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Orchid diversity of Kailash Cave (Gufa), Bagicha block, Jashpur District, Chhattisgarh, India

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Abstract
Kailash Cave/ Gufais a beautiful, Natural, attractive, and tapobhumi of most revered Maharaj Gahira Ji, and Famous by name of Kailashnatheshwar temple of Bagicha block of JashpurDistrict of Chhattisgarh. Kailash Gufa is located inthe Deodand place area. It lies between $23^{0}034820$'N latitude to $83^{0}588653$'E longitude. Average elevation between 609 to 800 Masl.The vegetation of the vegetation types of the Deodand, Kailash Gufa area is mixed deciduous types, with a temperature between 22°C - 25 °C in the maximum summer season and 2°C - 5 °C in the minimum winter season, and an annual rainfall of 120 mm. Extensive field surveys of Orchid surveys were conducted from January 2024 to August 2024 in various parts of the Deodand, Kailash Gufa area. In this study, 19 species of orchid species belonging to 12 genera (16 species are epiphytic,and 3 species are terrestrial) were identified in the Kailash Gufa and adjoining area of Bagicha block, Jashpur district of Chhattisgarh. The study represents the Checklist of orchid diversity and distribution throughout the region with the color photogrphs, phenology, associated host of epiphytic species, place of collection.

Keywords: Bagicha, chhattisgarh, epiphytic orchid, diversity, kailash gufa, jashpur, terrestrial

Introduction

Kailash Cave/ Gufa is a beautiful, natural and attractive place of the Bahicha block of Jashpur District of Chhattisgarh. Shri Kailash cave have the temple of Lord Shiva and a natural cave. Here one of the sacred Tapobhumi of the most revered Maharaj Gahira Ji. This place is located inside a dense forest. Kailash Dham is also famous by the name of Kailashnatheshwar Temple. Kailash Dham is located inBagicha tehsil, 100 km away from Jashpur. This place is located inDevdand village of the Bagicha tehsil. This place is about 50 kilometers away from Ambikapur. It is a place of natural and religious importance near Jashpur.

Shivalinga of Lord Shiva is Established inside the Kailash cave, which is very beautiful. Here one can have darshan of the snake god and a huge statue of Lord Nandi. There is a huge crowd of devotees here during the month of Sawan. A big fair is organized here during Mahashivratri and Sawan in which many people participate here.

One of the most sophisticated, valuable, and intriguing flowering plants in the world is the orchid, which is a member of the Orchidaceae family. A distinctive collection of extremely sophisticated monocotyledonous plants makes up one of the second-largest families of flowering plants. Numerous species have intraspecific variation in floral color, and they are incredibly diverse in terms of bloom size, shape, structure, number, density, color, and fragrance. Although they can be found practically anywhere in the world, from the tropics to the alpine, orchids are most diverse in the tropics. notably found in the Eastern Himalayas, Indo-Malaya, and tropical America. Antarctica and a few remote islands are home to no orchid species (Jalal, 2009).

One of the most well-known families of flowering plants, the Orchidaceae is found practically everywhere and includes between 30,000 and 35,000 species in 750–800 genera. The orchid family in India is represented by 1263 taxa in 155 genera (Singh *et al.,* 2019). Of these, 52 taxa under 21 genera are found in Chhattisgarh, with 50 taxa under 22 genera being checklisted there.(*Pandey et al.,* 2023).

Material and methods

Study area

Jashpur is a district of Chhattisgarh, central Indian of bordering Jharkhand and Odisha. Jashpur Nagar is the administrative headquarters of the district. The district was formerly a princely state before Independence. Highly mountainous and forested, Jashpur is known for its natural environment. The north-south length of this district is about 150 km, and its east-west breadth is about 85 km. Its total area is 6,205 km2. It is between 22° 17′ and 23° 15′ North latitude and 83° 30′ and 84° 24′ East longitude. The geographical area was 6701 km^2. It is bordered by the Balrampur district to the north, the Gumla district of Jharkhand to the east, the Simdega district of Jharkhand and the Sundergarh district of Odisha to the southeast, the Raigarh district to the southwest and the Surguja district.

