Flowering Time and Reference (s).

S. N.	Species of Orchid	Habitat	Morphological Characteristics	Areas and Location	Flowering Time	Reference (s)
1.	<i>Acampe praemorsa</i>	Epiphyte	Leaves are alternate, distichous, narrowly oblong, and unequally bilobed at the apex with a small fine tip. The flowers are a creamy yellow color, adorned with brown transverse linings and spots.	Kanger Valley National Park, Bastar, Maipat Hill, Ramgarh Hills, Ambikapur, Lundra, and Lakhanpur, Surguja.	Sept. – Nov.	[1-4]
2.	<i>Aerides odorata</i>	Epiphyte	Leaves alternate, distichous, spreading, thick, 10-20 cm long, oblong, flat, wavy, keeled, and unequally bilobed at the apex. The flowers are white, adorned with purple blotches and spots.	Kanger Valley National Park, Bastar, Maipat Hill, Ramgarh Hills, Ambikapur, Lundra, Lakhanpur, Surguja, and Achanakmar Tiger Reserve, Bilaspur.	June - July	[1-5]
3.	<i>Aerides multiflora</i>	Epiphyte	Leaves narrowly oblong, conduplicate, 10-15 cm long, deeply channeled, obliquely bifid at the apex. Flowers are pinkish-white or purple with darker blotches.	KVNP, Bastar, Maipat Hill, Ramgarh Hills, Ambikapur, Lundra, Lakhanpur, Surguja and Achanakmar Tiger Reserve, Bilaspur.	June – July	[1-5]
4.	<i>Cymbidium aloifolium</i> (L.)	Epiphyte	Leaves are linear-oblong, up to 60 cm long, curved, fleshy, and notched at the apex. Inflorescence raceme. Flowers are yellow with brown stripes and brownish lips, 3.5 cm across.	Koleng range: Netanar, Koleng, Darbha, Kotamsar Cave, Bhainsadarha Kanger, Dandak Cave, Kailash Cave, and Kanger Valley National Park, Bastar.	April – June	[5]
5.	<i>Dendrobium aphyllum</i>	Epiphyte	Leaves lanceolate, ovate-lanceolate, and acuminate. Flowers in fascicles of 1-3, from the swollen nodes, pale rose, lip yellow.	Koleng range: Netanar, Darbha, Kotamsar Cave, Bhainsadarha Kanger, Dandak Cave, Kailash Cave, and KVNP, Bastar.	Feb. – April	[5]
6.	<i>Dendrobium crepidatum</i> .	Epiphyte	Leaf's oblong-lanceolate, acute, entire, and many-nerved. White flowers tinged with lilac, waxy, in pairs, from the nodes of the apical part of pseudobulbs.	Kanger Valley National Park, Bastar, Maipat Hill, and Lakhanpur, Surguja.	Feb.– March	[1, 3, 4]
7.	<i>Dendrobium herbaceum</i>	Epiphyte	Leaves are alternate, distichous, sessile, and linear-lanceolate. Flowers are 10 x 8 mm, greenish white, and inodorous.	Kanger Valley National Park, Bastar, Maipat Hill, Ramgarh Hills, and Lakhanpur, Surguja.	Feb. – March	[1-4]
8.	<i>Dendrobium macrostachyum</i>	Epiphyte	Leaves are alternate, ovate to lanceolate, acute, or faintly notched. Flowers are fragrant and pale to pinkish-yellow.	KVNP, Bastar, Maipat Hill, Ramgarh Hills, Ambikapur, Lundra and Lakhanpur, Surguja.	June - July	[1-4]
9.	<i>Dendrobium peguanum</i>	Epiphyte	Leaves are linear-oblong and subacute. Flowers are 1–1.5 cm across, white,	Koleng beat the area and Kanger Valley National Park, Bastar.	Dec. – Feb.	[4, 6]

