THE SCIENCE WORLD
A Monthly e Magazine
ISSN:2583-2212
June, 2025 Vol.5(6), 7404-7409

Popular Article

Pecteilis gigantea – A victim of its own beauty

[1*]I. Shreelekha, [2]P. Hemanth Kumar, [3]Mahammad Atif, [4]M. Mandira
[1&3]PG Scholar, Department of Floriculture and Landscaping, College of Horticulture, Mudigere, Keladi Shivappa Nayaka University of Agriculture and Horticultural Sciences, Shivamogga – 577412, Karnataka
[2]Associate Professor and Head, Department of Floriculture and Landscaping, College of Horticulture, Mudigere, Keladi Shivappa Nayaka University of Agricultural and Horticultural Sciences, Shivamogga– 577412, Karnataka
DOI:10.5281/ScienceWorld.15766677

Introduction

Western Ghats also known as Sahyadri mountains are recognized as a global biodiversity hotspot and a reservoir of exceptionally high levels of biological diversity and endemism. In terms of plant diversity, the Western Ghats harbours approximately 5,000 species of flowering plants, belonging to nearly 2,200 genera and 217 families; about 1,700 (35%) are endemic (Kumar *et al*., 2004). The Hotspot covers around 23% (43,611 km²) of the original extent of forests (1,89,611 km²) and is one of the four Biodiversity hotspots within India (Mittermeier *et al.,* 2004). Its diverse vegetation is shaped by variations in rainfall and intricate geography, fostering a remarkable range of plant life, including a thriving orchid population. Till date, 306 orchid species have been documented in the Western Ghats (Nayar *et al.,* 2014), with nearly one-third of them are being endemic. Western Ghats have been a focal point for taxonomic research, where ongoing explorations have led to the identification of many new species and reports (Kumar *et al.,* 2016, Jayanthi *et al.,* 2017).

Among the incredible orchid diversity in the Western ghats, the genus *Pecteilis* Rafinesque stands out as a spectacular genus, comprising nine terrestrial species predominantly spread across Asia including China, Japan, Korea, Russia and the Malay Archipelago. The genus name originates from the Greek term *pektos* meaning "comb-like" which describes the distinctively pectinate structure of the lip or labellum in several species. Native to various Southeast Asian countries, species within this genus thrive in high-altitude grasslands, ranging from 400 to 2500 meters. *Pecteilis* is closely linked to the genus *Habenaria*, but the former is distinguished from later by its unique floral characteristics, including non-extending stigma lobes and rostellum forms a broad-band above the stigma lobes.

Additionally, its anther loculi are widely spaced on the connective while its sessile stigmas attach directly to the base of lip (Jalal and Jayanthi, 2019).

India is home to four species of *Pecteilis*: *Pecteilis gigantea* Rafinesque, *P. henryi* Schlechter, *P. susannae* Rafinesque, and *P. triflora* Tang & Wang. Within the Western Ghats, the genus was historically represented solely by *P. gigantea* (Nayar *et al.,* 2014), an enchanting species often referred to as Lady Susan's orchid, the butterfly orchid, or the queen of Khandala. However, this orchid's existence has now become a double-edged sword. Heavily sought after by collectors and traditional medicine practitioners, populations of *Pecteilis gigantea* are dwindling due to habitat destruction and unchecked exploitation.

