



Habenaria gibsonii var. *foetida* (Orchidaceae): An addition to the flora of Rajasthan

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General Note

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ABSTRACT

Habenaria gibsonii Hook.f. var. *foetida* Blatt. & McCann. is reported for the first time from Rajasthan state and collected from Mount Abu Wild Life Sanctuary. A detailed description along with colored photo plate, distribution map, associates. Threats facing by species are discussed and conservation strategies suggested.

Keywords: *Habenaria gibsonii* var. *foetida*, Addition, Flora of Rajasthan.

1. INTRODUCTION

Habenaria Willdenow (1805: 5) is one of the large genus of the family Orchidaceae having c. 883 terrestrial species (Govaerts et al. 2018). *Habenaria* has wide distribution throughout the tropical and subtropical regions of the Old and New World (Pridgeon et al. 2001), with centers of diversity in Brazil, southern and central Africa and East Asia (Batista *et al.*, 2013). In India it is represented by 69 species and 39 of them are found in the Western Ghats, with 22 being endemic (Nayar *et al.* 2014, Kumar *et al.* 2016) while in Rajasthan 3 species occurs (Choudhary *et al.* 2011; Sharma 2003; Shetty and Singh 1991).

2. MATERIAL AND METHODS

While working on the GIS mapping of threatened plants of Rajasthan during 2017 to 2019, authors was conducted survey of Mount Abu wildlife sanctuary during August, 2019 and collected unidentified herbarium samples of family Orchidaceae. These collected herbarium samples deposited at Botanical Survey of India, Jodhpur (BSJO). After critical study, scrutiny of literature (Shetty and Singh 1991; Sharma 2003; Choudhary *et al.* 2011; Nayar *et al.* 2014, Kumar *et al.* 2016) and herbaria (BSJO, BSA, RUBL, JAC, BLAT, DCH, CAL, K), it is identified as *Habenaria gibsonii* Hook.f. var. *foetida* Blatt. & McCann. It is also noticed that earlier this species was not reported from Rajasthan. So this species is addition the flora of Rajasthan state.

3. TAXONOMIC TREATMENT

Habenaria gibsonii Hook.f. var. *foetida* Blatt. & McCann, J. Bombay Nat. Hist. Soc. 36: 16 1932; *Habenaria foliosa* A. Rich. var. *foetida* (Blatt. & McCann.) Bennet. J. Econ. Taxon. Bot. 5: 452. 1984.

Terrestrial, tuberous perennial erect herbs, up to 60 cm high. Tubers one or two, ellipsoid, 2–3 × 1–2 cm. Lower portion of stem with 2–3 clasping lanceolate sheaths. Leaves 5–7 with the lowest and top most smaller than the rest, gradually changing into floral bracts, alternate 5–7 × 3–4.5 cm, ovate-lanceolate, margins wavy, apex pointed or acute, pale green. Flowers in lax, raceme inflorescence 10–20 cm long; greenish white, pedicels short, 1.5–2 mm long, slightly curved, bracts ovate-acute. Sepals green, unequal; dorsal obovate when spread, arching over, 5–8 × 4–6 mm, 3-nerved; lateral sepal white, 0.8–1 × 0.5–0.6 cm, sub falcate, acute at apex. Lateral petals 2 partite, upper segment 0.8–1.1 × 0.1 cm, sub falcate, acute at apex; lower segment shorter, linear acute at apex. Lip 3 partite middle one linear and two lateral ones 0.8 cm long linear, white. Rostellum shorter than the column, triangular; Column ca 0.4–0.5 cm long; Pollinia 0.2 cm long; pollinial cap possesses green small appendages on both the side. Ovary 2–2.8 cm long, curved, subsessile, beaked. Capsules 2–2.5 cm long, fusiform and ribbed; seeds many, minute, brownish, glabrous [Fig. 1, Fig. 2 & Fig. 3].

Fl. & Fr.: August –September

Specimen examined: RAJASTHAN: Mount Abu wildlife sanctuary, near sunset point, 24.58682° N, 72.69658° E, 04.08.2018, C.S. Purohit & Kulloli R.N. 36953 (BSJO).

Status: Include in CITES (Appendix II).

Ecology

This species has its typical habitats in rocky and gravelly area and undergrowth in forest areas, often on moist slopes in core zone of Mount Abu wildlife sanctuary, associated with *Carvia callosa*, *Securinega leucopyrus*, *Lantana camera*, *Agave americana*, *Euphorbia nerifolia* and *Carissa carandus*. Its prefer high altitudes between 900 – 1200 m.s.l.

Global distribution

Cambodia, Laos, Thailand, Vietnam and India [Gujarat (Bhatt & Nagar, 2014), Jharkhand (Kumar et al. 2007), Karnataka, Maharashtra and Odisha (Misra 2004)], Rajasthan [Fig. 4].

