



# Sources of Plant Name Immortalised But Plant Species on Verge of Extinction: A Precarious Scenario

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## Abstract

This attempt aims at tracing origin or sources of specific names of endemic flowering plant as occurring in the state of Maharashtra. As many as 45 name of species belonging 22 angiospermic families are analysed etymologically. These name are derived from various sources such as person concerned with plant preservation, botanists or taxonomists, geographical regions, cities or towns, fort and fort city, mountains, hill stations, India (as a nation), lake, religious place or pilgrim centre, state name, state capital, etc. These sources of specific names are permanently associated with the plant species and thus are immortalized. An attempt has been also made to know their status regarding habitat, biotic interference, depletion of species, causes of rarity and threats in this region. On one hand, the sources of plant names are immortalized, on the other they meet precarious circumstances leading to extinction. The overall measures to protect and conserve them is discussed relevantly and a deep concern is thereby expressed over the alarming decline of the botanical treasure.

**Key Words:** Endemics, Maharashtra, Etymology, Immortalisation, Threats.

## Introduction

Indian subcontinent is in natural, biological, ethnic, cultural and religion diversity. Importance of plants is passed over long past since Vedic period in India. However, more scientific and rational investigations on plantworld started since 16th century. Scientific plant studies since then continued through excursions, explorations and expeditions by non-Indian foreign researchers and also by subsequent workers in Indian territory. History of botanical exploration have been published by many and very recently by Sikarwar (2020). The botanical researches also discussed about the changing patterns of naturalized Indian Flora (Maheshwari, 1962, 1979; Nayar, 1977) on account plant invasions in India. Similarly, investigations on indigenous, endemic and threatened floral elements have been carried out in view of protection and conservation of Indian biodiversity. (Nayar and Sastry, 1987-2000; Mishra and Singh, 2001; Ahmedullah and Nayar, 1987; Jain and

Sastry, 1980, 1984; Nayar, 1980, 1982). All these floristic studies pointed out number of endemic plants from time to time, however, the bases of coining names have not been focused to date. Present author, therefore, attempted to divulge the preferences of bases while coining botanical names hitherto uninvestigated.

## Methodology

The present author studied endemic flowering plant species as found in the state of Maharashtra and their status. Information is borrowed from various literary sources such as by Jain and Sastry (1980, 1984), Nayar (1980, 1982), Nayar and Sastry (1987-2000), Mishra and Singh (2001), Ahmedullah and Nayar (1987) and Singh *et al.* (2015), apart from regional, state and district floras (Cooke, 1958; Naik, 1998; Sharma *et al.*, 1996; Singh *et al.* 2000, 2001, etc.). The endemic species are enumerated in the Table-I alongwith their IUCN category, source of plant names and critical comments. They are discussed relevantly.

## Results And Discussion

This investigation analysed 45 scientific names of exotic plants exclusively in Maharashtra which belong to 22 families of angiosperms. The sources of coining the specific epithets revealed are: (1) person concerned with plant preservation, (2) botanists or taxonomists, (3) geographical regions, (4) cities or towns, (5) fort and fort city, (6) mountains, (7) hill stations, (8) India (as a nation), (9) lake, (10) religious place or pilgrim centre, (11) state and (12) state capital. As for as endemic species concerned, the morphological features of plants have not received much attention as compared to these aforesaid sources of coining specific epithets. This is so because coiners of specific names are associated intimately with these sources and have specific love for them. Use of these sources with scientific plant names rendered them attached for ever and thus they are immortalized as stated earlier. The specific epithet based on India to coin plant names have been used by Linnaeus. He also used many local plant names based on Indian sources. Thus land, languages and legends of India are immortalized by this great biologist (Jain and Singh, 2014). Linnaeus based many names on the country India, Indian regions, state, faith and legends. A closer study of etymology of names help establish roots of Indian bioculture in scientific literature (Jain and Singh, 2012; Patil, 2006, 2007, 2021).

