Habenaria barbata Wight ex Hook.f.- a new record for Central India

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Abstract: *Habenaria barbata* Wight ex Hook.f. (Orchidaceae) was rediscovered from Krishnamali hills of Karlapat Wildlife Sanctuary, part of the Easter n Ghats, Odisha, India growing at an altitude of 1000 m asl. After critical review of the published literature on its distribution, it was found to be a new record for the Central India. The present paper deals with its description, distribution and ecology.

Introduction: Mineral deposited plateaus are always very interesting habitats for herbaceous flora. Nestled at the northern part of Eastern Ghats hill ranges, Karlapat Wildlife Sanctuary in South Kalahandi Forest Division is considered as large repository of Bauxite and other minerals, which are now posing threats for the rich biodiversity of the region because of unscrupulous mining. Covering an area of 175.3 sq km, Karlapat Wildlife Sanctuary is centrally located in the district of Kalahandi of south Odisha between 82°56'18" to 83°19'35" East longitude and 19°36'50" to 19°50'51" North latitude. Karlapat harbours both flora and fauna of Northern and Southern elements having a sizable population of flagship and indicator species like Tigers, Elephants, Leopards, Gaur, Malabar Giant Squirrel and Small-clawed Otters etc. (Palei *et al.*, 2011). The undulated terrains, perennial hill streams and innumerable valleys, tropical moist deciduous forests along with high altitude plateaus support rich and varied flora and fauna of socio-economic and ecological importance. Recent discovery of *Corallodiscus lanuginosus* (Rout *et al.*, 2008) and *Nymphoides parvifolia* (Rout *et al.*, 2010) from Krishnamali mountain of Karlapat Wildlife Sanctuary provides ample opportunity to state that the flora of this area is under surveyed. The Orchidaceous flora of Odisha virtually remained unknown prior to the works of Mooney, 1950 and Panigrahi *et al.*, 1964 who cited 32 and 25 species, respectively from the state. Later Mishra (2003) published a book on Orchids of Orissa out of his detailed exploration of Orchids from 1968 to 2001. He reported 130 species of Orchids under 48 genera from different phytogeographical regions of the State. *Habenaria* Willd is a group of terrestrial orchids represented by around 600 species in the world (Dressler, 1993) and 59 species in India (Choudhury *et al.,* 2011).

Fig.1. *Habenaria barbata* Wight ex Hook.f. (A) Whole plant, (B) Leaf, (C): Tuberiods, (D) Flower

Mishra, 2004 reported 17 species of Habenaria from Odisha. During a recent survey of Krishnamali Hills ($19^0$41'09.17" N, $83^0$4'17.20" E) of Karlapat Wildlife Sanctuary, Kalahandi district, part of the Eastern Ghats, first author discovered a very interesting terrestrial orchid. Plant was growing at an altitude of 1000 m asl under the canopy of *Shorea robusta* and *Terminalia alata*. After critical analysis and review of published literature on flora of Odisha (Saxena and Bramham, 1996), Orchids of Odisha (Mishra, 2003) and Catalogue of Indian Orchids (Kumar and Manilal, 1994), the plant was identified as *Habenaria barbata* Wight ex. Hook.f. (Fig.1). The current finding of *H. barbata* from Krishnamali hill of Karlapat Wildlife Sanctuary is found to be a new record for the Central India. Hence we provide an insight on the taxonomy and description of this species. This is an addition to the Orchid Flora of Odisha.

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Description

***Habenaria barbata* Wight ex Hook.f., Fl. Brit. India 6: 133. 1890; Fischer, in Fl. Pres. Madras 3: 1468. 1928.**

Habenaria. virens (Lindl.) Abeyw. in *Ceylon Journal of Science, Biological Science* 3:151, 1959, nom. illeg.
Ate virens Lindl., Gen. Sp Orch. Pl. 327. 1835.
Type: R. Wight ex Hook.f. *2084*, Flora of Madras.

