



An addition of endemic ground orchid *Peristylus stocksii* (Hook.F.) Kraenzl. To flora of Saurashtra from Girnar Hill

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Abstract

The paper deals with the new distribution record of an endemic orchid, *Peristylus stocksii* (Hook.f.) Kraenzl. from Girnar Wildlife Sanctuary to the Saurashtra, Gujarat at 900m elevation. The terrestrial species grows on sloping forest undergrowth. Notes on its habitat, flowering, and fruiting are provided.

Keywords: Endemic orchid, Girnar Wildlife Sanctuary, *Peristylus stocksii* Hook f. Kraenzl, Saurashtra Flora

Introduction

Orchids are the most fascinating group of flowering plants and are considered as having the most beautiful flowers. They show the incredible range of diversity in floral as well as vegetative features (Pijl and Dodson, 1966, Faden *et al.*, 1985) ^[5, 14]. In worldwide, *Peristylus* genera is represented by 106 species and three varieties among them 34 species and two varieties are reported from India (Govaerts 2003; Misra 2007; Tiwari *et al.*, 2009; Singh *et al.*, 2019; Kothiyar *et al.*, 2020) ^[9, 11, 20, 21], and in Gujarat, it is represented by four species *P. stocksii*, *P. plantagineus*, *P. constrictus* and *P. lawii* among them two species found in South Gujarat (Shah 1978; Gamit *et al.*, 2015; Qureshimatva *et al.*, 2016) ^[15, 8, 19]. The region Saurashtra is divided into 10 districts, which include the majority of the district covered with dry deciduous forest, grassland and scrub forest. The Girnar hill is situated between the parallels of latitude North 21°31'48" and meridians of longitude East 70°31'48". From the ten biogeographic zones of India, Girnar Wildlife Sanctuary is classified in the semi-arid zone (Gadhvi *et al.*, 2021a and 2021b) ^[6, 7].

Peristylus stocksii (Hook.f.) Kraenzl. was not recorded by earlier researchers from Saurashtra region Santapau (1953) ^[18], Santapau & Raizada (1954), Cooke (1958) ^[4], Patel (1971) ^[13], Shah (1978) ^[19], Raghvan *et al.* (1981), Bole and Pathak (1988) ^[3], Nagar (2005) ^[12], Sisodiya (2007) and Bhatt (2018) ^[2]. Therefore, it is reported as a new distribution record for the Saurashtra region of Gujarat. Further described and detailed photographs were taken which are represented in figure 3.

Materials and Methods

As part of an extensive botanical survey, plant specimens were collected and later subjected to thorough identification. This process was carried out using established references, including the works of Cooke (1958) ^[4], Shah (1978) ^[19], Bole and Pathak (1988) ^[3], Almeida (1998) ^[1], along with relevant research publications and reports. Comprehensive morphological descriptions and ecological observations were subsequently documented. The authenticated voucher specimens have been preserved in the herbarium of the Department of Life Sciences, Bhakta Kavi Narsinh Mehta University, Junagadh, Gujarat.

Taxonomic Treatment

Peristylus stocksii (Hook.f.) Kraenzl., Orchid. Gen. Sp. 1: 513. 1898; Cooke, Fl. Pres. Bombay 3: 215. 1958 ^[4] (Repr.); Santapau and Kapadia, Orchids Bombay 48. t. 9, C-D. 1966 ^[17]; Abraham and Vatsala, Introd. Orchids 243. t. 38. 1981; Shah, Fl. Gujarat 2: 661. 1978 ^[19]; Raghavan *et al.* in Bull. Bot. Surv. India 84. 1981 ^[16].

Habenaria stocksii Hook.f., Fl. Brit. India 6: 158. 1890.

