

A preliminary floristic account of Nageswari Hill and Balda Cave and its surroundings, Odisha

The Eastern Ghats, a discontinuous range of mountains along the eastern coast of India, play a significant role in the floristic diversity of the region. It runs from Odisha, Andhra Pradesh, with parts of Karnataka and Telangana, up to Tamil Nadu. The Eastern Ghats are home to over 3,000 species of flowering plants, with many endemic species (Reddy et al. 2002). Koraput district of Odisha is known for its rich floristic diversity and is also renowned for its rich traditional knowledge of plants and the deep-rooted relationship between its tribal communities and the natural environment. Home to diverse indigenous tribes such as the Kondhs, Parajas, and Gadabas, Koraput has long been a center for ethnobotanical knowledge, where medicinal plants and wild edibles play a crucial role in healthcare, nutrition, and cultural practices. It was also designated as a “Globally Important Agricultural Heritage System” (FAO 2012).

Nageswari hill and Balda cave, located in Nandapur block of Koraput District, hold significant floristic and ecological value due to their unique topography, microclimate, and relative isolation. The vast tabletop plateau, popularly known as “India map hill,” provides a microhabitat for various plant species. These sites support a rich diversity of endemic, rare, and medicinal plant species that are not commonly found in the surrounding lowland regions. Nageswari hill, in particular, is known for its dense semi-evergreen to moist

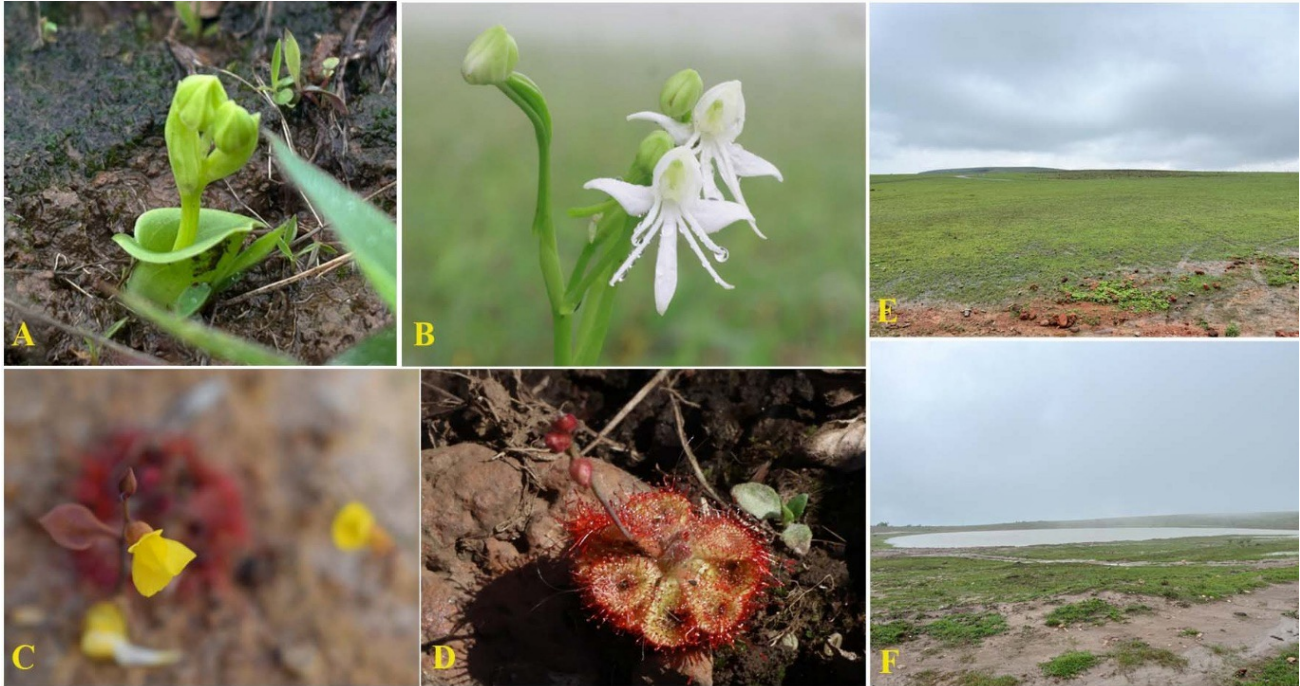
deciduous forest cover, harbouring several ethnobotanically important species used by local tribal communities for traditional medicine and rituals.

Balda cave, nestled within forested hills, provides a microhabitat that sustains shade-loving and moisture-retentive flora, including ferns, orchids, and mosses. These areas are considered refugia for many plant species, contributing to the overall biodiversity of the Eastern Ghats. The cultural and religious significance of these sites further protects their ecological integrity, as many plants are preserved due to their sacred associations with local deities, “Donger Dei” and tribal customs during the Chaitra festival.