Terrestrial erect herb, 15 to 35 cm tall. Tubers hypogeal, ovoid or oblong, 2-3.3 cm diameter. Stem with purple hue, erect. Leaves 5-6, scattered in the lower 1/3rd of the stem, ovate or narrow-lanceolate, 2-6.5 x 1.2-2 cm, acute or acuminate, margin entire, white, slightly wavy and sheathing at the base. Inflorescence terminal, many-flowered lax raceme, up to 20 cm long. Bracts ovate, 1.5-2 x 0.5-0.8 cm, foliaceous, sheathing, acuminate, longer than ovary. Flowers greenish-purple, *ca* 2cm across. Sepals unequal, ovate, green; dorsal sepal 0.8-1.2 x 0.3-0.6 cm, acuminate, green, glabrous; lateral sepals falcate, 0.8-1.2 x 0.3-0.6 cm, acuminate, green, glabrous. Petals entire at base, bipartite above the middle, broader, pubescent, upper lobe longer, curved upwards, 0.5-0.8 cm. Lip 1.3-1.5 x 0.5-0.6 cm, longer than sepals, scabrid pilose, linear at base, 3-furcate, greenish purple, side lobes shorter than mid lobe; spur as long as the ovary, 1.5 cm. Pollinia obliquely obovoid, 0.1-0.2 cm, yellow.

Note: This species was originally named *Ate virens* by Lindley (1835). Wight ex Hook.f. (1845) named it as *Habenaria barbata*, by using a separate specimen. Later, J. D. Hooker (1890) validated the name *H. barbata*. Abeywickrama (1959) transferred *Ate virens* to *Habenaria* which was illegitimate as there was already another *Habenaria virens* of P.F. Hunt & Summerhayes in existence in 1845.

Ecology and distribution: Occasionally found in bauxite deposited plateau tops having grasslands at an elevation of 900 to 1000 m asl under the canopy of high altitude *Shorea robusta* and *Terminalia alata*. Only 3 plants were observed on a transect of 2 km and nearby areas. Currently the habitat of this species is used for the cultivation of *Guizotia abyssinica* (family - Asteraceae) by the villagers residing around the foot hills of the mountain. At the same time a large herd of buffaloes are being left free to graze on the plateau from the month of June to November as this plateau holds water from June to February and large grassland on the plateau top provides amicable environment for the Buffaloes. The owners are generating good revenues by selling the curd, milk etc. due to this practice. Since the growing session of this species is coinciding with the grazing period of buffaloes, the habitat as well as the species is threatened. Another very interesting observation made by the author is the damaging of the tubers of the Orchids by Wild Boar on the plateau which was also confirmed by the direct evidences and interaction with the local communities. As this plateau is the critical habitat for many terrestrial orchids like *Pecteilis gigantea*, *Habenaria grandifloriformis*, *Peristylus goodyeroides*, *Nervilia crociformis*, *Nervilia plicata* etc. and the recently discovered *Habenaria barbata*, tubers of some of the plants were found uprooted by the wild boars in the plateau top. Hence to conserve and protect the rich and diverse terrestrial orchidaceous flora of the plateau, a detail survey and documentation is needed. As people of 26 villages reside around the hill are getting benefited from various kind of ecosystem services from the hill, awareness programs focusing on the importance of this hill has to be taken up by the forest department to protect and conserve the whole habitat of the Krishnamali hill. Some of the activities performed by the villagers have to be regulated including grazing on the top plateau, shifting cultivation in the habitat of Orchids etc., while developing habitat management plan for the sanctuary.

Global Distribution: Endemic to Sri Lanka and India (Fernando and Ormerod, 2008 and Hooker, 1890).

Flowering and Fruiting: October-December

Specimen examined: P.K. Dash 10373, Krishnamali hills, Karlapat Wildlife Sanctuary, Kalahandi, 1000m asl on 18/09/12 (B); R. Wight ex Hook.f. 2084 (K000247472), Madras, India (Type); S. coll, s.n. (K000247410), Madras, India; G. Thomson s.n. (K000247411), Madras, India.

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