

**ENDEMIC SPECIES OF FLOWERING PLANTS OF PENINSULAR INDIA OCCUR
IN SATPUDA MOUNTAIN RANGES OF NANDURBAR AND DHULE DISTRICTS,
MAHARASHTRA, INDIA WITH SPECIAL REFERENCE TO FAMILY
ASTERACEAE AND ORCHIDACEAE**

Garud B.D

P. G. Department of Botany

Jaihind Educational Trust's, Z. B. Patil College, Deopur, Dhule-424002

Mobile: 9423495657, e-mail- balasahebgarud@gmail.com

ABSTRACT

Present paper deals with 18 endemic species of flowering plants of Asteraceae and Orchidaceae of Peninsular India occur in Satpuda mountain ranges of Nandurbar and Dhule districts. The family Asteraceae comprising of about 31 genera and 49 species, out of these 8 species are endemic in the Satpuda mountain ranges. The family Orchidaceae comprising 9 genera and 24 species, out of these 10 species are endemic to the region.

Keywords: Endemic Species, Asteraceae and Orchidaceae

INTRODUCTION

The Satpura Range is a range of hills in central India. The range rises in eastern Gujarat state running east through the border of Maharashtra and Madhya Pradesh to the east till Chhattisgarh. The range parallels the Vindhya Range to the north, and these two east-west ranges divide Indian Subcontinent into the Indo-Gangetic plain of northern India and the Deccan Plateau of the south. Most of the Satpura range was heavily forested and show vast diversity in flora and fauna with high degree of endemism, which had attracted many botanists in the past and it is considerably explored by many workers, such as (Graham, 1839), (Dalzell, 1850-52) (Gibson, 1863), (Brandis, 1874), (Lisboa, 1886), (Woodrow, 1897, 1898a, 1898b, 1899, 1901.), ((Talbot, 1906), (Blatter and McCann, 1935) and (Cook, 1901-1908, 1958 reprinted).

The vegetation of Satpuda mountain ranges can be grouped into two main forest types (Champion and Seth, 1968) i) Southern tropical deciduous forest- sub type- slightly moist teak forest and ii) Mixed dry deciduous forest with teak sub type. The former type occur in the hilly portion and latter in on foot hills of Satpuda. The climatic regimes, forest types and

habitat condition that provides a favourable environment for accommodating diverse life forms and species. The flora is highly diversified in vegetation and has a rich number of floristic components due to its topography, climatic and edaphic factor, which are favourable for luxurious vegetation. But the area has been subject to gradual deforestation in recent decades, although significant stands of forests remain. These forest areas also provide habitat to several at risk and endangered species. Asteraceae forms the largest family of the flowering plants (Funk et al. 2009). In India, Asteraceae are represented by 900 species under 167 genera (Hajra et al. 1995). The family is cosmopolitan and occurring in almost every habitat. The chief centre of diversity of the Indian Asteraceae is the Himalayan biogeographic zone. This is due to its variable climatic condition and altitudes, which in turn have resulted in diverse habitats. The most dominant family of the world Asteraceae is occupying 3rd position in the flora of Toranmal hill station of Satpuda (Garud,1999, 2019,) and Dhule (Patil, 2003, Varghese, M. 1988), 4th position in Gujarat (Shah,1978), 5th position in Maharashtra (Mahabale,1978) and 6th position in Bombay Presidency (Cook 1901-1908).

Orchidaceae is the second largest family of flowering plants in the world, comprising of about 779 genera and 22,500 species (Mabblerley, 2008). Peninsular India consist 130 endemic species belonging to 38 genera, of these, 43 are terrestrial, 85 epiphytic and two holomycotrophic (saprophytic). The Western Ghats and deccan plateau has 123 and 29 endemic orchid species and Eastern Ghats has 22 endemic orchid species (Jeewan Singh Jalal et.al.2012). The endemic taxa occur in a restricted area usually isolated by geographical or temporal barriers (Ahmedullah & Nayar, 1987). Orchids are very sensitive to habitat degradation and fragmentation, In India; the orchid diversity is represented by 1,331 species belonging to 186 genera (Misra, 2007) , distributed mainly in eastern Himalaya, Western Ghats and Khaki hills. The world richest diversity of orchid genera and species is found in the tropics and rare in arctic region. Orchid in temprate region are mainly terrestrial while those tropical region are mainly epiphytic, some time climbers. The family encompasses about 6-11% of all seed plants (Yohan Pillon et.al.2007). The present study area the family orchidaceae comprising of about 9 genera and 24 species out of these 10 endemic species of Peninsular India occur in Satpuda mountain ranges of Nandurbar and Dhule districts, The family occupying 9th position in study area and 8th position in Bombay Presidency(Cook, T. 1901-1908), and 6th position in Maharashtra, (Mahabale,1978).

