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RESEARCH ARTICLE

***Vanda tessellata* (Roxb.) Hook. ex G. Don (Orchidaceae) an addition to the Flora of Bhitarkanika National Park, Odisha, India**

S. P. Panda¹, H. N. Subudhi², A. K. Sahu³, K. K. Swain⁴ and M. Biswal⁵

1. ICZMP, O/o DFO, Mangrove Forest Division (WL), Rajnagar, Kendrapara

2. CRRI, Bidyadharpur, Cuttack

3. SPMU, ICZMP, 108 Suryanagar, Bhubaneswar

4. Mangrove Forest Division (WL), Rajnagar, Kendrapara

5. PMU, ICZMP, Wildlife Wing, Bhubaneswar

Abstract:

Exhaustive field surveys were conducted in the aegis of ICZM Project to enumerate, recording of information and sample collection of plants of Bhitarkanika. Bhitarkanika has acquired a special position all round the globe for its rich biodiversity especially the mangroves. Its peculiar geographic location coupled with varied micro climatic conditions enables to harbour one of the richest diversity of mangroves; first in India and second in the world next to Papua New Guinea. But however there was no record of any orchid species from any mangrove forests of the state where as a healthy orchid diversity was reported from the tidal and littoral forests of Andaman and Nicobar Islands. This striking factor provides the preliminary platform to undertake survey programme for prevalence of orchids, which resulted in addition of an epiphytic orchid i.e. *Vanda tessellata*, which was not reported earlier from Bhitarkanika National Park.

So the present communication deals with the detailed nomenclature, phytogeography, phenology of flowering, ecology etc. Concurrently some useful aspects of this taxon have also been outlined.

Key Words:**Introduction**

Bhitarkanika lying between 20° 30' to 20° 50'N Latitude and 86°30' to 87°06'E Longitude of Kendrapara district and in the North-Eastern Coast of Odisha state is a treasure house of biodiversity (Map.1). Bhitarkanika has a special repute among the protected areas like National Parks and Sanctuaries for its rich floral as well as faunal diversity. Out of these, the mangrove forests of deserve special mention being the rare, rich and unique ecosystems of the world. The mangrove forests of Bhitarkanika are mainly located in the deltaic regions of river Brahmani and Baitarani. Bhitarkanika have the 2nd largest mangal formation of the country next to the Indian Sundarbans in the state of West Bengal in respect geographical distribution. The mangrove palm, *Nypa fruticans* have been introduced in the forests of this National park from the Sundarbans. However, this is a native species of Sundarbans although it has shown luxuriant growth here in Bhitarkanika. This is the major difference between the flora of both these mangrove formations. Due to the varied edaphic conditions, Bhitarkanika is endowed with rich and diverse mangrove flora in addition with some non-mangrove dry deciduous and moist deciduous elements. There is a significant patch of miscellaneous forests in the central part of the Bhitarkanika PRF where these non-mangrove taxa were distributed abundantly due to lack of inflow of tidal water and occurrence of sandy soil. Some of the dominant species of this forest type are *Ficus sp.*, *Borassus flabellifer*, *Barringtonia acutangula*, *Diospyros ferrea*, *Diospyros sylvatica*, *Lanea coromandelica* etc. Haines (1921-25), the then Conservator of Forests and the pioneer worker has reported 37 species under 30 genera belonging to 23 families from Mahanadi delta and Chilika lake without mentioning the precise locality of prevalence. He briefly discussed the mangrove formation under the heading "Coastal tract" (vide general chapter of the Flora and Botanical formation. Botany of Bihar and Orissa.1: 48-50.1925), where in, there is mention of some mangrove species and their associates. Haines has provided general information about the coastal flora in the introductory part of his treatise "The Botany of Bihar and Orissa". Mooney (1950), the subsequent worker also made a short trip to Jambu, Hukitola and False point of Mahanadi delta in the

month of June 1949. He added 12 species from these regions to his compendium when his treatise “Supplement to the Botany of Bihar and Orissa” was in the press. Of these, 10 species were turned out to be the new records for the state of Odisha. Both the workers, Haines (l.c.) and Mooney (l.c.) emphasized that further detailed studies of the unexplored and under explored coastal belt will add more species to the coastal flora. Banerjee (1984) have recorded 312 angiosperms including 2 pteridophytes belonging to 80 families from the sanctuary area. Out of these, 90 are monocots belonging to 18 families where as 209 are dicots under 62 families. In the past, many workers botanized the mangrove chunks of Odisha especially Bhitarkanika but no one have reported any orchid species from the mangrove forests (Choudhury 1984, 1990a, 1990b and Reddy *et al.* 2006). After these significant works, Saxena and Brahmam (1994-96) while compiling the flora of the state did not mention a single species of orchid from this area. Recently Kar and Chadha (1999) were given a detailed list of plant species occurring in this sanctuary, which is compilation of earlier data. But there is also no mention of any orchid species. So, it is quite clear that there was hardly any prior record of orchid species from the mangrove forests of Odisha in general and Bhitarkanika in particular. But in contrast the mangrove forests of Andaman and Nicobar Islands harbour number of orchids. The pioneer orchidologist of Odisha, S. Misra have visited the mangrove forests of Bhitarkanika exclusively for the search of orchids, but his effort resulted no addition of orchid from that area (Technical Report of AICOPTAX-Orchids, submitted to Ministry of Environment & Forests, Government of India, New Delhi, 2012).

