

VASCULAR PLANTS OF BASTAR, MADHYA PRADESH

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ABSTRACT

The Bastar area comes under Bastar district of the Madhya Pradesh and lies south of Raipur between $19^{\circ}0'-21^{\circ}0'N$ and $81^{\circ}0'-82^{\circ}0'E$. The major portion of this area has more or less remained botanically unexplored so far and three exploration trips were conducted in the years 1958, 1959 and 1961, and a total number of 481 species representing 336 genera and 112 families were collected.

The vegetation at the foot and lower slopes of the hills is of the mixed deciduous type. The undergrowth in these forests is rather sparse. Evergreen forests occur in Kanger Valley, Dharba, Kutamsar and along the upper slopes of Bailadila. The hill-tops, particularly at Dharba and Narayanpur, are rich in grasses and herbs and amidst these terrestrial orchids are also noticed. Since there are a number of tanks at the foot of these hills and in the plains which are wet and marshy during the rainy season, interesting aquatic and marshy plants are met with.

INTRODUCTION

The Bastar area comes under Bastar district of the Madhya Pradesh and lies south of Raipur between $19^{\circ}0'-21^{\circ}0'N$ and $81^{\circ}0'-82^{\circ}0'E$ and the altitude ranges from 400' to 1400m. A major portion of this region forms the so-called Dandakaranya which is celebrated in the 'Ramayana' as the epic exile of Shri Rama; this region represents a broad stretch of land spread over three States—Andhra Pradesh, Madhya Pradesh and Orissa, reclaimed for rehabilitation purposes.

The major portion of the Bastar area has remained botanically unexplored; recently Grigson (1938), Jain (1963a, b, c), Mooney (1942), Tiwari (1954a, b; 1955a, b; 1964a, b) and Tiwari & Maheshwari (1963; 1964; 1965) have made some contributions to the flora of this region. Three seasonal explorations were conducted in November 1958, August-September 1959 and February 1961; the localities visited were Keskai, Kanker, Kondagaon, Chitrakut, Boregaon, Jagadalspur, Kanger Valley, Tirathgarh Falls, Dharba, Kutamsar, Chapka Springs, Jayathgiri, Dhantewada to Bailadila, Narayanpur, Rao Ghat and Badmakot (Map).

GEOLOGY, ROCK AND SOIL

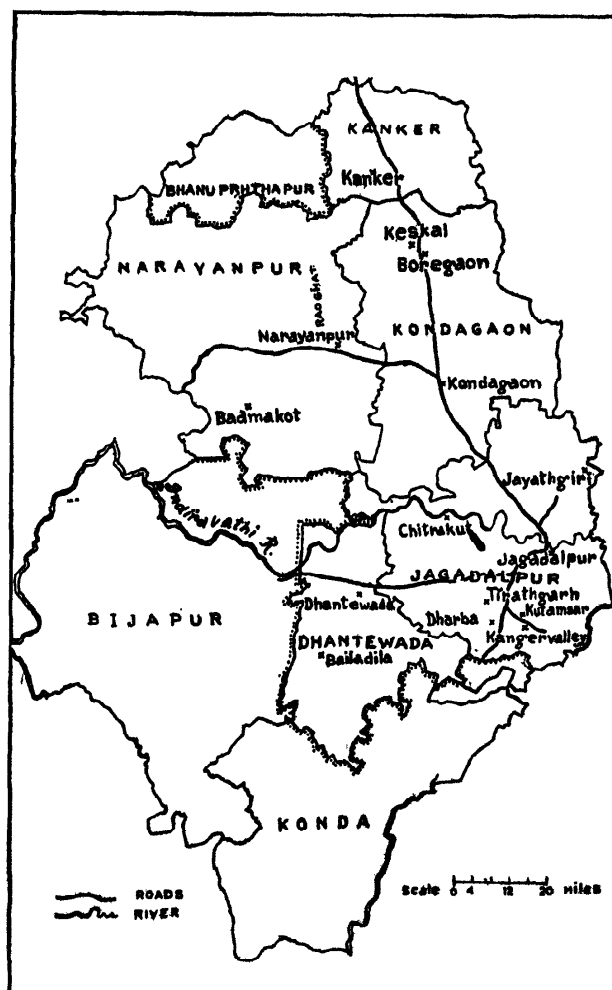
The common rocks are granites with granitoid gneiss, sandstones and laterites (Sur, 1958). Along the slopes of the hills in evergreen forests, the soil is fertile with rich black humus; in and around tanks and puddles, it is mainly clayey.

CLIMATE

The amount of rainfall varies from east to west, from about 127 to 152 cm; the average daily maximum and minimum temperatures are $40^{\circ}C$ in May and $11^{\circ}C$ in December.