(Garud, et.al.2020) reported 2 species of Orchidaceae are critically endangered viz. *Eulophia herbacea* and *Eulophia ramentacea* and 1 species is endangered viz. *Eulophia nuda* and 3 species of Fabaceae are endangered from this region.

This type of systematic study is a valuable tool for plant taxonomists, forest department,

1	<i>Blumea</i>	<i>eriantha</i>	Asteraceae
2	<i>Blumea</i>	<i>malcolmii</i>	Asteraceae
3	<i>Cyathocline</i>	<i>lutea</i>	Asteraceae
4	<i>Cyathocline</i>	<i>purpurea</i>	Asteraceae
5	<i>Senecio</i>	<i>dalzellii</i>	Asteraceae
6	<i>Senecio</i>	<i>edgeworthii</i>	Asteraceae
7	<i>Senecio</i>	<i>hewrensis</i>	Asteraceae
8	<i>Tricholepis</i>	<i>amplexicaulis</i>	Asteraceae
9	<i>Aerides</i>	<i>dalzelliana</i>	Orchidaceae
10	<i>Aerides</i>	<i>maculosum</i>	Orchidaceae
11	<i>Bulbophyllum</i>	<i>fimbriatum</i>	Orchidaceae
12	<i>Dendrobium</i>	<i>barbatulum</i>	Orchidaceae
13	<i>Dendrobium</i>	<i>ovatum</i>	Orchidaceae
14	<i>Eulophia</i>	<i>ramentacea</i>	Orchidaceae
15	<i>Habenaria</i>	<i>crassifolia</i>	Orchidaceae

touri
sm
depa
rtme
nt, to
agric
ultur
e
colle
ges,
fores
try
instit
utes,

academic institutes. It is a little effort to develop interest to the students of Botany and plant lovers.

Table-1 Endemic Species of study area

16	<i>Habenaria</i>	<i>grandifloriformis</i>	Orchidaceae
17	<i>Habenaria</i>	<i>heyneana</i>	Orchidaceae
18	<i>Habenaria</i>	<i>longicorniculata</i>	Orchidaceae

Description of Taxa:

Each taxon with latest valid name is followed by vernacular name/s, habit, few morphological characters, flowering and fruiting period, distribution and world distribution status

Blumea eriantha DC.

Buradi

Herbs, stem erect, dichotomously branched.

Fl. & Frts. : December- May.

Distri. : Common in open forest and grassland. Kalapani, Veri,

World Distri. : Indian

Blumea malcolmii (C.B.Cl.)Hook. f

A stout herbaceous plant, densely hairy

Fl. & Frts. : October-May.

Distri. : Common on hill slopes and rocky soil. Pimplibari, Koslapani,

World Distri. : Indian

Cyathocline lutea Law ex

Herbs, small, slender; stems scape like.

Fl. & Frts. : October-January.

Distri. : Rare on rocky soil. Astambha, Morjhiri, .

World Distri. : Indian

Cyathocline purpurea (Buch.-Ham. ex. D. Don)O. Ktze. var. **purpurea**.

Suberect herbs, viscid and glandular, silky hairy..

Fl. & Frts. : September-March.

Distri. : Common in wet localities and river banks. Falai, Todikund,
World Distri. : Indo-Burmese-Chinese

Senecio dalzellii C.B.Cl. Sonki

Herbs

Fl. & Frts. : September-October.

Distri. : Common in hill slopes and grasses. Dhamanmal, Kathi,

World Distri. : Indian

Senecio edgeworthii Hook.

Herbs erect.