It is geographically divided into two parts. The northern hilly belt is called the Upper Ghat runs fromLoroghatKastura, Narayanpur, Bagicha up to Surguja and Balrampur districts. they containa reserve forest It covers Sanna, Bagicha, and Narayanpur, and an extension plateaucovering 1384 km^2, which is about 1200 meters above sea level and is covered by a dense forest. The remaining, southern part, is called Nichghat; they are flat in general but also has many big mountains. In JashpurRaigarh road there are two more ghats, Jhanda ghat before Kansabel and Belaghat after Kansabel.Major rivers in the Mahanadi basin are Ib and its tributaries such as Dorki, Maini, Kokiya, Utai, Khadung, Girma and Burhi. In the eastern part, rivers named Baki and Lava Nadi flow in the Brahmani basin. Lower Ganges part is mainly drained by Geor and Kanhar rivers.

Bagicha is a block of the district of Jashpur, Chhattisgarh, is lies between 22 ^{0} 912725' N latitude to 83 ^{0} 734406' E longitude, average elevation is 609 m asl.Total area of bagicha tehsil is 1,486 km² including 1,460.36 km² rural area and 25.81 km² urban area.

Identification and Field Survey

During the field visit of the Kailash Gufa, Bagicha block, Jashpur district and adjoining areas, we came across interesting species of orchids, and upon critical observations of the specimens, they were identified. Review the relevant literature (Singh N.P. *et al*., 2001; Khanna *et al*., 2005; Kotia *et al*., 2013; Singh R.N. *et al*., 2019; K. Chowlu, 2019; Rawat *et al.,* 2023) [14, 15, 28, 29]. Websites of the Plant List (http://www.theplantlist.org), POWO, Tropicos was consulted for updating species names, revealing that these species have been reported from the Jashpur District of Chhattisgarh, India.

The current collection thus forms some report of terrestrial and epiphytic orchid species from the Kailash Gufa, Bagicha block, Jashpur district of Chhattisgarh state in central India. We are here to provide a list, phenology, and other relevant notes on the species for easy identification.