Although these names have been immortalized, the situations in which these plant species inhabit is not satisfactory. These endemic specific grow in habitats such as: (i) later soil exposed dry, (ii) exposed dry hill slopes, (iii) cleared forests and open places, (iv) moist area, (v) cultivated fields, (vi) degraded hill slopes, (vii) low forest slopes, (viii) degraded grasslands, (ix) rocky places or rocky crevices, (x) open grass pleateau, (xi) fallow fields, (xii) lakes, ponds, ditches, (iii) red soils and flats on hill tops, (xiv) sandy grooves, sandy gravel, (xv) abandoned fields, etc. Thus endemic species have perforce been rendered confined to most of the narrow habitats. Biotic interference on account of (a) deforestation, (b) over-grazing, (c) weed removal and agricultural operations, (d) habital destruction, (e) fragmented and sparse distribution, (f) few individual plants, (g) clearance due development activities and industrialisation, (h) removal of tubers for consumption, (i) narrow range of tolerance, (j) specific ecological requirements, (k) landslides, (l) fire, (m) infestation by caterpillars, (n) urbanization, (o) clearing of lake and ponds, etc. have been responsible for their rarity and depletion. All of these species are critically endangered. The totality of genes, species and ecosystems in a region make its biodiversity.

The loss of biodiversity and the degradation of habitats and ecosystems are mostly irreversible, ultimately resulting in extinction of species.

Rarity of some endemic species can be understood as they are not subsequently inventorised in other regions. For example, *Dipcadi concanense* (Dalz.) Baker (Liliaceae) is shown to have more than 50,000 populations in Ratnagiri district. Its earlier IUCN category as CR will change to VN (i.e. vulnerable) (Chandore, 2015). Attempts on this line are, however, desired for rare taxa. Some taxa are DD (Data Deficient) e.g. *Pycreus bolei* Almeida or NE (Not Evaluated) e.g. *Ischaemum bombaiyense* Bor. (Gaikwad *et al.*, 2014). Further critical sources are obviously needed to arrive at factual reports.

Some of them thought to be extinct or on the verge of extinction. Already 15 endemic species (\*) have been included in Red Data Book of Indian plants (Nayar and Sasty, 1987-2000). Another aspect has to be studied yet. Out of 22 families, many endemic members are dependent floral biologically (particularly pollination) on some peculiar species of insects e.g. members of Aselepiadaceae, Orchidaceae, etc. Because felling of trees and overall depletion of floristic elements, these necessary pollinating vectors may also out of scene. This factor has to be emphasized during the programmes of protection and conservation. The reasons for this precarious condition is dual: (i) unfavourable habitat for growth and nourishment, (ii) biotic interference enlisted above. On one hand, though the sources of endemic plant names are immortalized permanently in scientific world, on the other hand they are threatened severely for the reasons stated above. Although we generally think of their protection and conservation, practically very limited efforts are made on this line. Like water, conservation is everybody's necessity but nobody's responsibility. These endemic taxa although construed as national heritage, they are not given due attention. They are in a sorry state of affairs and exhibit a precarious scenario all over. Stringent actions, strict vigilance and hard decisions for the perpetuation are dire necessities of time. An appeal is, therefore, made for collaborative efforts of government agencies, conservationists and the people who implement measures.

Rainfall, temperature, humidity, soil types and topography have bearings on the different floristic patterns in the state of Maharashtra (India). The forest area in the state is 63842 sq.km. which is c.20.75% of its geographical area (cf. Singh *et al.*, 2000). According to Champion and Seth' classification (1968) of forest, the forests belong mainly to types *viz.*, (I) Moist tropical forests, (II) Dry Tropical forests, and (III) Montane subtropical forests (Mahabale, 1987). Results of past floristic surveys of the present state of Maharashtra are embodied in regional and state floras by Cooke (1958), Naik (1998), Patunkar (1990), Sharma (1996), Singh *et al.* (2000, 2001), besides some district floras by various authors. Changing floristic patterns and their status have been also documented and analysed (Mishra and Singh, 2001; Nayar and Sastry, 1987-2000; Jain and Sastry, 1984. Nayar, 1980, 1982; Ahmedullah and Nayar, 1987, Singh *et al.*, 2015). The present author studied endemic flowering plant species as occurring in the state of Maharashtra with particular emphasis on the sources of scientific plant names. The results of this study are discussed in the following.