Fl. & Frts. : August-November.

Distri. : Occasional in hill slopes and rocky soils. Toranmal, Khadki,

World Distri. : Indian

Senecio hewrensis (Dalz.) Hook.f

Herbs, annuals.

Fl. & Frts. : August-October.

Distri. : Common on hill slopes and rocky soil. Toranmal, Kalapani,

World Distri. : Indian

Tricholepis amplexicaulis C.B.Cl. Dahan

Herbs, annual, erect.

Fl. & Frts. : October-January.

Distri. : Common on hill slopes, grasslands and rocky soils. Pal, Khirvel,

World Distri. : Indian

Aerides dalzelliana (Sant.)

Stems short, sheathed. Flowers greenish-white, Capsules narrowly fusiform, ribbed, purplish-brown.

Fl. & Frts. : May-March.

Distri. : Occasional on tall trees. Amalibari,

World Distri. : Indian

Aerides maculosum Lindl

Stems sheathed. Flowers pink, pedicelled, bracteate. Capsules obovoid, strongly ribbed, shortly stalked.

Fls. & Frts. : May-October.

Distri. : Common on trees. Amalibari,

World Distri. : Indian.

Dendrobium ovatum (Willd.) Kranzl

Pseudobulbs, mauve-brown, leafless during flowering

Fl. & Frts. : September-March.
 Distri. : Occasional. Falai, Toranmal,
 World Distri. : Indian.
 Ecological notes: Common in dense forests.

Dendrobium microbulbon A. Rich,

Pseudobulbs crowded, mauve-brown, leafless during flowering, conical, 1-3-jointed

Fl. & Frts. : December-May.
 Distri. : Common on trees. Toranmal, Falai,
 World Distri. : Indian.

Eulophia ramentacea Lindl. ex Wight

Satavri.

Ground orchid Pseudobulbs shortly pyramidal or irregularly 3-cornerecl. Flowers pale maroon with yellow tinge in lax racemes. Capsules drooping, obovoid-

Fl. & Frts. : December-March.
 Distri. : Rare, Toranmal,
 World Distri. : Indian.

Habenaria crassifolia A. Rich

Herbs, Tubers ovate-elliptic or broadly rounded Flowers white,

Fl. & Frts. : August-October.
 Distri. : Rare. Toranmal, Kalapani,
 World Distri. : Indian.
 Ecological notes: Rare on hill tops of Satpuda.

Habenaria grandifloriformis Blatt. & McC.

Chickurkanda.

Tuberous herbs. Flowers white,

Fl. & Frts. : June-November.
 Distri. : Common on hill slopes. Toranmal, Amalibari,
 World Distri. : Indian.
 Ecological notes: Common on ground at Sitakhai in Toranmal.

Habenaria heyneana Lindl

Herbs, tubers 1 or 2, ovoid or oblong-ovoid. Flowers greenish-white. Capsules ellipsoid or oblong.

Fl. & Frts. : August-November.
 Distri. : Occasional. Toranmal,
 World Distri. : Indian.

Ecological notes: A common W. Ghat element reported in Toranmal first time.

Habenaria longicorniculata Grah

Herbs. Tubers ovate or ellipsoid. Flowers white, pedicellate, bracteate. Capsules narrowly fusiform, beaked.

Fl. & Frts. : July-October.
 Distri. : Common on slopes.Toranmal, Falai,
 World Distri. : Indian.
 Ecological notes: Common ground orchid.