			with a pale brown or maroon lip, dark brown to purple veins, and a purple anterior lobe. Pedicel and ovary glabrous.			
10.	<i>Dendrobium transparens</i>	Epiphyte	Leaves are linear-lanceolate, with an apex that is oblique and acute. Flowers are two to three, fragrant, and white, tinged purplish or rose towards the tip.	Bhainsadarha, Koleng, Pengaras beat area, Kanger Valley National Park, Bastar, Mainpat hill and Lakhanpur, Surguja.	May – June	[1, 3, 4]
11.	<i>Dendrobium formosum</i>	Epiphyte	Leaves sessile, oblong, opposite on both sides of the pseudobulb. Flowers are odorous, 5-9 cm in size, and white, with a yellowish-orange spot present on the lip.	Maipat Hill, Lundra and Lakhanpur, Surguja.	June – Aug.	[1, 3]
12.	<i>Epipactis veratrifolia</i>	Terrestrial	Erect herb up to 83 cm tall. The stem is green with a purple color near the base. Leaves are simple, alternate, ovate-lanceolate, long-pointed, membranous, and green; floral bracts are leaf-like, the lower ones longer than the flower.	Distribution in the forest area of Ambikapur blocks in Surguja.	Feb. – March	[1]
13.	<i>Eulophia graminea</i>	Terrestrial	Roots thick and clustered. Pseudobulbs 2.5-10 cm long, obpyriform, epigeal. Leaves 3-8, absent during flowering, up to 30 cm long, linear, acute, and plicate. Flowers are distant, greenish and whitish, with brown-purple veins, about 2 cm across.	Pangaras forest beat of Koleng range and Kanger Valley National Park, Bastar.	March – May	[4]
14.	<i>Eulophia herbacea</i>	Terrestrial	Petals are white with yellow blotches at the base, and the labellum is 3-lobed. Tubers are used as aphrodisiacs.	Udanti-Sitanadi, Achanakmar Tiger Reserve, Bilaspur, and Ambikapur, Surguja.	May - July	[1, 5]
15.	<i>Eulophia picta</i>	Terrestrial	Herb, deciduous, often forming small vegetative clumps; pseudobulbs crowded, broadly ovoid, 2.5–4.5 cm diam. Leaves 3–5, petioles 2–8 cm long; lamina ovate to obovate 150–370. Flowers mature, then straighten and elongate up to 700 mm long.	Ambikapur, Lundra and Lakhanpur, Surguja.	June - July	[1]
16.	<i>Geodorum densiflorum</i>	Terrestrial	Leaves cauline, unequal, smaller below, plicate, elliptic-lanceolate, acuminate, plicate, and multiple-veined. The flower is pinkish-purple and not fully opened.	Kotamsar & Koleg Bhainsadarha, Pulcha, Koleng, Netanar, Pengaras, Dandak Cave, Kailash Cave and KVNP, Bastar.	July – Aug.	[1]
17.	<i>Habenaria commelinifolia</i>	Terrestrial	Leaves alternate, 7-15 cm, acute, oblong-lanceolate (commelinaceous) with white margins. Laxly flowered with white flowers.	KVNP, Bastar, Ramgarh Hills, Ambikapur, Lundra, Lakhanpur, Surguja, and Udanti-Sitanadi & Achanakmar Tiger Reserve, Bilaspur.	Aug. – Nov.	[1, 2, 4, 5]
18.	<i>Habenaria laciniata</i>	Terrestrial	Leaves are 5-7, orbicular to oblong-lanceolate, and flowers are greenish-white.	Distributed to the Lundra block of the Surguja district.	Jun. - July	[1]
19.	<i>Habenaria furcifera</i>	Terrestrial	Leaves are narrowly elliptic, slightly narrowed towards the sheathing base, shiny, without any distinct margin. Flowers are pale green with a yellowish tinge and shortly pedicelled.	Tirathgarh Fall, Kotamsar area, Kanger Valley National Park, Bastar, Udanti-Sitanadi and Achanakmar Tiger Reserve, Bilaspur.	Aug. – Sept.	[4, 5]
20.	<i>Habenaria marginata</i>	Terrestrial	Leaves subradical, sessile, oblong or linear-oblong, 3-12 cm long, margins pale yellow. Flowers are greenish-yellow to orange.	KVNP, Bastar, Ambikapur, Lundra, Lakhanpur, Ramgarh Hills. Surguja, Udanti-Sitanadi and Achanakmar Tiger Reserve, Bilaspur.	Aug. – Sept.	[1, 2, 4, 5]
21.	<i>Habenaria</i>	Terrestrial	Leaves 3-5, radical or subradical.	Netanar, Pilcha Pengaras,	Aug. –	[4]