Note

Habenaria gibsonii is a species represented by two varieties, both of which were originally described from the Khandala region of India (Blatter & McCann 1932), and with both later found also in Orissa (Misra 2004) and Jharkhand (Kumar et al. 2007). Variety *foetida* is differentiated from the homotypic form in possessing foul smelling flowers and relatively short stigmatic processes up to 1.5 mm long that are appressed around the mouth of the spur, whereas the latter has apparently odourless flowers with relatively long stigmatic processes up to 2.5 mm long that are appressed only to the back of the mouth of the spur.

Although the flowers belonging to our recent collection of plants from Mount Abu, Rajasthan (Purohit & Kulloli, 36953) were emitting a pungent odour. Most of the authors have not commented on a floral odour, probably because they were working with herbarium specimens and not fresh material. During processing of herbarium specimens pungent odour of flowers lost. Because a thorough investigation of the stability of these rather minor and perhaps dubious differences within and between populations is beyond the scope of the present paper, for now we maintain the two varieties as distinct.



Fig. 1 Natural location of *Habenaria gibsonii* var. *foetida* at Mount Abu Wildlife Sanctuary



Fig. 2 Full Blooming of *Habenaria gibsonii* var. *foetida* in Natural location

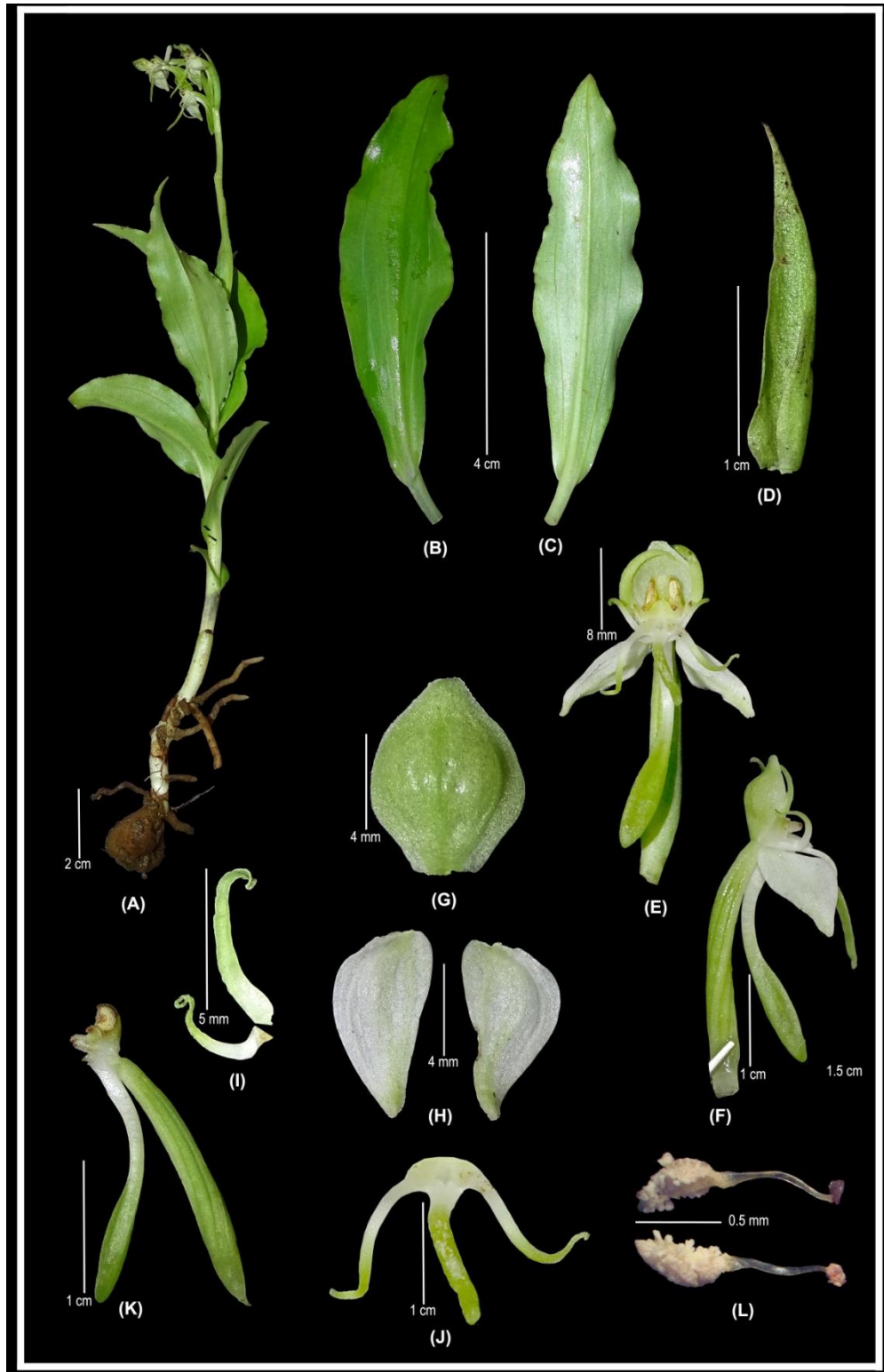


Fig.3 *Habenaria gibsoni* var. *foetida*.