Result and Discussion

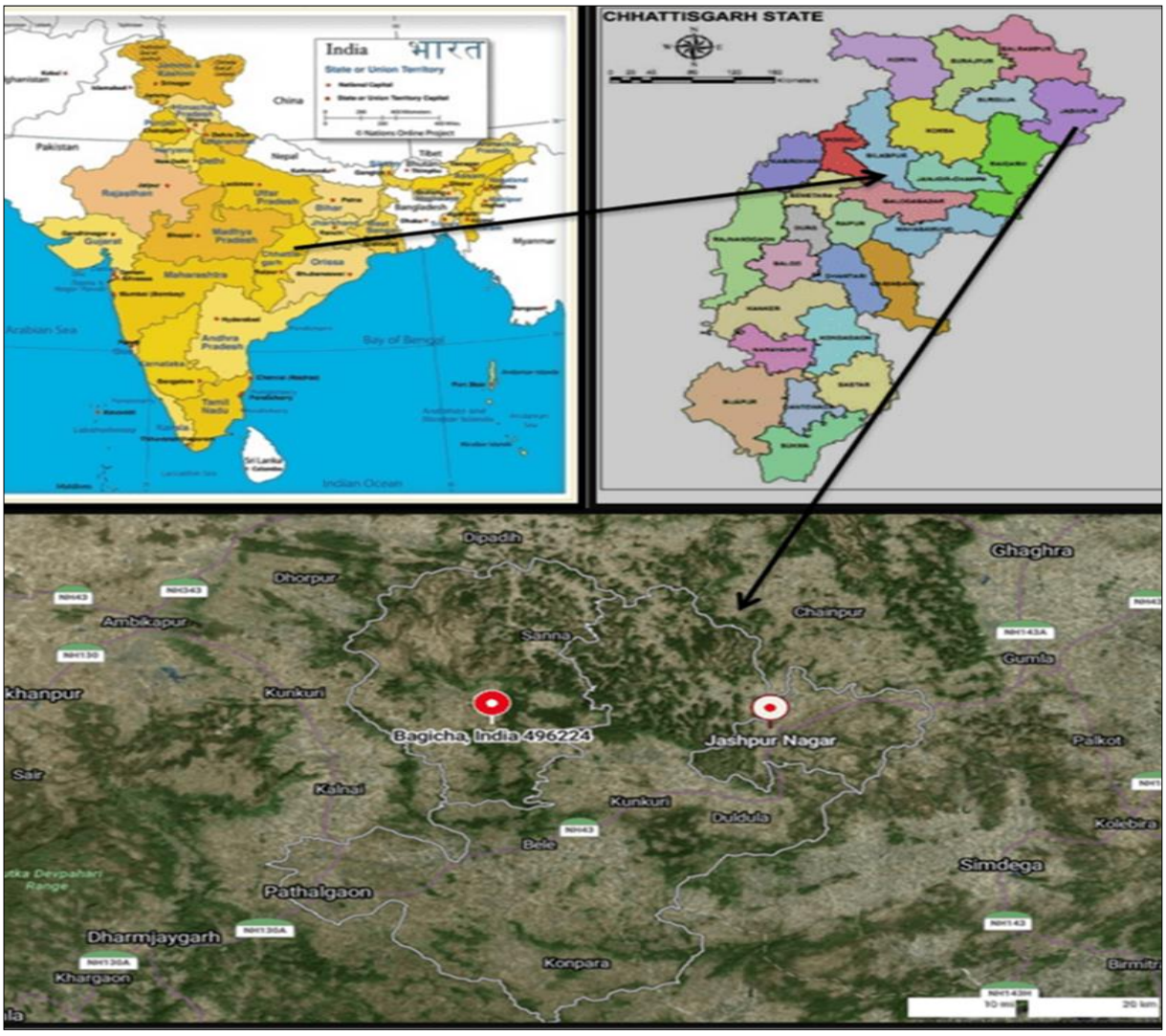
While conducting a survey of the Kailash Gufa Forest area and adjoining area in January 2024 –August 2024, various Forest areas of 19 species belonging to 12 genera of Terrestrial and epiphytic orchids were recorded. Terrestrial Orchids are beings to appear from 609 m to 800 masl elevation onwards. Apart from climatic conditions, altitude plays a vital role in the distribution of Orchids. *Habenaria commelinifolia* (Roxb.) Wall. ex Lindl.*, Habenaria laciniata* Dalzell., *Dendrobium herbaceum* Lindl., *Dendrobium macrostachyum* Lindl. *Rhynchostylis retusa* (L.) Blume., *Dendrobium transparens* Wall. ex Lindl, *Habenaria marginata* Colebr, *Vanda tessellata* (Roxb.) Hook. ex G. Don, *Vanda testacea* (Lindl.) Rchb.f. epiphytic and terrestrial orchid species are commonly distributed in area but *Crepidium resupinatum* (G. Forst.) Szlach., *Acampe praemorsa* (Roxb.) Blatt. & McCann, *Aerides multiflora* Roxb., *Aerides odorata* Lour., *Luisia trichorhiza* (Hook.) Blume, *Luisia zeylanica* Lindl.*Oberonia falconeri* Hook.f., *Pelatantheria insectifera* (Rchb.f.) Ridl., *Smitinandia micrantha* (Lindl.) Holttum, *Thunia alba* (Lindl.) Rchb.f., are critical, distributed around Kailash GufaKailash gufa, Bagicha, Jashpur. Earlier, of Orchid species on these regions of Kailash gufa, Bagicha, Jashpur other than no Exploration work of the field of orchids diversity in Kailash Gufa, Bagicha, Jashpur. The present study of the various parts of forest area of Kailash Gufa, Bagicha, Jashpur district reported 19 species belonging to 12 genera of Orchid flora, distribution of the area of Jashpur district of Chhattisgarh. The orchid species are listed followed by Botanical name, Habit, Phenology, distribution, and Color photographs are provided here (Table 1, 2, & Plate1, &2)**.**

Table: 1 List of Orchid in Kailash Gufa, Bagicha Block, Jashpur District of Chhattisgarh, India