Taxonomic characters

Kingdom – Plantae

Phylum - Tracheophyta

Class - Liliopsida

Order - Asparagales

Family - *Orchidaceae*

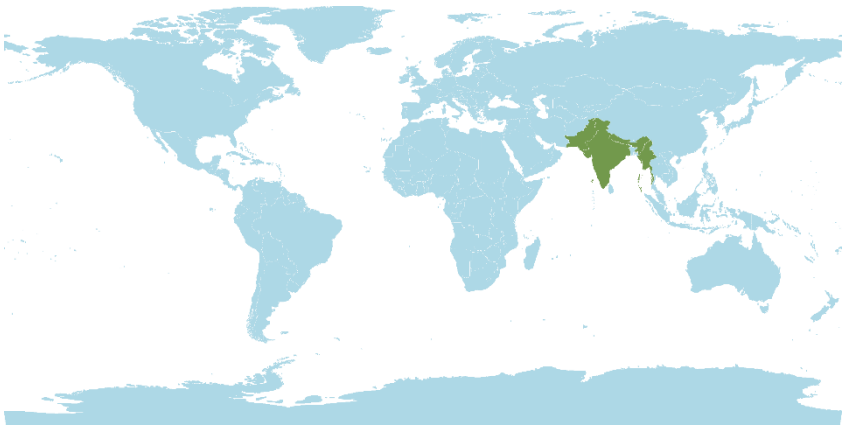
Genus - *Pecteilis*

Species - *Pecteilis gigantea* (Sm.) Rafinesque

Synonyms: *Habenaria gigantea, Orchis gigantea, Platanthera gigantea*

Vernacular name: Waghchora (Marathi), Kalluchedi (Malayalam)

Distribution



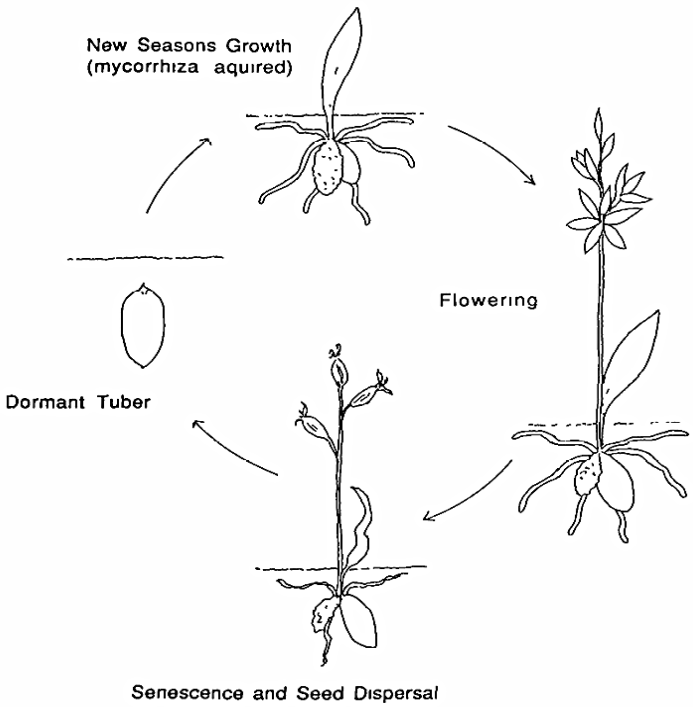
Pecteilis gigantea is native to the Eastern Himalayas, India, Myanmar, Nepal, Pakistan and Western Himalayas regions. In India it spread across different states like Nagaland, Himachal Pradesh, Jammu & Kashmir, Uttarakhand, Andhra Pradesh, Odisha, Goa, Gujarat, Karnataka, Kerala, Maharashtra, Tamil Nadu, Dadra & Nagar Haveli, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand. It predominantly extends its biome in the regions of Western ghats such as Maharashtra, Karnataka, Kerala etc.

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 29 /06/2025

Plant description

Pecteilis gigantea or Giant Egret Flower is a medium to large sized ground orchid, which can grow up to 3 ft tall. It consists of large underground tubers about 10 cm long ellipsoidal in shape. Stem is characterized by tall, robust structure and leafy throughout the length. Leaves are ovate-oblong in shape, with the upper ones forming sheaths around the stem where largest leaves can reach up to 12 cm length and 5 cm width and are sessile (attached directly without a stalk). It produces strikingly large, white, fragrant flowers waxy in texture around 10 cm in diameter. Flowers borne on terminal racemes around 2 to 4 in numbers almost stalkless i.e. subsessile in nature. Sepals are spreading, with the lateral ones being broad and blunt. Bracts are 7.5 x 3 cm in size, ovate with a tapering tip, and resemble small leaves. The dorsal sepal is rhomboid in shape, measures 4 x 5 cm; 7-9 veined. In contrast, the lateral sepals are 5 x 2.5 cm, oblong with a slanted base, somewhat pointed but with a blunt tip, and also have 7-9 veins. Petals are small, measuring about 3.5 x 2-4 mm, narrow, curved like a sickle, and have rounded tips. Lip or labellum is large approximately 15 x 7 cm including a long cylindrical spur that measures 12-13 cm in length and 0.5 cm in width which is divided into three lobes: the side lobes which are fringed with long, narrow teeth, while the middle lobe is oblong-lanceolate with a blunt end. The spur is cylindrical about twice as long as the ovary. Within the flower, column is short and lacks a foot and there are two granular pollinia, each attached to a long stalk-like caudicle.