	<i>plantaginea</i>		Flower bright white, odorless, ca. 23 x 15 mm.	Bhainsadarha, KVNP, Bastar.	Oct.	
22.	<i>Habenaria roxburghii</i>	Terrestrial	Leaves 2-6, adpressed to the ground, fleshy, coriaceous, waxy, and dark green. Flowers are white and mildly fragrant.	Netanar, Pilcha Pengaras, Bhainsadarha, Kanger Valley National Park, Bastar.	Jun. - July	[4]
23.	<i>Habenaria diphylla</i>	Terrestrial	These are monocot herbs, 10-30 cm tall. leaves-2, opposite, attached to the ground, cordate at base, acute apex, flowered, 6-8 cm long racemes, dorsal sepals pale green, lateral sepals white, small, dorsal sepals hooked with petals, concave, greenish white.	Achanakmar-Amarkantak Biosphere Reserve, Bilaspur.	Sept. - Oct.	[5]
24.	<i>Liparis deflexa</i>	Terrestrial	Leaves are flat on the ground, usually two, opposite, sessile, sheathing at the base, ovate, and acute. Flowers are ca. 12 x 8 mm across and odorless.	Bhainsadarha area and Kanger Valley National Park, Bastar.	Sep.- Oct.	[4]
25.	<i>Luisia inconspicua</i>	Epiphytic	It has terete (cylindrical) leaves and short inflorescences with a raceme of several flowers. The flowers are several, and the raceme bears multiple flowers.	Distribution in the forest area of Ambikapur blocks in the Surguja district.	Aug. – Sept.	[1]
26.	<i>Luisia trichorhiza</i>	Epiphytic	Leaves are fleshy, terete, and uniformly thick till the apex. Flower: greenish-pink to purple.	Koleng, Dandak Cave, Kailash Cave, Pulcha, Pengaras beat area, KVNP, Bastar, and Lakhanpur, Surguja.	May – July	[1, 4]
27.	<i>Luisia zeylanica</i>	Epiphytic	It has a thick stem, 15-30 cm long, stout, with leaves up to 15 cm, terete, tapering conspicuously from base to apex. Flower about 2 cm across, foul smelling. Dull, dirty purple.	Ambikapur, Lakhanpur, and Mainpat Hill, Surguja.	Feb.– March	[1, 3]
28.	<i>Oberonia falconeri</i>	Epiphyte	It has long leaves, 2-9 cm, thick, slightly curved, broadly ensiform, acute, or acuminate. Flowers are greenish-yellow, shortly pedicelled, small, and spiral.	Kanger Valley National Park, Bastar, Ramgarh Hills, Mainpat hill, Ambikapur, Lundra and Lakhanpur, Surguja.	Sept. - Oct.	[1-4]
29.	<i>Oberonia mucronata</i>	Epiphyte	Leaves 5-7, subradical, distichous, equitant, unequal, the upper ones larger, 15-210 x 7-20 mm, fleshy. Flowers are very minute and greenish yellow.	Kotomser, Koleng range in Pengaras beat and Kanger Valley National Park, Bastar.	Sep. – Nov.	[4]
30.	<i>Odisha cleistantha</i>	Terrestrial	Leaves cauline, 3-6, margin pale green or white translucent, elliptic-lanceolate, acute, with sheathing bases. Flowers are light green, inodorous, and never open completely.	Kotamsar, Kotamsar Cave, Netanar to towards Koleng, Dandak Cave, Kailash Cave, lower Kangerdhara road area and Kanger Valley National Park, Bastar.	Sept.- Oct.	[4]
31.	<i>Pelatantheria insectifera</i>	Epiphyte	Leaves many, alternate, shallow-channeled, oblong, unequally bilobed at the apex. The flower is small, attractive, and well spread.	Kanger Valley National Park, Bastar, Ramgarh Hills, Mainpat hill, Ambikapur, Lundra and Lakhanpur, Surguja.	July – Aug.	[1-4]
32.	<i>Peristylus goodyeroides</i>	Terrestrial	The leaves are scattered on the axis stem, ovate to ovate-elliptic, and acute. The flowers are white or pale brownish green.	Bhainsadarha, Koleng, Darbha-Jerum Ghat, Kanger Dhara, Kanger Valley National Park, Bastar.	July – Oct.	[4]
33.	<i>Peristylus plantagineus</i>	Terrestrial	The leaves are 3, alternate, distichous, sessile, broadly elliptic-lanceolate, and acuminate. Flowers greenish, with white petals and lip.	Kotamsar range and Kanger Valley National Park. Bastar.	Sep. – Oct.	[4]
34.	<i>Pholidota imbricata</i>	Epiphyte	Leaves are solitary, arising from the tip of the pseudobulb, ovate-oblong, acute	Koleng beat area and Kanger Valley National Park, Bastar.	Sep. – Oct.	[4]