Terrestrial herbs, 20.0 – 40.0 cm high. Tubers 1.7 – 3.0 × 1.2 – 2.0 cm, 1 – 2, oblong or ellipsoidal. Leaves 7.0 – 11.5 × 3.0 – 3.5 cm, elliptic – lanceolate, acute or sub acuminate, margins wavy, scattered on stem, sheathing at base. Inflorescence 9.0 – 24.0 cm long including peduncle, many-flowered sub secund twisted spikes (Figure 4, C). Flowers ca. 0.9 cm, yellowish – green, sessile, bracteate. Bracts ca. 1.2 × 0.4 cm, more or less equalling ovary, ovate, acuminate. Sepals subequal, green; dorsal sepal ca. 0.25 × 0.15 cm, concave, forming a hood over column with petals, elliptic – oblong, mucronate; lateral sepals ca. 0.3 × 0.15 cm, spreading, obliquely oblong, obtuse. Petals ca. 0.3 × 0.2 cm, green, sub-fleshy, sub obliquely ovate – oblong, obtuse, entire. Lip ca. 0.3 × 0.4 cm, longer than lateral sepals, trilobed, clawed; claw ca. 0.2 cm broad, concave; lateral lobes ca. 0.2 × 0.1 cm, incurved, oblong, obtuse, entire; mid lobe ca. 0.4 × 0.1 cm, straight, oblong, obtuse, entire. Spur 0.6 cm long, green, shorter than ovary, inflated downwards. Column very small, green, obtuse. Pollinia yellowish, clavate, obovate – oblong with short caudicle. Capsules 0.8 – 1.0 cm long, green, slightly curved, ribbed.

Flowering & Fruiting: July – September.

Ecology: The plant is found in dry deciduous forests, in moisture locations, slopes, especially undergrowth of Bamboo (*Dendrocalamus strictus* (Roxb.) Nees) and surrounding plants are *Habenaria foliosa*, *Dioscorea bulbifera* and *Adiantum sp.* Plant is tuberous geophyte, meaning it has an underground storage organ (Tuber).

Native: Western Ghats, India

Location: Girnar hill's in Girnar Wildlife Sanctuary, GPS: 21° 31' 40.94" N, 70° 31' 10.90" E.

Specimen examined: India, Gujarat, Girnar Wildlife Sanctuary, 900m, Rasik Sojitra, Snehal Gamit and Sandip Gamit (BKNMU371)

Distribution in Gujarat: Valsad, Dang

Global Distribution: Endemic to Peninsular India (Goa, Karnataka, Kerala, Maharashtra and Tamil Nadu).

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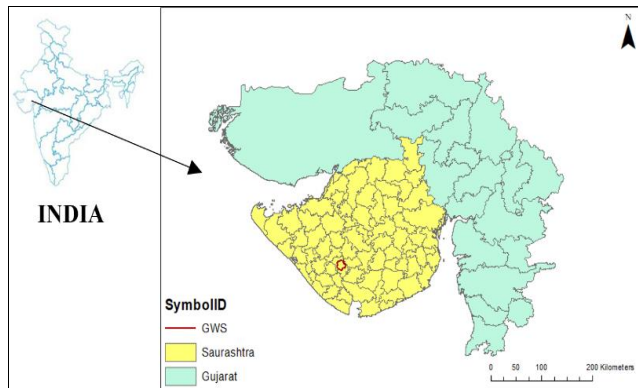


Fig 1: Gujarat state map. (GWS= Girnar Wildlife Sanctuary)



Fig 2: Girnar Wildlife Sanctuary



Fig 3: *Peristylus stocksii* in natural habitat.

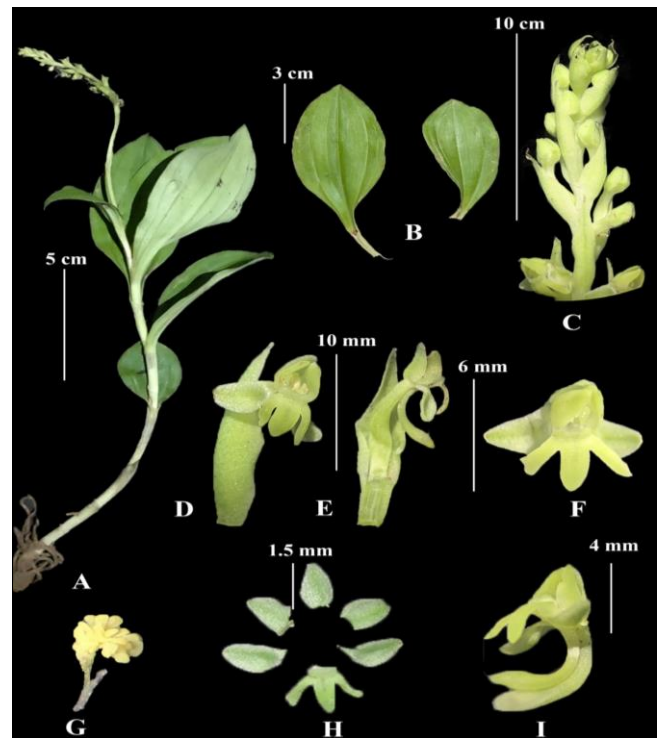


Fig 4: *Peristylus stocksii*. A. Habit B. Leaves C. Inflorescence D. Flower (front view) E. Flower (side view) F. Flower, G. Pollinia H. Dissected floral parts I. Flower with spur.

