



Orchid diversity of Jamtara Forest Division, Jamtara, Jharkhand, India

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ABSTRACT

The present survey was conducted in the year 2023 to study the orchid diversity in Jamtara Forest Division, Jamtara, Jharkhand, India. The study was made during the flowering period of orchid species for proper identification. The survey outcome revealed a total of 19 species belonging to 11 genera, out of which four species are terrestrial and 15 species are epiphytes.

Key words: Jamtara, Jharkhand, orchidaceae, orchid diversity

INTRODUCTION

Orchids are the most advanced, diverse and widespread family of monocots on the earth. The origin of these plants dates back millions of years. However, exactly how old is the family, has long been disputed, as there are no fossil remains to work with (Schiff, 2018). The family Orchidaceae is the most diverse group of plants, with an estimate of about 28,000 currently accepted species and 800 sub-species (Pal and Nagrare, 2006; Bazzicalupo et al., 2023). They are divided into five sub-families: Apostasioideae, Vanilloideae, Cypripedioideae, Epidendroideae, and Orchidoideae (Chase et al., 2018). As orchid seeds are very small and mild, they are dispersed through wind when they fall into some new environmental condition. They either die, attempt to tolerate, or even bring approximately a few genotypic trades to adapt to the new surroundings. This is one of the reasons why orchids are such a big group of plants (Gupta and Kumar, 2007; Kumar et al., 2007). They grow in diverse ecosystems except the polar regions and hot-dry deserts (Benzing and Atwood, 1984). In many countries, some orchids

have also been used as traditional natural drugs (Bal et al., 2007; Misra et al., 2013; Kumar et al., 2021). In India, they are represented by about 1256 species (Misra, 2019; Singh et al., 2019; Kumar and Kumar, 2020). In the state of Jharkhand, India, however, no comprehensive study on orchids has been carried out so far. The population of many orchids in the state is declining due to anthropogenic factors and climatic changes. Therefore, their documentation and conservation are necessary. The present study highlights the diversity of orchids in Jamtara Forest Division, Jharkhand, India, for future in-situ conservation plans.

MATERIALS AND METHODS

Study area

Jamtara Forest Division (JFD) is situated in the Eastern part of Jharkhand state in Jamtara district (Fig. 1). It is located at 23.95°N 86.8°E and has an average elevation of 155 m. JFD has four ranges, namely: Jamtara, Nala, Kundhit, and Narayanpur. It experiences extremes of climate, with the mean temperature varying from 17°C to 32°C. In winter, the minimum temperature is 2°C,

and the maximum temperature rises up to 45°C in the months during April to May. The monsoon starts in July and lasts till October. The average annual rainfall in the Jamtara and Kundahit Ranges of the Division is slightly greater than that of the rest of the areas (Ajinkya et al., 2023).

Data collection

Extensive field surveys were conducted in 2023 across the division, and the study was made during their flowering period for proper identification of species (Fig. 2).

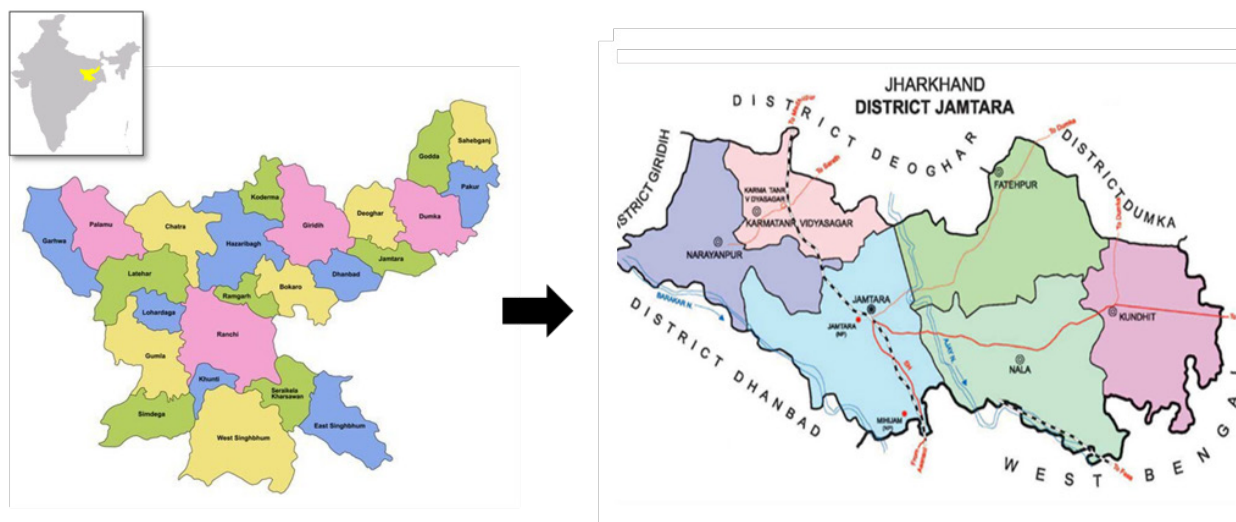


Fig. 1. Geographical location of study area

Information on the phenology, habit, habitat, color of flower, local name, relative abundance, associated plants, etc. for many species were recorded. (Kumar et al., 2021).