During a recent botanical exploration tour to the Koraput district, the authors also surveyed the Nageswari hill and Balda, where several interesting plants were documented. The lateritic plateau in this area almost looks barren during the summer season; however, during the monsoon season, this plateau gets covered with small streams, seasonal ponds, and puddles among rock crevices (Lekhakh & Yadav 2012). These provide microhabitat for a variety of species. Some pteridophytes, such as *Hemionitis arifolia* (Burm.f.) T.Moore, *Asplenium* L., *Pityrogramma* Link., etc. grow abundantly along stream banks. Some common medicinal plants, such as *Celastrus paniculatus* Willd., *Cleistanthus patulus* (Roxb.) Müll.Arg.,

Floristic enumeration:

	Plant name	Family	Habit
1	<i>Acmella</i> sp.	Asteraceae	Herb
2	<i>Agave americana</i> L.	Asparagaceae	Herb
3	<i>Ageratum conyzoides</i> L.	Asteraceae	Herb
4	<i>Ammannia</i> sp.	Lythraceae	Herb
5	<i>Asplenium</i> L.	Aspleniaceae	Herb
6	<i>Bonnaya oppositifolia</i> (Retz.) Spreng.	Linderniaceae	Herb
7	<i>Brugmansia suaveolens</i> (Humb. & Bonpl. ex Willd.) Sweet	Solanaceae	Shrub
8	<i>Celastrus paniculatus</i> Willd.	Celastraceae	Tree
9	<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Herb
10	<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob.	Asteraceae	Shrub
11	<i>Chrysopogon aciculatus</i> (Retz.) Trin.)	Poaceae	Herb
12	<i>Cleistanthus patulus</i> (Roxb.) Müll.Arg.	Phyllanthaceae	Tree
13	<i>Cyanotis</i> sp.	Commelinaceae	Herb
14	<i>Dillenia pentagyna</i> Roxb.	Dilleniaceae	Tree
15	<i>Drosera burmanni</i> Vahl	Droseraceae	Herb
16	<i>Drosera indica</i> L.	Droseraceae	Herb
17	<i>Eclipta</i> sp.	Asteraceae	Shrub
18	<i>Emilia</i> sp.	Asteraceae	Herb
19	<i>Fimbristylis</i> sp.	Cyperaceae	Herb
20	<i>Grangea maderaspatana</i> (L.) Desf.	Asteraceae	Herb
21	<i>Grona triflora</i> (L.) H. Ohashi & K. Ohashi	Fabaceae	Herb
22	<i>Habenaria grandifloriformis</i> Blatt & McCann.	Orchidaceae	Herb
23	<i>Hemionitis arifolia</i> (Burm.f.) T. Moore	Pteridaceae	Herb
24	<i>Hoppea dichotoma</i> Willd.	Gentianaceae	Herb
25	<i>Hypericum gaitii</i> Haines	Hypericaceae	Small Tree
26	<i>Hypericum japonicum</i> Thunb.	Hypericaceae	Herb
27	<i>Ischaemum rugosum</i> Salisb.	Poaceae	Herb
28	<i>Litsea glutinosa</i> (Lour.) C.B. Rob.	Lauraceae	Tree
29	<i>Macaranga peltata</i> (Roxb.) Müll. Arg.	Euphorbiaceae	Small Tree
30	<i>Mappia nimmoniana</i> (J. Graham) Byng & Stull	Icacinaceae	Small Tree
31	<i>Murdannia</i> sp.	Commelinaceae	Herb
32	<i>Neocinnamomum caudatum</i> (Nees) Merr.	Lauraceae	Tree
33	<i>Lantana camara</i> L.	Verbenaceae	Shrub
34	<i>Limnophyla</i> sp.	Plantaginaceae	Herb
35	<i>Oldenlandia</i> sp.	Rubiaceae	Herb
36	<i>Pilea microphylla</i> (L.) Liebm.	Urticaceae	Herb
37	<i>Pityrogramma</i> Link	Pteridaceae	
38	<i>Pogostemon</i> sp.	Lamiaceae	Shrub
39	<i>Rotala</i> sp.	Lythraceae	Herb
40	<i>Smithia</i> sp.	Fabaceae	Herb
41	<i>Stylidium</i> sp.	Stylidiaceae	Herb
42	<i>Utricularia bifida</i> L.	Lentibulariaceae	Herb



A&B—*Habenaria grandifloriformis* Blatt & McCann (Orchidaceae) | C—*Utricularia bifida* L. (Lentibulariaceae)
| D—*Drosera burmanni* Vahl (Droseraceae) | E&F—Habitat of the plateau.