De Candolle (1985) employed the term 'endemism' to a confined geographic region or habitat isolated by ecological or temporal barriers. Of late, taxonomic units which are restricted to a narrow phytogeographic range on account of their isolation by ecological, geographical (spatial) or temporal (genetic, adaptive, etc.)



barriers are refereed as 'endemics'. They are also classified as (i) Paleoendemics (relictual endemics) and neoendemics (recently evolved endemics) (cf. Stebbins and Major, 1965). In India, as far as angiosperms are concerned, current estimations project a total of 18043 species, 296 subspecies, 2215 varieties, 33 subvarieties and 70 forms (Singh *et al.*, 2015). The information on Maharashtra is yet scattered. These endemics are obviously Indian national living treasures and national heritage. These have been investigated critically and analysed numerically plant group-wise and geographically in view of their protection and conservation. However, there has been no attempt knowing the bases or sources of coining plant names to date. The present author extender literary research from this standpoint and even their status. Botanists use a standardised two-part naming system called 'Binomial Nomenclature' to avoid confusion. It was pioneered by the Swedish naturalist Carl Linnaeus (18th century). This system grew into the rules set down in the 'International Code of Botanical Nomenclature (ICBN), now simply called 'ICN'. Plant names are based on Latin and Greek. The scientific or botanical names give a useful bit of information about the plant, inviting us to learn more. They are often coined by using some sources or bases. Morphological characters are more commonly used, as also the use-reports. Apart from these, coiners of plant names have their own choices or preferences. They can use the names of persons like botanists or taxonomists, some authorities, names of town, cities, mountains, rivers, gods or goddesses, etc. Even common (vernacular) names of plants are also latinised for example many Malayalam names have been used in generic and specific names (Manilal, 1980). Such sources especially for Indian plants have been also compiled (Patil, 2006, 2007). Jain (1976) also sought attention about plant names based on Khasi hills of Himalaya e.g. *Nepenthes khasiana*, *Piper khasianum*, etc. In his opinion, Khasi hills due to love for these hills, the coiners of these names, made Khasi hill immortalized in scientific literature. Such other names have gone into internationally recognized literature and recorded in libraries, museum and herbarium. These names remain permanently attached with these plant species for all time to come (cf. Jain, *loc.cit.*). Thus the sources of plant names are immortalized. Present author selected some endemic plant species especially found in territory of Maharashtra State. An attempt is made in this communication to seek immortalization of such sources or bases. At the same time, it is also endeavoured to show how such immortalized plant names or their related plant species are in a precarious state, nay on the brink of extinction due to rapid decline. These circumstances are discussed critically.

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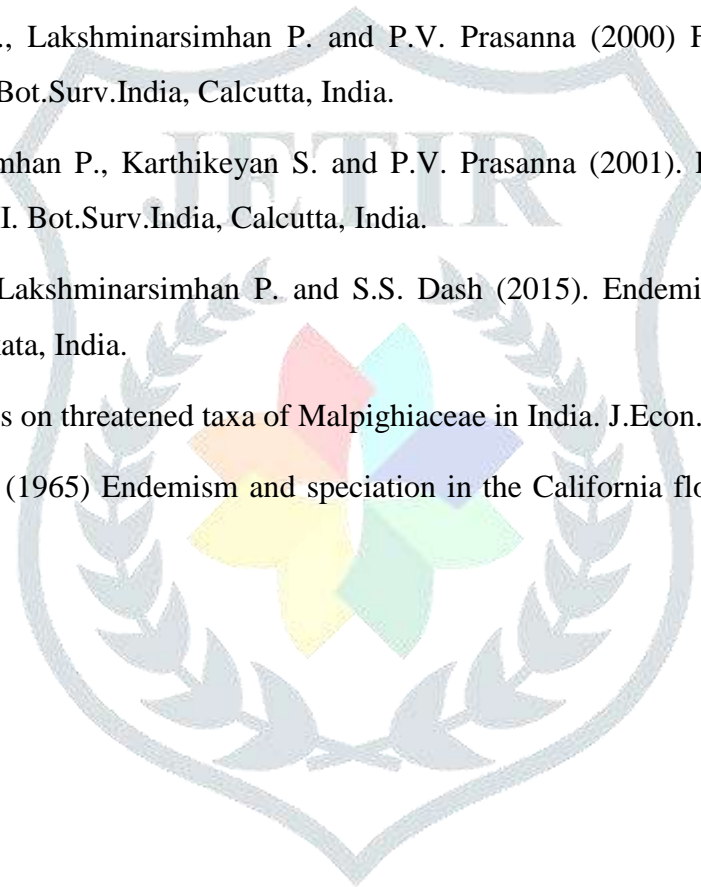
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**Table-I: Enumeration of Endemic Plant Species From Maharashtra**