Life cycle



Pecteilis species like those of *Habenaria* are perennial, deciduous geophytes with a growth cycle associated with a wet season followed by a dormant period i.e., their tubers remain underground and dormant during the dry season and send up leafy shoots during the rainy season which produce terminal inflorescence.

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 29 /06/2025

Flowering

Flowering takes place in the month of August – October after the onset of monsoon.

Habitat

It thrives in open grassy slopes and plateaus of moist deciduous forests, semi-evergreen forests. It usually found along the margins of forests in open and on sloppy grasslands at an altitude of 800 - 1200 m is most suitable (Batista *et al.,* 2013).

Cultivation

In wild, *Pecteilis gigantea* prefers cool climate followed by monsoon rainfall correlates with a peak mycorrhizal fungus growth favours orchid growth. It consists of tiny seeds inside the pods and these seeds germinate only with the association of mycorrhizal fungi. However, germination of terrestrial orchids under the laboratory conditions is not easy due to nutrient complexities which is highly suitable to wild habitat. A few seeds out of thousand seeds will germinate and produce seedlings, which will survive to produce adult plants. Due to these complexities, these orchids are not commercially exploited for cultivation as it needs specific climatic conditions. But greater efficiency in seed germination can be achieved through *in vitro* propagation methods. *In vitro* seed germination in *Pecteilis gigantea* was performed by using Vacin and Went Basal Medium (VWBM) fortified with BAP (mg^{-1}), NAA ($1mg^{-1}$), Coconut Milk (15%) and Peptone (500 ppm) where 92% survival frequency of plantlets was achieved (Gayatri *et al.,* 2006).

Threats

As this species is popularly known as the queen of Khandala was found very common fifty years ago and sold in the Khandala's hill station markets. This led to a fall in the species and now it is confined to a few spots only. Restricted to a small area threatened by local grazing, trampling and invasive species. *Pecteilis gigantea* flowers are used for decoration during the Ganapathi festival by the local villagers. This orchid's large size and striking beauty make it highly vulnerable to plucking and collection, increasing the risk of population decline.

Conservation Status: Not Evaluated (NE)

Conclusion:

Pecteilis gigantea is a largest terrestrial orchid in the western ghats due to its larger size and massive appearance. Despite its impressive size and aesthetic appeal, the species survival is threatened by the digging up of its tubers by wild boars and the greed of humans who collect it. Only a single plant was sighted at a single locality. However, more exploration is needed in similar habitats to assign the exact threat category. In this consequence, knowledge of their distribution and the niche radius of this species is essential which will allow conservators to work out conservation strategies effectively for this species and to identify potential sites for reintroductions to minimize the risk of extinction.

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 29 /06/2025

REFERENCES

Jayanthi, J., Jalal, J. S. And Neelima, A. M., 2017, *habenaria sahyadrica* (orchidaceae) – a new distributional record for karnataka. *Indian j. For.,* **40**(1): 77-78.

Nayar, T. S., Sibi, M. And Beegam, A. R., 2014, flowering plants of the western ghats, india. *Jawaharlal nehru tropical botanic garden and research institute*, *palode.* Pp. 1683.

Batista, J. A. N., Borges, K. S., De Faria, M. W. F., Proite, K., Ramalho, A. J., Salazar, G. A. & Van Den Berg, C. 2013, molecular phylogenetics of the species-rich genus *habenaria* (orchidaceae) in the new world based on nuclear and plastid dna sequences. Molecular phylogenetics and evolution., **67**: 95–109.

Jalal, J. S. And Jayanthi, J., 2019, *pecteilis korigadensis* (orchidaceae: orchidoideae), a new terrestrial orchid from the northern western ghats, india. *Phytotaxa.,* **388**(2): 167-173.

Gayatri, M. C., Kavyashree, R., Usha, S. R. And Dhananjaya, S. P., 2006, *in vitro* seed germination of *pecteilis gigantea*: a rare and endangered orchid from western ghats. *Plant cell biotechnol. Mol. Biol.,* **7**(3&4): 191-194.

Official Website
www.thescienceworld.net
thescienceworldmagazine@gmail.com
Published 29 /06/2025