			to subacuminate, and coriaceous; the petiole is grooved. Flowers non-resupinate, white or pink, arranged in two rows.			
35.	<i>Rhynchostylis retusa</i> (L.) Blume.	Epiphyte	Leaves are dense, long (15 cm), linear, and deeply channelled. Flowers are fragrant and white or pink with purple or pink markings and dense. Capsules obovoid, winged.	Kanger Valley National Park, Bastar, Ambikapur, Lundra, Lakhanpur, Ramgarh Hills and Mainpat hill, Surguja.	May - July	[1-4]
36.	<i>Smitinandia micrantha</i>	Epiphyte	The leaves are oblong, with the apex obliquely truncate to unequally 2-lobed and keeled. Leaf-opposed, longer than leaves in fruits, with a stout peduncle and rachis. Flowers are pinkish, with a dark pink lip.	Kanger Valley National Park Bastar, and Lundra, Surguja.	April – June	[1, 4]
37.	<i>Vanda testacea</i>	Epiphyte	The stem is thick, 10-20 cm. Leaves leathery, 7-10 x 1-1.3 cm. Flowers are yellow, long-pedicelled, and 1.5 cm across.	KVNP, Bastar, Maipat Hill, Ramgarh Hill, Ambikapur, Lundra, Lakhanpur, Surguja, Udanti-Sitanadi and Achanakmar Tiger Reserve, Bilaspur.	March – May and Nov. – Dec.	[1-5]
38.	<i>Vanda tessellata</i>	Epiphyte	Leaves are several, distichous, linear, keeled, auriculate at the base, unequally bilobed at the apex, and 10-20 x 1-1.3 cm. Flowers are yellowish-green, with a blue tinge, scented, and 3.5-5 cm across.	KVNP, Bastar, Maipat Hill, Ramgarh Hills, Ambikapur, Lundra, Lakhanpur, Surguja, Udanti- Sitanadi and Achanakmar Tiger Reserve, Bilaspur.	April – June	[1-5]

Ecological Associations

Epiphytes were predominantly associated with *Shorea robusta*, *Diospyros melanoxylon* and *Tectona grandis*. Terrestrial orchids were found in moist humus-rich soils, rocky slope, and shaded plateaus. The flowering season extended mainly from March to July, with some species adapted to monsoon flowering (e. g. *Habenaria* spp.).

Threats to Orchid Diversity

- Deforestation and habitat fragmentation due to mining, infrastructure projects, and shifting cultivation.
- Unsustainable harvesting for ornamental and medicinal use.
- Climate variability altering flowering phenology and reducing pollinator availability.
- Knowledge gaps in population dynamics, seed dispersal ecology, and mycorrhizal associations.

Conservation Status

Few species have been evaluated for IUCN status at the state level. Field observations suggest local rarity of *dendrobium crepidatum* and *Rhynchostylis retusa* (albiflora form). Protection is inconsistent outside designated reserves, leaving orchids in unprotected forests highly vulnerable.