Sr.No. (1)	Plant Species & Family (2)	IUCN Category (3)	Source Immortalised (4)	Critical Comments (5)
*1.	<i>Abutilon ranadei</i> Woodr. & Stapf. Malvaceae	CR	Ranade, Sometimes Keeper of the Herbarium at College of Science, Pune (M.S.)	Populations severely fragmented, thought to be extinct but recollected from type locality, to be conserved as ornamental species; occurrence on laterite soils in open places rarely.
*2.	<i>Aspidopterys canarensis</i> Dalz. Malpighiaceae	CR	Canara, a coastal region of India in South	Except type specimen, not collected later; doubt raised about its survival in Maharashtra, but recollected; potentiality as an ornamental plant; occurs rarely in evergreen forests.
3.	<i>Salacia brunoniana</i> Wight & Arn. Celastraceae	CR	Brunon, a botanist	Occupancy at a single location, distribution rare.
4.	<i>Ventilago madraspatana</i> Gaertn. var. <i>fructifida</i> Sant. Rhamnaceae	CR	Madras, a city in Tamil Nadu state	Occupancy at a single location, distribution very much fragmented, elimination due to its depletion of host trees because of deforestation reported as a rare species.
5.	<i>Indigofera santapau</i> Sanjappa Papilionaceae	CR	Fr. Santapau, H. Former Director, Bot. Surv. India, Calcutta	Occupancy at a single location, grows on exposed hill slopes.
6.	<i>Indigofera trita</i> L. var. <i>purandharensis</i> Sanjappa Papilionaceae	CR	Purandhar Fort and city in State of Maharashtra	Occupancy at a single location as a type locality, occurs on dry hill slopes.

Sr.No. (1)	Plant Species & Family (2)	IUCN Category (3)	Source Immortalised (4)	Critical Comments (5)
*7.	<i>Rotala ritchie</i> (C.B.Cl.) Koehne Lythraceae	CR	Ritchie, a botanist who collected this plant from Belgaum (Karnataka)	Occupancy at a single location, no one could locate after 1966, habitat destruction due to different development activities, protective measures needed to conserve it; rarely floating along banks of ponds.
8.	<i>Pimpinella rollae</i> Billore & Hemadri Apiaceae	CR	Rolla S. Rao, a hardcore field botanist and taxonomist in India	Occupancy at a single location, distribution fragmented, rare in open areas.
9.	<i>Neanotis sahyadrica</i> Billore & Mudaliar Rubiaceae	CR	Sahyadri mountain (Western Ghats)	Occupancy at a single location distribution fragmented, occurs in open moist areas.
10.	<i>Bidaria khandalense</i> (Sant.) Jagtap & Singh Asclepiadaceae	CR	Khandala, a hill station in Western Ghats	Mature individuals less than 50, after intensive search, could not be recollected, thought possibly extinct, only 04 individual later observed in another locality, deforestation is main reason for its depletion.
11.	<i>Brachystelma malwanese</i> Yadav & N.P.Singh Asclepiadaceae	CR	Maval region, west of Pune region in Maharashtra State	Newly described species, sparsely distributed in its habitat, habitat need to be protected to conserve it.
12.	<i>Brachystelma naorojii</i> P.Tetali, D.K. Kulk., S.Tetali & Kumb. Asclepiadaceae	CR	Naoroji Godrej, an industrialist interested in plant conservation.	Severely fragmented population, threatened due to cattle grazing, also this area declared for industrial zone; occurs on partially degraded hill slopes and open hill tops as a rare species.