References

1. Almeida MR. The Flora of Maharashtra, Orient Press, Mumbai, 1998.
2. Bhatt MR. Systematic Studies on Orchidaceae of Gujarat, Ph.D. thesis, Maharaja Sayajirao University of Baroda, 2018.
3. Bole PV, Pathak UM. Flora of Saurashtra. Botanical Survey of India, Howrah, Kolkata, 1988, 137–154.
4. Cooke T. The Flora of the Presidency of Bombay. Botanical Survey of India, 1958, 186–222.
5. Faden RB, Dahlgren RMT, Jacobsen N, Clifford HT, Jacobsen K, Yeo PF. *et al.* The Families of the Monocotyledons: Structure, Evolution, Taxonomy. Springer Berlin Heidelberg, 1985, 1–106.
6. Gadhvi K, Gamit S, Dudhagara D, Vyas S, Yadav RA. new distributional record of bladderwort species *Utricularia janarthanamii* for Gujarat state. *Plant Science Today*, 2021b;8(1):182-184.
7. Gadhvi K, Gamit S, Parmar V, Vyas S, Yadav R. *Habenaria Marginata* Colebr. A new distributional record for saurashtra region, Gujarat state. *The Journal of Indian Botanical Society*, 2021a;101:163-165.
8. Gamit SB, Maurya RR, Qureshimatva UM, Solanki HA. Check list of flowering plants in Tapi District, Gujarat, India. *International Journal of Advanced Research*, 2015;3(10):1104-1123.
9. Govaerts R. World Checklist of Monocotyledons Database in ACCESS. The Board of Trustees of the Royal Botanic Gardens, Kew, 2003, 1-71827.
10. Kotiya A, Singh J, Jalal JS, Singh GP, Reddy GV. *Peristylus lawii* Orchidaceae. A New Record for Rajasthan State, India, 2020.
11. Misra S. *Orchids of India*. Bishen Singh Mahendra Pal Singh, 2007.
12. Nagar S. *Biodiversity of Barda hills and its surroundings*. Scientific publisher Jodhpur, India, 2005.

13. Patel R. Forest flora of Gujarat State, Published by Forest Department, Baroda, Gujarat State, 1971.
14. Pijl L, Dodson CH, Orchid flowers. their pollination and evolution. The Fairchild Tropical Garden the University of Miami Press, 1966, 1–214.
15. Qureshimatva UM, Maurya RR, Gamit SB, Solanki HA. Check list of flowering plants in Panchmahal District, Gujarat, India, 2016.
16. Raghavan RS, Wadhwa BM, Ansari MY, Rao RS. A check list of the plants of Gujarat. Rec. Bot. Surv. India, 1981:21:1–127.
17. Santapau H, Kapadia Z. The Orchids of Bombay Manager of Publications, Government of India, New Delhi, India, 1966, 1–239.
18. Santapau H, Plants of Saurashtra a preliminary list. Saurashtra Res. Soc. Rajkot, 1953, 1-45.
19. Shah GL. Flora of Gujarat State. Sardar Patel University Press, 1978, 1–1074.
20. Singh SK, Agarwala DK, Jalal JS, Dash SS, Mao AA, Singh P. *et al.* Orchids of India, a pictorial guide, botanical survey of India. Kolkata, 2019, 548.
21. Tiwari UKL, Amit Kotia AK, Tana Mewada TM, Rawat GS. New distributional record of an endemic orchid, *Peristylus stocksii* Hook. f. Kraenzl., from Rajasthan, 2009.
22. Wainer J. Girinagar: Junagadh Mount Girnar. Chapter 30 Vegetation of Girnar. Kindle Edition, Australia, 2015.