Research Priorities

- Population and ecological studies: Long-term monitoring to assess trend resilience.
- Reproductive biology: Pollination and seed germination studies to guide restoration.
- Molecular phylogenetics: Clarify taxonomic ambiguities in *Luisia* and *Habenaria*.
- Ex-situ and in situ conservation: Tissue culture protocols, orchid garden, and integration with eco-tourism

Table 2: Comparative Summary of Orchid Diversity in Chhattisgarh Forest Regions

S. N.	Site / Study Area	Present District	Latitude (N)	Longitude (E)	Total No. of Species	Total No. of Genera	Epiphytic	Terrestrial
1	Achanakmar–Amarkantak Biosphere Reserve (AABR), Bilaspur	Mungeli	22.50	81.65	1	1	–	1
2	Udanti–Sitanadi Tiger Reserve, Bilaspur	Gariaband & Dhamtari	19.92	82.50	8	4	4	4

3	Kanger Valley National Park, Baster	Bastar	18.87	82.00	30	17	20	10
4	Mainpat Hill, (Surguja)	Surguja	22.81	83.29	14	8	14	0
5	Ramgarh Hills, Udaipur, (Surguja)	Surguja	22.89	83.02	12	8	10	2
6	Ambikapur, (Surguja)	Surguja	23.12	83.18	16	11	11	5
7	Lundra, (Surguja)	Surguja	23.11	83.37	15	10	11	4
8	Lakhanpur, (Surguja)	Surguja	22.98	83.05	19	10	15	4
9	Total	—	—	—	38	18	22	16

Notes: Total values represent the net number of unique taxa recorded across Chhattisgarh; overlapping species/genera are not double-counted.