RESULTS AND DISCUSSION

The study revealed that the study area harbours about 19 species of orchids belonging to 11 genera. Among them, four species are terrestrial, 15 species are epiphytic. The genus *Luisia* represents four species viz. *L. inconspicua*, *L. trichorhiza*, *L. tristis*, *L. zeylanica* followed by the genus *Acampe* with three species namely *A. carinata*, *A. praemorsa* and *A. rigida*. The genus *Eulophia*, *Oberonia* and *Vanda* represents two species each those are *E. diffusiflora*, *E. picta*, *O. ensiformis*, *O. falconeri*, *V. tessellata* and *V. testacea*, respectively. It was noticed that the flowering period for the terrestrial orchids in study areas is mainly during June to August and the *Habenaria plantaginea* is one of the late flowering orchids,

blooms between August to October. The epiphytic orchids bloom during February to June. Some epiphytic orchids also show late flowering that is in the month of September to November, like *O. ensiformis*, *O. falconeri* and *Bulbophyllum careyanum* (Table 1, Fig. 3).

During the literature survey, it was observed that very little documentation is available on the orchid diversity of Jharkhand state. Gupta and Kumar (2007) recorded 20 species of orchids from Saranda Forest Division, West Singhbhum District of Jharkhand. Kumar et al. (2007) recorded a total of 63 species, of which 33 are terrestrial, and one semi-aquatic species, whereas 29 are epiphytic, of which five were found to be lithophytes. Kumar and Kumar (2020) documented a total of 31 orchid species with their medicinal uses, of which 17 are epiphytic, 10 are terrestrial, three are lithophytic, and one belongs to semi-aquatic habitat in Jharkhand state.

Table 1. Orchid diversity of Jamtara Forest Division, Jamtara, Jharkhand, India

Sl. No.	Botanical Name	Habitat	Flowering periods
1.	<i>Acampe carinata</i> (Griff.) Panigrahi	Epiphyte	Oct – Jan
2.	<i>A. praemorsa</i> (Roxb.) Blatt. & McCann	Epiphyte	May – Oct
3.	<i>A. rigida</i> (Buch.-Ham. ex Sm.) P.F.Hunt	Epiphyte	Aug – Sep
4.	<i>Aerides multiflora</i> Roxb.	Epiphyte	Jun – July
5.	<i>Bulbophyllum careyanum</i> (Hook.) Spreng.	Epiphyte	Sep- Dec
6.	<i>Eulophia diffusiflora</i> M.W. Chase, Kumar & Schuit.	Terrestrial	Jun – July
7.	<i>E. picta</i> (R.Br.) Ormerod	Terrestrial	Jun – July
8.	<i>Habenaria plantaginea</i> Lindl.	Terrestrial	Aug – Oct
9.	<i>Liparis odorata</i> (Willd.) Lindl.	Terrestrial	July – Aug
10.	<i>Luisia inconspicua</i> (Hook.f.) King & Pantl.	Epiphyte	Mar – May
11.	<i>L. trichorhiza</i> (Hook.) Blume	Epiphyte	Mar – May
12.	<i>L. tristis</i> (G.Forst.) Hook.f.	Epiphyte	Feb – Mar
13.	<i>L. zeylanica</i> Lindl.	Epiphyte	Mar – May
14.	<i>Oberonia ensiformis</i> (Sm.) Lindl.	Epiphyte	Oct – Nov
15.	<i>O. falconeri</i> Hook.f.	Epiphyte	Sep – Oct
16.	<i>Rhynchostylis retusa</i> (L.) Blume	Epiphyte	Mar – Jun
17.	<i>Smitinandia micrantha</i> (Lindl.) Holttum	Epiphyte	Apr – Jun
18.	<i>Vanda tessellata</i> (Roxb.) Hook. ex G.Don	Epiphyte	Mar – Oct
19.	<i>V. testacea</i> (Lindl.) Rchb.f.	Epiphyte	Apr – May



Fig. 2. Survey works in study areas, a) documentation of *H. plantaginea*, b) A local inhabitant shows *Vanda tessellata*



Fig. 3. Some common orchids of Jamtara Forest Division, Jharkhand, India A) *V. tessellata*, B) *H. plantaginea*, C) *A. praemorsa*

CONCLUSION

The study concludes that Jharkhand state has less documentation on orchid diversity. In this regard, the present investigation offers baseline data for upcoming exploration projects in the state that aim to document the diversity of orchids. In addition, the present study highlights the orchid species found in Jamtara Forest Division, Jamtara, Jharkhand, and suggests to build a long-term conservation plan for the state.

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