Anthropogenic threats prevailing on the plateau: A—Grazing by cattle | B—Tourism | C—Trampling.

Dillenia pentagyna Roxb., *Litsea glutinosa* (Lour.) C.B.Rob., *Macaranga peltata* (Roxb.) Müll.Arg., *Mappia nimmoniana* (J.Graham) Byng & Stull, *Neocinnamomum caudatum* (Nees) Merr., are found growing abundantly throughout the area. Additionally, the plateau is also home to the Near Threatened endemic terrestrial orchid, *Habenaria grandifloriformis* Blatt & McCann. This endemic taxon has been previously reported from different parts of Koraput, viz. Panchpatmate, Deomali, Pattangi, Turia Parbat (Saxena & Brahman 1995; Misra 2004; Misra 2007; Patil 2022). The species is currently known from only a limited number of occurrences in the Koraput District.

The authors have encountered a good population comprising approximately 1,000 individuals growing in this plateau, which is an additional locality within the Koraput District. *Hypericum gaitii* Haines, another endemic, threatened known only from Jenabila (Similipal) & Deomali (Koraput), has been found naturally growing abundantly on the rocky slopes of Nageswari hill. During the winter, small patches of carnivorous plants, primarily *Drosera burmanni* Vahl, and *Utricularia bifida* L. along with can be spotted throughout the plateau.

Threats

Habitat degradation is considered one of the key factors contributing to the depletion of floristic diversity. Nageswari hills and the plateau are under threats from uncontrolled tourism, along with other man-made activities like grazing by domesticated animals, trampling, etc. This gradually leads to the deterioration of the quality of the habitat.

Moreover, tourism, grazing, quarrying, plantation of *Eucalyptus* sp., and expansion of cultivation land are already causing severe alterations in these plateaus. The region, characterized by lateritic plateaus and dense forests, holds some of the largest bauxite reserves in the country, such as Panchpatmali.

Now, Nageswari hill appears to be following a similar trajectory, as the Odisha government plans to initiate bauxite mining there. It is crucial to protect this area to ensure the conservation of the species thriving in this habitat.

Conclusion

The Nageswari hill plateau is home to two endemic species such as *Habenaria grandifloriformis* Blatt. & McCann & *Hypericum gaitii* Haines, including carnivorous plants, as well as several threatened medicinal plants. Environmentalists and local communities have expressed their deep concern about the potential ecological degradation and the erosion of cultural heritage that could result from mining and related development activities.

Given these risks, proactive and concrete measures should be taken to preserve this unique plateau in its natural state; otherwise, its unique biodiversity and the traditional knowledge of the indigenous tribes associated with these plant species will be lost forever before being documented.

References

- Saxena, H.O. & M. Brahmam (1995). The Flora of Orissa. (Acanthaceae to Commelinaceae). Vol. 3. Regional Research Laboratory, Bhubaneswar & Forest Development Corporation, Bhubaneswar.
- FAO (2012). Globally Important Agricultural Heritage Systems (GIAHS)-Koraput Traditional Agriculture, India. Food and Agriculture Organization of the United Nations. <https://www.fao.org/giahs/giahsaroundtheworld/india-koraput/en/>. Accessed on 08.vii.2025
- Lekhak, M.M. & S.R. Yadav (2012). Herbaceous vegetation of threatened high altitude lateritic plateau ecosystems of Western Ghats, southwestern Maharashtra, India. *Rheedea* 22(1): 39–61.
- Misra, S. (2004). Orchids of Orissa. Bishen Singh Mahendra Pal Singh, Dehradun, 774 pp.
- Misra, S. (2007). Orchids of India, a Glimpse. Bishen Singh Mahendra Pal Singh, Dehradun, 402 pp.
- Patil, A. (2022). *Habenaria grandifloriformis*. The IUCN Red List of Threatened Species 2022: e.T13424554A13424557. <https://doi.org/10.2305/IUCN.UK.2022-1.RLTS.T13424554A13424557.en>. Accessed on 29 August 2025.
- Reddy, C.S. et al. (2002). Vegetation diversity and endemism in Eastern Ghats, India, pp. 109–134. In: Baquer, S.H. et al. (eds.). Proceedings of National Seminar on Conservation of Eastern Ghats. S.V. University, Tirupati, March 24–26. Environment Protection Training and Research Institute, Hyderabad.

Yasaswinee Rout^{1*}, Prabhat Kumar Das² & Jeewan Singh Jalal³

¹Central National Herbarium, Botanical Survey of India, Howrah, West Bengal, India.

²Centre for Biotechnology, Siksha'O'Anusandhan (Deemed to be University), Bhubaneswar, Odisha, India.

³Botanical Survey of India, HQ, Kolkata, West Bengal, India.

*Corresponding author: yasaswinee.botanica@gmail.com

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