S. No.	Botanical Name	Habit	Phenology
1.	*Acampe praemorsa* (Roxb.) Blatt. & McCann	Epiphytic	Nov-Dec.
2.	*Aerides multiflora* Roxb.	Epiphytic	July-August
3.	*Aerides odorata* Lour.	Epiphytic	July-August
4.	*Crepidium resupinatum* (G.Forst.) Szlach.	Lithophytic	July-August
5.	*Dendrobium herbaceum* Lindl.	Epiphytic	February- March
6.	*Dendrobium macrostachyum* Lindl.	Epiphytic	June- July
7.	*Dendrobium transparens* Wall. ex Lindl	Epiphytic	June-July
8.	*Habenaria commelinifolia* (Roxb.) Wall. ex Lindl	Terrestrial	August-September
9.	*Habenaria laciniata* Dalzell	Terrestrial	July-August
10.	*Habenaria marginata* Colebr	Terrestrial	July-August
11.	*Luisia trichorhiza* (Hook.) Blume	Epiphytic	Ferburary- March
12.	*Luisia zeylanica* Lindl.	Epiphytic	Ferburary- March
13.	*Oberonia falconeri* Hook.f.	Epiphytic	September- November
14.	*Pelatantheria insectifera* (Rchb.f.) Ridl.	Epiphytic	July- September
15.	*Rhynchostylis retusa* (L.) Blume	Epiphytic	June- August
16.	*Smitinandia micrantha* (Lindl.) Holttum	Epiphytic	May-June
17.	*Thunia alba* (Lindl.) Rchb.f.	Lithophytic/ Epiphytic	August-September
18.	*Vanda tessellata* (Roxb.) Hook. ex G. Don	Epiphytic	May-July
19.	*Vanda testacea* (Lindl.) Rchb.f.	Epiphytic	June- July

Table 2: Number of epiphytic orchid species associate a particular host tree species in kailash gufa, bagicha block of jashpur, distict, chhattisgarh, central india

S. No.	Name	Family	Number of orchid species associated with a particular host	Orchid species
1	*Diospyros melanoxylon* Roxb.	*Ebenaceae*	2	*Acampe praemorsa* (Roxb.) Blatt. & McCann, *Oberonia falconeri* Hook.f.
2	*Ficus religiosa* L.	*Moraceae*	1	*Thunia alba* (Lindl.) Rchb.f.
3.	*Mangifera indica* L.	*Anacardiaceae*	3	*Smitinandia micrantha* (Lindl.) Holttum*, Vanda tessellata* (Roxb.) Hook. ex G. Don, *Vanda testacea* (Lindl.) Rchb.f.
4.	*Shorea robusta* C.F. Gaertn	*Dipterocarpaceae*	11	*Acampe praemorsa* (Roxb.) Blatt. & McCann, *Aerides multiflora* Roxb., *Aerides odorata* Lour., *Dendrobium herbaceum* Lindl., *Dendrobium transparens* Wall. ex Lindl, *Luisia trichorhiza* (Hook.) Blume, *Luisia zeylanica* Lindl., *Rhynchostylis retusa* (L.) Blume, *Vanda tessellata* (Roxb.) Hook. ex G. Don, *Vanda testacea* (Lindl.) Rchb.f., *Pelatantheria insectifera* (Rchb.f.) Ridl.
5.	*Syzygium cumini* (L.) Skeels	*Myrtaceae*	3	*Aerides odorata* Lour., *Vanda tessellata* (Roxb.) Hook. ex G. Don, *Vanda testacea* (Lindl.) Rchb.f.
6	*Terminalia bellirica* (Gaertn.) Roxb.	*Combretaceae*	3	*Aerides multiflora* Roxb*, Rhynchostylis retusa* (L.) Blume, *Vanda tessellata* (Roxb.) Hook. ex G.Don,
7	*Terminalia elliptica* Willd.	*Combretaceae*	1	*Aerides multiflora* Roxb.