Sr.No. (1)	Plant Species & Family (2)	IUCN Category (3)	Source Immortalised (4)	Critical Comments (5)
*13.	<i>Ceropegia evansii</i> McC Asclepiadaceae	CR	Thomas Evans, 19th Century, English botanist.	Severally fragmented population, population much depleted; grows in low forest slopes; tubers edible; grows on forest slopes.
14.	<i>Ceropegia jainii</i> Ansari & Kulkarni Asclepiadaceae	CR	Dr.S.K.Jain, Eminent Botanist, Former Director, Bot.Surv.India.	Severely fragmented population and restricted in distribution; tubers edible; occurs in grassy bed on hill side; reported as rare species.
*15.	<i>Ceropegia mahabalei</i> Hemadri <i>et</i> Ansari Asclepiadaceae	CR	Prof.T.S. Mahabale, a botanist and paleobotanist, university of Poona (M.S.)	Located at type locality only, overgrazing, degradation of grasslands, narrow distribution of species, narrow distribution of species, narrow range of tolerance very specific ecological requirements, tubers edible.
*16.	<i>Ceropegia panchganesis</i> Blatt. & McC. Asclepiadaceae	CR	Panchgani, a hill station in Western Ghats.	Restricted distribution, narrow range of tolerance, habitat destruction, tubers edible, needs immediate protection for conservation; reported as a rare species in grasses.
*17.	<i>Ceropegia rollae</i> Hemadri Asclepiadaceae	CR	Rolla S.Rao, a hardcore field botanist and taxonomist in India.	Severally fragmented population, very few individuals recorded, needs immediate protection to avoid extinction; occurs on hill slopes in exposed areas.

Sr.No. (1)	Plant Species & Family (2)	IUCN Category (3)	Source Immortalised (4)	Critical Comments (5)
*18.	<i>Frerea indica</i> Dalz. Asclepiadaceae	CR	India (as a nation)	Severally fragmented population, IUCN declared it as one of the 12 most endangered plants on earth; fire, grazing and landslides are threats, besides infestation by caterpillars, grows in rocky crevices of hill cliffs at higher levels.
19.	<i>Operculina tansaensis</i> Sant. & Patel Convolvulaceae	CR	Tansa Lake in Thane district, Maharashtra	Found only at a single location.
*20.	<i>Barleria gibsonoides</i> Blatt. et McC. Acanthaceae	Possibly extinct	Gibson, co-author of 'The Bombay Flora' (1861)	Found only at type locality infrequently on open grassy plateau.
*21.	<i>Dicliptera ghatika</i> Sant. Acanthaceae	CR	Western Ghats in South-Western India.	Found only at type locality, need immediate conservation; found in forest clearings.
22.	<i>Dicliptera nasikiensis</i> Lakshminarasimhan & Sharma Acanthaceae	CR	Nasik, a religious city of Hindus and pilgrim centre in Maharashtra State	Found at a single location from type locality, only 12 individuals noted, excessive grazing is responsible for rarity; growing in fallow fields under shades as a rare species.
23.	<i>Lepidagathis bandraensis</i> Blatt. Acanthaceae	CR	Bandra, Bombay (Mumbai) region	Found at a single location, even type specimen said to be perished, thought once to be extinct, but found later at Kinwat forest (Maharashtra), distribution severely fragmented need immediate conservation.

Sr.No. (1)	Plant Species & Family (2)	IUCN Category (3)	Source Immortalised (4)	Critical Comments (5)
24.	<i>Litsea wightiana</i> (Nees) Bth. & Hook. f. Lauraceae	CR	Robert Wight, an economic botanist and taxonomist who described 110 new genera and 1267 species of flowering plants; published 'Wights Icons' in 06 volumes.	Severally fragmented populations, reported as a rare species, developmental activities at its habitat being a reason for its rarity.
25.	<i>Scurrula stocksii</i> (Hook.f.) Danser Loranthaceae	CR	Dr.E.Stocks, botanist in a Konkan and Sindh (India).	Doubted for vanishing in region, at another locality population severally fragmented, destruction due to deforestation being a major threat reported rarely on trees.
26.	<i>Euphorbia concanensis</i> Janarthanam & Yadav. Euphorbiaceae	CR	Konkan region of Maharashtra State	Included in threatened category due to its very much localized distribution, reported as a rare species on laterite rocks and red soil amidst grasses and around fields.
27.	<i>Habenaria caranjensis</i> Dalz. Orchidaceae	Possibly extinct	Carauja (Karanja) Near Bombay (Mumbai)	Collected once only at this locality (but no specimens at Kew Herbarium and also not recollected anywhere.
28.	<i>Peristylus richadianus</i> Wight Orchidaceae	CR	Ricard Achille, a botanist	Found only at a single location as a rare species on lateritic flats on a hill top; distribution very much sporadic.