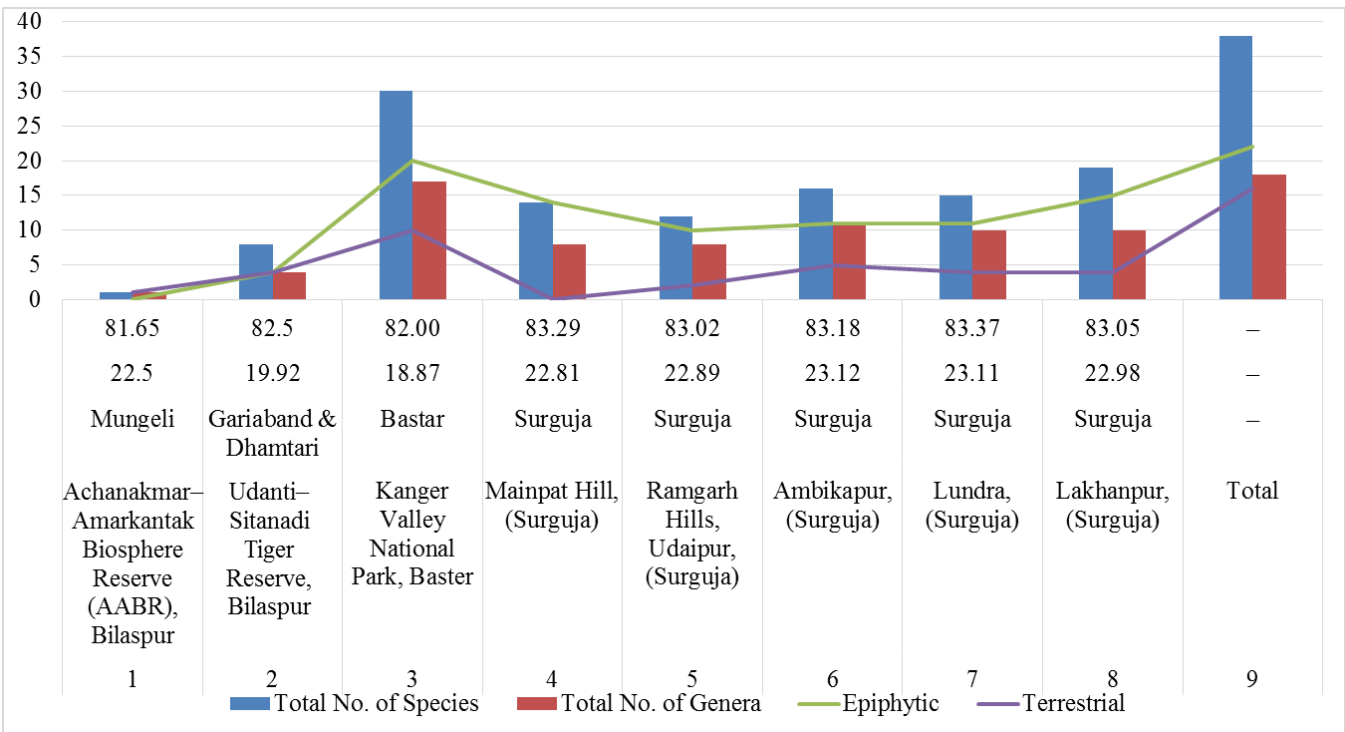


Fig. 1: Comparative Summary of Orchid Diversity in Chhattisgarh Forest Region

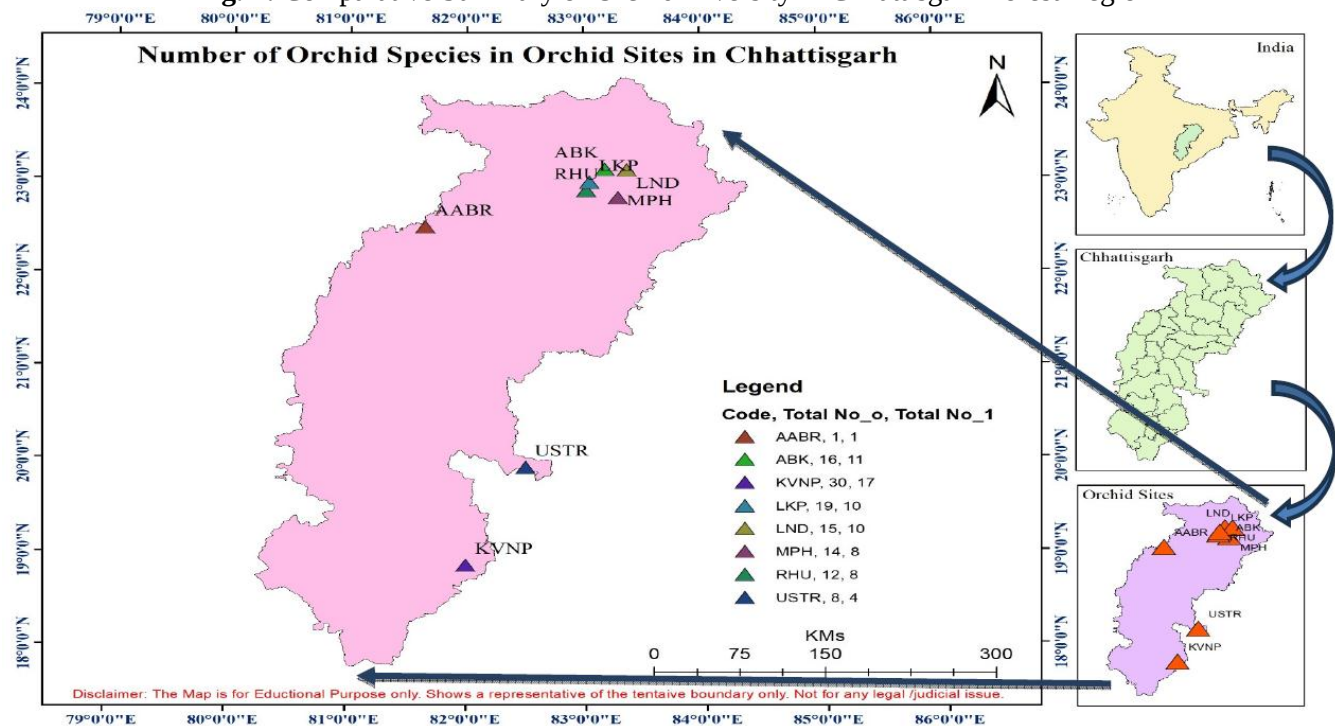


Fig. 2 : Location Map of Orchid Study Sites Showing the Number of Orchid Species in Chhattisgarh Forest Region

Conclusion

Chhattisgarh harbors significant but under-documented orchid diversity, representing an important component of central India flora. While 38 species are known, further explorations are likely to reveal additional taxa. The state's orchids face serious conservation challenges, including habitat degradation and overharvesting. Further research should focus on ecological monitoring, conservation breeding, and integration orchid conservation into broader biodiversity strategies. Protecting these species is not only crucial for maintaining ecosystem resilience but also for sustaining traditional knowledge and potential economic opportunities in horticulture and eco-tourism.