Map: Showing the study of kailash gufa, Bagicha block, Jashpur District, Chhattisghar

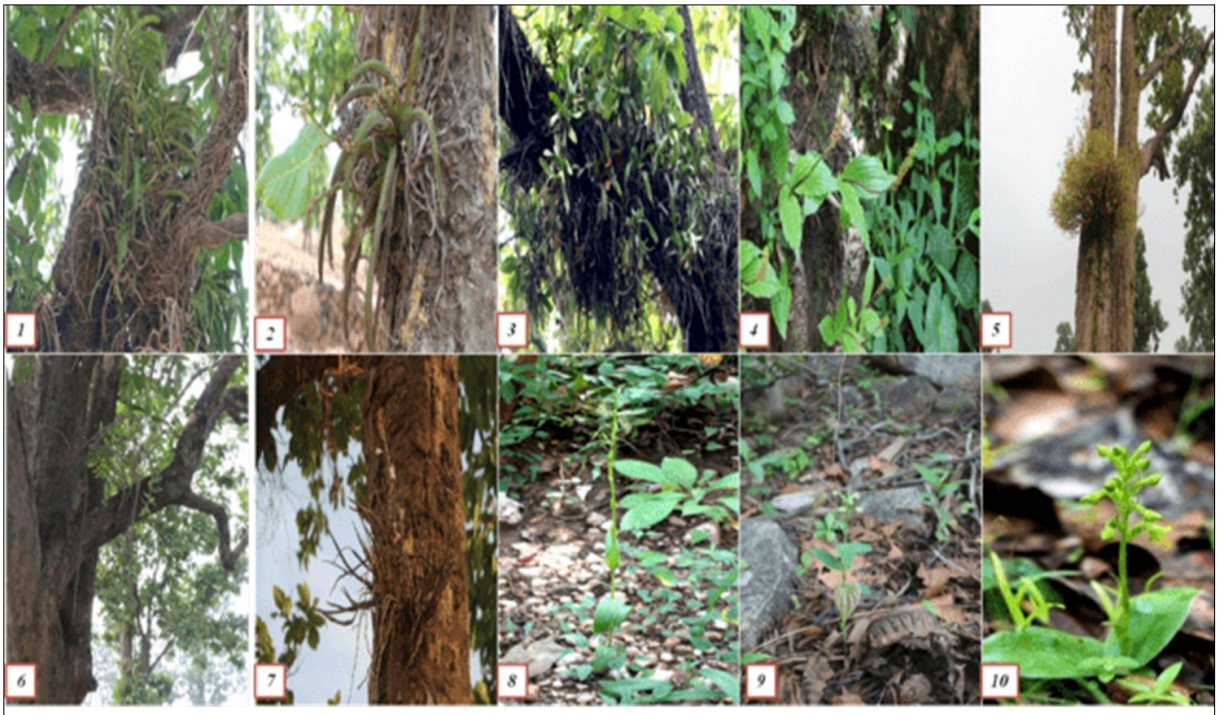


Plate 1:- (1):-*Acampe praemorsa* (Roxb.) Blatter&McCann, (2):-*Aerides multiflora* Roxb., (3):-*Aerides odorata* Lour., (4):- *Crepidium resupinatum* (G. Forst.) Szlach, (5):- *Dendrobium herbaceum* Lindl., (6):-*Dendrobium macrostachyum* Lindl., (7):-*Dendrobium transparens* Wall. ex Lindl, (8):-*Habenaria commelinifolia* (Roxb.) Wall. ex Lindl., (9):-*Habenaria laciniata* Dalzell. (10):-*Habenaria marginata* Colebr.

Plate 2:- (11):-*Luisia trichorhiza* (Hook.) Blume, (12):-*Luisia zeylanica* Lindl., (13):- *Oberonia falconeri* Hook.f., (14):-*Pelatantheria insectifera* (Rchb.f.) Ridl., (15):-*Rhynchostylis retusa* (L.) Blume., (16):-*Smitinandia micrantha* (Lindl.) Holttum, (17):- *Thunia alba* (Lindl.) Rchb.f., *(18):- Vanda tessellata* (Roxb.) Hook. ex G.Don, *(19):- Vanda testacea* (Lindl.) Rchb.f.

Conclusion

Although the forest area of Kailash gufa, Bagicha, Jashpur region is so rich in orchid populations, it provides a platform to grow diverse floral and faunal wealth. Orchids are the unexplored floral wealth of Jashpur district of Chhattisgarh. Therefore, the present study highlights the Kailash gufa, areas of orchid species Diversity, and needs more exploration work toward their documentation and conservation.

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