Sr.No. (1)	Plant Species & Family (2)	IUCN Category (3)	Source Immortalised (4)	Critical Comments (5)
*29.	<i>Crinum eleonora</i> Blatt. & McC. <i>f. eleonora</i> Amaryllidaceae	Possibly extinct	Eleonor-Mary Allen, Wife of Charles McCann. (A botanist)	Known only by its type collection as rare species, exploitation of bulbs for gardening may be responsible for its status; grows on open hill sides.
*30.	<i>Crinum eleonora</i> Blatt. & McG. <i>f. purpurea</i> Amaryllidaceae	Possibly extinct	Eleonor-Mary Allen, Wife of Charles McCann. (A botanist)	Like another forma, over exploitation of bulbs may be a reason for its status; grows on open hill sides.
31.	<i>Crinum woodrowii</i> Baker Amaryllidaceae	Possibly extinct	G.M.Woodrow botanized in Northern Western Ghats in India.	Not recollected after its type collection.
32.	<i>Camptorhiza indica</i> Yadav, Singh & Mathew Liliaceae	CR	India (as a nation)	Restricted to a small area, habitat needs to be immediately conserved; recently described as a rare species in grasslands along ditches.
*33.	<i>Dipcadi cancanense</i> (Dalz.) Baker Liliaceae	CR	Konkan region of Maharashtra State	Found only at a single location on sandy sea coasts; urbanization thought to be a reason to its present status; recently located more than 50000 population from other locality.
*34.	<i>Dipcadi maharashtrensis</i> Deb. & Dasgupta. Liliaceae	CR	Maharashtra, a state of India.	Found only at type locality, grows in sandy grooves; possibly endangered; occurs on sandy gravel on the plateau.



Sr.No. (1)	Plant Species & Family (2)	IUCN Category (3)	Source Immortalised (4)	Critical Comments (5)
*35.	<i>Drimia razii</i> Ansari Liliaceae	CR	B.A. Razi, an Indian botanist and Professor of Botany, Banglore, India.	Found only at a single location as rare species on rocky areas and gravellery slopes; habitat needs to be, protected to conserve it.
36.	<i>Arisaema sivadasanii</i> Yadav, Patil & Janarth. Arceae	CR	M. Sivadasan, a taxonomist who botanised in Kerala State	Fond at a single location, a newly described species.
37.	<i>Aponogetn bruggenii</i> Yadav & Govekar Aponogetonaceae	CR	H.W.E. (Harry) Bruggen, a Dutch botanist	A weed in paddy fields, localized distribution, removal of weeds in paddy fields being a threat to this species.
38.	<i>Eriocaulon santapau</i> Moldenke Eriocaulaceae	CR	Fr.H. Santapau, Former Director, Bot. Surv. India. Calcutta.	Found at a single location, and Konkan from its type locality.
39.	<i>Mariscus blatteri</i> McC. Cyperaceae	CR	E.Blatter established Herbarium for taxonomic studies at St.Xavier College, Bombay (Mumbai), then renamed after his name as 'Blatter Herbarium' by Fr. H. Santapau.	Known only by type collection as a rare species.
40.	<i>Pycreus bolei</i> S.M. Almeida Cyperaceae	CR	P.V.Bole, A taxonomist	Reported from only type locality, recorded as rare, removal of weeds from paddy fields thought cause of its rarity.

Sr.No. (1)	Plant Species & Family (2)	IUCN Category (3)	Source Immortalised (4)	Critical Comments (5)
41.	<i>Scirpus naikianus</i> Wadood Khan Cyperaceae	CR	Dr.V.N.Naik, botanized in Marathwada region of Maharashtra State, published 'Flora of Marathwada' (M.S.)	Found at a single location, very much localized distribution, clearing of lakes and ponds thought a cause for its rarity, needs conservation to avoid its extinction; recently described.
42.	<i>Scleria poklii</i> Wadood Khan Cyperaceae	CR	Prof.Pokle, D.S. Co-author of 'Flora of Marathwada' (M.S.)	Distribution localized, weeding activity in paddy fields and grazing thought causes of its rarity, recently described.
43.	<i>Ischaemum huegelii</i> Hack Poaceae	CR	Hugel, C.A.A. Von, who collected plants in India (1658)	Found only at a single location, but not recollected after 1896, once collected from abandoned fields in secondary forest (Mistry, 1986) as a rare species.
*44.	<i>Ischaemum raizadae</i> Hemadri & Billore Poaceae	CR	Raizada a, botanist in India.	Rare and infrequently distributed in Maharashtra only; grows on rocks and rocky crevices.

N.B.: \*: Indicate inclusion in Red Data Book of Indian Plant (By Nayar & Sastry, 1987-2000).