- | | |
|------------------------------|-------------------------------|
| (A) Whole plant with tuber; | (B) Leaf Surface ventral view |
| (C) Leaf Surface dorsal view | (D) Bract; |
| (E) Front view of Flower; | (F) Lateral View of Flower; |
| (G) Sepal dorsal view; | (H) Lateral Sepals; |
| (I) Lateral Petal; | (J) Labellum; |
| (K) Spur and Ovary; | (L) Pollinarium |

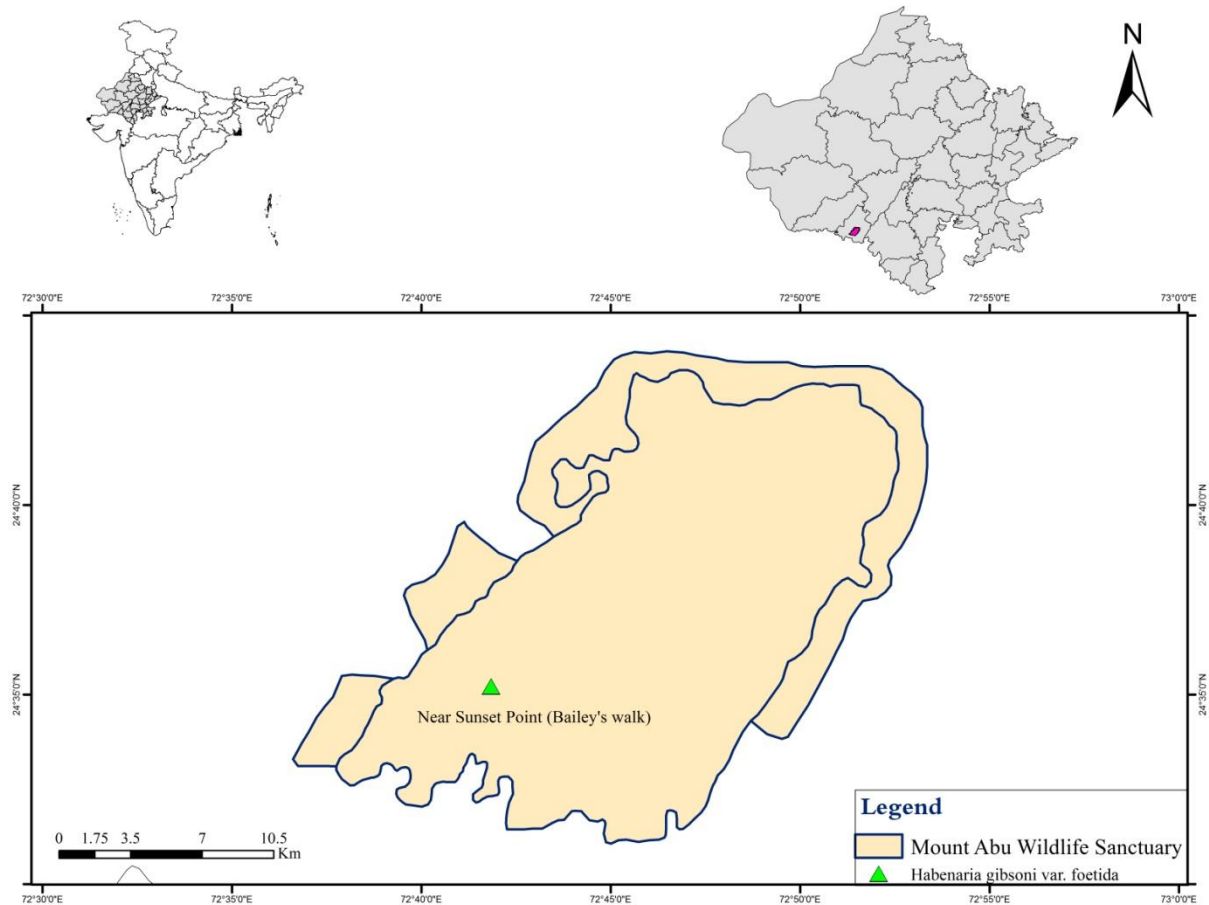


Fig. 4 Distribution map of *Habernaria gibsonii* var. *foetida* in Rajasthan

Threats factors

Major threat to decline of this species is consumption of tubers by wild animals like bear and wild boar as food. The remaining population is perpetuating by means of the tubers, having edible and medicinal properties which are collected by local people for their routine use. Habitat destruction and developmental activities for tourism purpose is also threat to decline the population.

Author's contribution:

R.N. Kulloli's contribution in the paper:

- Prepare photo plate
- Prepare paper jointly both authors
- Collected plant jointly both authors
- Describe plant jointly both authors

C.S. Purohit's contribution in the paper:

- Prepare distribution
- Prepare paper jointly both authors
- Collected plant jointly both authors
- Describe plant jointly both authors

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Conflict of Interest: The authors declare that there are no conflicts of interests.

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