REFERENCES

- Ahmedullah M. & M.p. Nayar (1987).** Endemic plants of the India region- Vol. I
 Peninsular India, Botanical Survey of India, Calcutta, 262 pp.
- Blatter, E. & McCann, C. (1935).** *The Bombay grasses.* Sci. Monogr. No. 5. Imp. Council.
 Agric. Res. India, New Delhi (Reprint 1984).
- Brandis, D. (1874).** *The forest flora of North-West and Central India,* London.
- Champion, H.G. & Seth, S.K. (1968).** *A revised survey of the forest types of India,* GOI Press, Delhi.
- Cooke, T. (1901-1908).** *The flora of the Presidency of Bombay,* London 2 Vols.(Reprinted edition, 1958, 3 Vols. Govt. of India).
- Dalzell, N.A. (1850-52).** Contribution to the botany of Western India. Hook. *J. Bot. & Kew. Gard. Misc.* 2: 33-41, 257-265, 336-344; 3: 33-39, 89-90, 120-124, 134-39, 178-80, 206-212, 225-233, 279-282, 345-346; 4: 107-114, 189-195, 341-347.
- Funk, V.A., Susanna, A., Stuessy, T. And Bayer, R. (eds) (2009).** Systematic, Evolution and Biogeography of the Compositae. International Association for Plant Taxonomy, Washington DCS
- Garud, B.D. (1999).** *Studies on the flora of Toranmal,* Dhule District in Maharashtra state, Part I & II, Ph.D. Thesis, North Maharashtra University, Jalgaon.
- Garud, B.D., Yadav, S.S. & Varghese, M. (1999)** Further contribution to the rare, endangered, threatened and endemic species of flowering plants in Maharashtra state. *Geobios New Reports* 18: 91-94.

- Garud, B.D. & Mathew, D. (2019).** Phytoclimatic spectrum of Satpuda mountain ranges in Dhule and Nandurbar districts, Maharashtra State. *International Journal of Research and Analytical Reviews*. 6(1):503-513.
- Garud, B.D., Mathew, D. & Rathod, V.N. (2019).** A contribution to the floral elements of Satpuda mountain ranges in Dhule and Nandurbar districts of Maharashtra State, India. *Ajanta*. 8:1-6.
- Garud B.D. and Dinu Mathew(2020).** Critically endangered species from Satpuda mountain ranges in nandurbar and dhule districts of Maharashtra, India. *Gorteria Journal* Vol-33 Issue,12 PP 460-464
- Garud B.D. and Pratik Shinde (2020).** A contribution to endangered species of flowering plants from Satpuda mountains of north Maharashtra, India. *Gorteria Journal* Vol-33 Issue,12 PP 465-470
- Gibson, A. (1863).** *A handbook to the forests of the Bombay Presidency*, Bombay.
- Graham, J. (1839).** A catalogue of the plants growing in Bombay and its vicinity, spontaneous, cultivated or introduced as far as they have been ascertained, Bombay.
- Hajra, P. K., Rao, R.R., Singh, D. K. And Uniyal, B.P. (eds.) (1995).** Flora of India, Vol-12 & 13- Botanical Survey Of India, Calcutta.
- Jeewan Singh Jalal and J. Jayanthi(2012).** Endemic orchid of Peninsular India: A review. *Journal of Threatened taxa* 4(15): 3415-3425
- Lisboa, J.C. (1886).** *Useful plants of the Bombay Presidency*. Gazett. Bombay Press, Bombay
- Mabberley, D.J. (2008).** Mabberley's plant-book: a portable dictionary of plants, their classification and uses 3rd edition, revised, Cambridge University Press, Cambridge, xviii, 1021 pp
- Mahabale, T.S. (1987).** In Chaudhary, K.K. (Ed.) *Botany and flora of Maharashtra*, General state series, Botany-part IV, Maharashtra state Gazetteers, Gazetteers dept., Bombay. 872 p.
- Misra, S. (2007).** Orchid of India- A Glimpe. Bishen Singh Mahendra pal Singh. Dehradun

Vt 402 pp.

Patil, D.A. (2003). *Flora of Dhule and Nandurbar Districts*(Maharashtra).Bishen Singh Mahendra Pal Singh, Dehradun.

Shah, G.L. (1978). *Flora of Gujarat State*. 2 Vols. Sardar Patel University, Gujarat.

Talbot, W.A. (1906). The distribution of the forest flora of the Bombay Presidency and Sind. *Indian Forester*, 32: 8-24, 56-64, 126-141.

Varghese, M. (1988). *Forest Flora of Dhule District Part I and II*, S.P. University, Ph. D. Thesis (unpublished)

Woodrow, G.M. (1897-1901). The flora of Western India, *Jour. Bombay Nat. Hist. Soc.* 11: 118-130, 265-273, 420-430, 635-651; 12: 162-176, 354-371, 515-526; 13: 427-442.