Orchidaceae is the largest family of the world and in the state of Odisha it is ranked 8th position (among the prevailing families) while there was no mention of any orchid species in the Flora of this National Park. This is the striking factor behind (undertaking) this piece of work. Taking these facts into account efforts were made for the prevalence of orchids. Finally in Bhitarkanika PRF, a clump of epiphytic plants were observed in budding stage. After critical observations and reference of perusal of literatures the identity of this species has been conformed to be *Vanda tessellata* (Roxb.) Hook. ex G. Don. As in the earlier flora/ list of plants of Bhitarkanika there was no mention of any orchid species, so this forms a new record for the flora of Bhitarkanika in respect of family, genus and species. Apart from this, it is the first record of an orchid species from the mangrove forests of Odisha.

Results and Discussion

Orchids are the individual members of the world’s largest flowering plants family i.e. Orchidaceae comprising over 22,000 species of different habits like epiphytic, lithophytic, saphrophytic and terrestrials. These are very rare and special type of plants having immense role in horticulture as well as medicine industries. These are the indicative species of a particular forest. Like finding of *Vanda tessellata* (Roxb.) Hook. ex G. Don indicates that the forest is an open type of forest. So, the family orchidaceae along with its individual members placed in the special group of IUCN (International Union Conservation of Nature and Natural Resources). Considering these facts, a concise up-to-date nomenclature, description, phenology, ecology along with their colossal role in medicine have been provided in brief.

Vanda tessellata (Roxb.) Hook. ex G. Don in Loud. Hort. Brit. 372. 1830; Haines, Bot. Bihar and Orissa 3: 1233. 1961; Matthew, Fl. Tam. Carnatic 3(3): 1600. 1983; Pullaiah, Fl. Andhra Pradesh 3: 959. 1994; Misra, Orch. Orissa 635. 2004. *Epidendrum tessellatum* Roxb. Pl. Corom. t. 42.1795. *Vanda roxburghii* R. Br. in Ker-Gawl., Bot. Reg. 6: t. 506. 1820.

Robust epiphytic herbs. Stems woody, terete, bearing aerial roots. Leaves sessile, plicate, articulate at base, strongly keeled, channeled, glabrous, coriaceous, oblong, obtuse, apex praemorse with unequal lobes, 10-14 cm long. Inflorescence axillary lax raceme, longer than the leaves; racemes with 4-12 spreading flowers. Flowers large, 40-50 mm across, pedicellate, bracteate, zygomorphic, showy, bluish colour with brown nerves, clawed, mild scented. Lip shorter than the sepals and petals, funnel shaped, fleshy, 3-lobed; hypochile with a conical spur. Capsules clavate, angled, woody, many seeded.

Flowers : March- May and September-December.

Fruits: June-January.

Locality : Bhitarkanika PRF.

Ecology: Common in deciduous forests in open vegetation or partly exposed conditions.

Illustration : Matthew, Illus. Fl. Tam. Carnatic f. 717. 1982.

Taxonomical Note: This species is very well known for its colour variations. Over 50 shades in green, yellow, blue etc. were recorded (Jayaweera, 1981). However, in Odisha around 10-12 shades are found (Misra, 2004). This is quite a hardy species among all the species of orchids very much suitable for cultivation in garden conditions.

Medicinal Uses: The alexiteric and antipyretic; useful in dyspepsia, bronchitis, inflammations, piles, hiccup. Externally the root is used in rheumatism and allied disorders and diseases of the nervous system. It is also remedy for secondary syphilis and scorpion sting. Juice of the leaves is given in otitis and the paste as febrifuge. The roots possess significant anti-inflammatory activity.

Chemical composition: The plant has an alkaloid, a glucoside, tannins, B-sitosterol, y-sitosterol and a long chain aliphatic compound, fatty oils, resins and colouring matters. Roots contain tetracosyl ferrulate and B-sitosterol-D-glucoside.

Traditional uses: In Unani system root is used as tonic to liver and brain; good for bronchitis, piles, lumbago, toothache, boils of the scalp; lessens inflammations; heals fractures. The root is bitter and useful in rheumatism and allied disorders. It also enters into the composition of several medicated oils for external application in rheumatism and diseases of the nervous system. The leaves are pounded into a paste and applied to the body during fever. A compound decoction of this root is being administered in case of Hemiplegia. The leaves are pounded and the paste is applied to the body to bring down fever; their juice is dropped in the ear for the treatment of Otitis media and other inflammatory conditions. The roots are used in Dyspepsia, Bronchitis, Rheumatism and also in fever. The entire herb is also used in sciatica. (Misra, 2004; Panda *et al.*, 2006 and Subudhi *et al.*, 2012)

50 gm of root is boiled in 250 ml of water until it reduces to 100 ml and filtered and cooled. Then 5ml of the decoction is mixed with 3 to 5 ml of honey taken orally on empty stomach twice a day for one month for treatment of sexually transmitted diseases. The root paste is also used to cure rheumatism and nervous disorders (Dash *et al.*, 2008).



Map.1. Map of Bhitarkanika Wildlife Sanctuary and National Park



Plate 1. *Vanda tessellata* (Roxb.) Hook. ex G. Don in blooming

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