References

- [1] Rajwade, R. K. and Patel, D. K. (2025). Comparative studies on orchid species diversity of three blocks of Surguja district, Chhattisgarh, Central India. *International Journal of Botany Studies*. ISSN: 2455-541.
- [2] Rajwade, R. K. and Patel, D. K. (2024). Orchid species diversity of Ramgarh Hills (PUTA), Udaipur, Surguja, Chhattisgarh, India. *International Journal of Botany Studies*, 33–39.
- [3] Rajwade, R. K. and Patel, D. K. (2023). Epiphytic orchid species diversity of Mainpat, Surguja, Chhattisgarh, India. *Scope Journal*, 13, 31–47.
- [4] Kotia, A., Kumar, P., Tiwari, U. L. and Jalal, J. S. (2013). Orchid diversity and distribution in Kanger Valley National Park, Chhattisgarh. *Journal of Economic and Taxonomic Botany*, 37(1), 1–10.
- [5] Mishra, D. R. P. (2018). *Flora of Chhattisgarh with special reference to Udanti-Sitanadi and Achanakmar Tiger Reserve of Chhattisgarh: An identification field guide* (pp. 182–187). Chhattisgarh State Biodiversity Board.
- [6] Kotia, A., Tiwari, U. and Rawat, G. S. (2010). New distributional records of some orchids from Chhattisgarh State (Kanger Valley National Park), India. *Indian Forester*, 136(3), 354–358.
- [7] Bose, T. K. and Bhattacharjee, S. K. (1999). *Orchids of India* (p. 487). Naya Prokash.
- [8] Bentham, G. and Hooker, J. D. (1862–1883). *Genera plantarum* (Vols. 1–3). L. Reeve & Co.
- [9] Batista, J. A., Karina, S. B., Marina, W. F., Faria, K., Aline, P. and Gerardo, J. R. (2013). Molecular phylogenetics and morphological reappraisal of the *Platanthera* clade (Orchidaceae: Orchidinae) prompts expansion of the generic limits of *Galearis* and *Platanthera*. *Annals of Botany*, 104, 431–445. <https://doi.org/10.1093/aob/mct10>
- [10] Chowdhery, H. J. (1998). *Orchid flora of Arunachal Pradesh*. Botanical Survey of India.
- [11] Dixit, S. K. and Roy, G. P. (1992). Additions to the flora of Bastar district, Madhya Pradesh. *Journal of Economic and Taxonomic Botany*, 16(2), 351–365.
- [12] Hooker, J. D. (1890). Orchidaceae. In *Flora of British India* (Vols. 5–6, pp. 687–864, 1–198). L. Reeve & Co.
- [13] Henry, A. N., Chitra, V. and Balakrishnan, N. P. (1989). *The flora of Tamil Nadu*. Botanical Survey of India.
- [14] Gattoo, A. A. and Ahmad, M. A. (2013). A review on orchids in India and their conservation. *International Journal of Advanced Research*, 1, 5–7.
- [15] Jha, A. K. and Khanna, K. K. (2005). Plant wealth (Angiosperms) of Kanger Valley National Park, Bastar (C.G.). *Phytotaxonomy*, 5, 12–31.
- [16] Jain, S. K. and Rao, R. R. (1977). *A handbook of field and herbarium methods*. Today and Tomorrow's Printers and Publishers.
- [17] Jalal, J. S., Kumar, P., Rawat, G. S. and Pangtey, Y. P. (2008). Orchidaceae of Uttarakhand, Western Himalaya, India. *Check List*, 4, 304–320.
- [18] Jalal, J. S., Kumar, P. and Rawat, G. S. (2007). Orchidaceae of Chota Nagpur, State of Jharkhand, India. *Check List*, 3, 297–304.
- [19] Jalal, J. S. (2012). Distribution pattern of orchids in Uttarakhand, Western Himalayas, India. *International Journal of Plant Biology*, 3(1), e5.
- [20] Khanna, K. K., Kumar, A., Dixit, R. D. and Singh, N. P. (2001). *Supplement to the flora of Madhya Pradesh*. Botanical Survey of India.
- [21] Kumaar, M. D., Karthikeyan, S., Lourdasamy, K. D., Senthil, A. and Kumar, S. V. (2024). Morphophysiological adaptations and fragrance profile analysis of two relocated orchid species. *Plant Science Today*. <https://doi.org/10.14719/pst.4822>
- [22] King, G. and Pantling, R. (1898). *The orchids of the Sikkim-Himalaya*. Annals of the Royal Botanic Garden, Calcutta.
- [23] Khanna, K. K., Kumar, A., Jha, A. K., Singh, B. and Singh, M. (2005). *Floristic diversity of Chhattisgarh (Angiosperms)* (pp. 438–455). Connaught Place.
- [24] Kumar, P. (2008). *Systematics and some aspects of ecology of orchids in Jharkhand State, India* [Doctoral dissertation, Forest Research Institute University].
- [25] Kumar, V. and Sikarwar, R. L. S. (2002). Observations on some rare and endangered plants of Chhattisgarh State, India. *Phytotaxonomy*, 2, 135–142.
- [26] Lokho, A. (2013). Diversity of *Dendrobium* Sw., its distributional patterns and present status in Northeast India. *International Journal of Scientific Research Publications*, 3(5), 1–9.
- [27] Rodgers, W. A. and Panwar, H. S. (1988). *Planning wildlife protected areas network in India* (Vols. 1–2). Wildlife Institute of India, Department of Environment, Forests and Wildlife.
- [28] Roy, G. P. and Chaturvedi, K. K. (1987). Less known medicinal uses of rare and endangered plants of Abujmahar reserve area, Bastar (M.P.). *Journal of Economic and Taxonomic Botany*, 9, 325–328.
- [29] Singh, S. K., Agarwala, D. K., Jalal, J. S., Dash, S. S., Mao, A. A. and Singh, P. (2019). *Orchids of India: Pictorial guide*. Botanical Survey of India.
- [30] Sharma, A. and Rajwade, R. K. (2017). Exploration of *Oberonia* sp. from Maheshpur of Sarguja, Chhattisgarh. *Journal of Science*, 2(2), 56–60.

- [31] Singh, N. P., Khanna, K. K., Mudgal, V. and Dixit, R. D. (2001). *Flora of Madhya Pradesh* (Vol. 3). Botanical Survey of India.
- [32] Saxena, H. O. and Khotale, S. N. (1976). A contribution to the flora of Bastar (M.P.). *Journal of the Bombay Natural History Society*, **73**, 21–34.
- [33] Tiwari, S. D. N. and Maheshwari, J. K. (1963). Orchids of Madhya Pradesh. *Indian Forester*, **89**, 426–444.
- [34] Verma, D. M., Balakrishnan, N. P. and Dixit, R. D. (1993). *Flora of Madhya Pradesh* (Vol. 3). Botanical Survey of India.
- [35] Timsina, B., Kindlmann, P., Subedi, S., Khatri, S. and Rokaya, M. B. (2021). Epiphytic orchid diversity along an altitudinal gradient in Central Nepal. *Plants*, **10**(7), 1381.
- [36] Pant, B., Paudel, M. R., Chand, M. B., Pradhan, S., Malla, B. B. and Raskoti, B. B. (2018). Orchid diversity in two community forests of Makawanpur district, Central Nepal. *Journal of Threatened Taxa*, **10**(11), 12523–12530.
- [37] Pridgeon, A. M. (1987). The velamen and exodermis of orchid roots. In J. Arditti (Ed.), *Orchid biology: Reviews and perspectives IV* (pp. 139–192). Cornell University Press.
- [38] Yonzon, R., Lama, D., Bhujel, R. B., Rai, S., Kendra, D. K. V. and Viswa-vidyalaya, U. B. K. (2011). Epiphytic orchid species diversity of Darjeeling Himalaya of West Bengal, India. *Asian Journal of Pharmaceutical and Life Sciences*, 2231, 4423.
- [39] Vinodia, S. and Dixit, A. K. (2017). *Habenaria diphylla* (Nimmo) Dalzell: A new addition to the orchid flora of Bilaspur district (Chhattisgarh), Central India. *Current Botany*, **8**, 60–65.