VEGETATION

The vegetation at the foot and lower slopes of the hills is of the mixed deciduous type. Deciduous trees forming the chief components of these forests



Map of Bastar

are: *Adina cordifolia*, *Anogeissus latifolia*, *Bombax ceiba*, *Boswellia glabra*, *Bridelia retusa*, *Buchanania lanzan*, *Cassia fistula*, *Chochlospermum religiosum*, *Gmelina arborea*, *Kydia calycina*, *Lannea coromandelica*, *Madhuca indica*, *Ougeinia oojensis*, *Semecarpus anacardium*, *Shorea robusta*, *Soyimida febrifuga* and *Tectona grandis*. Some of the commoner climbers are: *Ampelocissus tomentosa*, *Combretum ovalifolium*, *C. roxburghii*, *Dalbergia volubilis*, *Gouania tiliifolia*, *Hiptage benghalensis*, *Phanera vahlii*, *Ventilago calyculata* and *Zizyphus rugosa*. By about the middle of February, most of the trees, shrubs and climbers shed their leaves and the forests present a bare appearance. There are, however, a few evergreen trees like *Cipadessa baccifera*, *Linociera ramiflora* and *Mallostus philippensis* scattered all along the forests, but their distribution does not change the deciduous appearance of the forests.

The permanent undergrowth is rather sparse and consists of the following species: *Abutilon persicum*, *Andrographis paniculata*, *Azanza lampas*, *Blepharis maderaspatensis*, *Eranthemum purpurascens*, *Glycosmis mauritiana*, *Grewia hirsuta*, *G. rothii*, *Hemigraphis venosa*, *Lepidagathis incurva*, *Moghania paniculata*, *M. stricta*, *M. strobilifera*, *Peristrophe bicalyculata*, *Petalidium barlerioides*, *Phaulopsis dorsiflora*, *Triumfetta rhomboidea* and *Urena lobata*.

Evergreen forests occur in Kanger Valley, Dharba, Kutamsar and along the upper slopes of Bailadila. The vegetation here is dense, and trees like *Celtis cinnamomea*, *Callicarpa arborea*, *Eurya japonica*, *Symplocos laurina*, *Wendlandia heynei* and *W. gamblei* are fairly well represented. The ground layer of these forests becomes dense immediately after monsoon and is made up of a number of herbs and cryptogams. The most common of these are *Aeginetia indica* (a complete root parasite with purple flowers), *Canscora decussata*, *C. diffusa*, *Celosia argentea*, *Commelina hasskarlii*, *Costus speciosus*, *Curcuma amada*, *Cyrtococcum oxyphyllum*, *Digitaria* spp., *Exacum bicolor*, *Floscopa scandens*, *Globba bulbifera*, *Lipocarpa argentea*, *L. triceps* and *Lygodium flexuosum*. Under the shade of trees and along the streams a number of ferns and fern allies, like *Adiantum philippense*, *Angiopteris evecta*, *Cyathea gigantea*, *C. latebrosa*, *Cyclosorus extensus*, *Schizoloma ensifolium*, *Ophioglossum reticulatum* and *O. polyphyllum* grow luxuriantly. Further, particularly amidst grasses where the soil is swampy, *Ophioglossum costatum* grows very well and some large-sized robust plants measuring up to 32 cm were collected.

At Chapka and Jayathgiri water drains out continuously from natural springs and around them a compact closed swampy vegetation is seen. Populations of *Calamus rotang*, *Flagellaria indica*, *Pandanus tectorius* and *Smilax prolifera* forming impenetrable bushes are met, amidst which are seen tall specimens of *Equisetum debile*, especially at Behatjeran near Jayathgiri. *Orthosiphon spiralis*, called commonly "Dr. Lim's diabetic tea" or "Java tea" also occurs along the outskirts of Jayathgiri. Near the Kutumsar caves, where the humus is rich and the humidity great, the rocks present a stratified appearance. On these rocks, where water drips constantly, populations of *Begonia picta*, *Epithema carnosum* and *Elatostema surculosum* are prominent.

Grasslands are on hill-tops particularly at Dharba and Narayanpur. The commoner grasses in almost pure formations are *Bothriochloa pertusa*, *Cymbopogon martinii*, *Eleusine indica*, *Eragrostis diarrhena*, *Heteropogon contortus*, *Pennisetum pedicellatum* and *Vetiveria zizanioides*. Other herbaceous plants found in these areas are *Acalypha ciliata*, *Alysicarpus bupleurifolius*, *Blechnum orientale*, *Coleus forskohlii*, *Crotalaria linifolia*, *Desmodium gyrans*, *Dicranopteris linearis*, *Exallage auricularia*, *Gonotheca ovatifolia*, *Pteridium aquilinum* and *Vernonia* spp. Amidst these, terrestrial orchids are present: *Habenaria decipiens*, *H. platyphylla*, *Liparis nervosa*, *Microstylis cardoni* and *Peristylus plantagineus*.

Since there are a number of tanks at the foot of these hills and in the plains which are wet and marshy during the rainy season, interesting aquatic and marshy plants are met with: *Nelumbo nucifera*, *Nymphaea nouchali*, *N. stellata*, *Nymphoides indicum*, *N. cristatum*, *Trapa natans* var. *bispinosa*, *Utricularia aurea* and *U. gibba* ssp. *exoleta*. Along the margin of the river Indiravathi near Chitrakut Falls *Cryptocoryne retrospiralis* was noticed in plenty. In a marshy rice field near Kondagaon a population of *Burmannia pusilla* with purple flowers was observed. Along the margins of a lake near Kanker a large population of *Isoetes coromandelina* was seen; and near the border of a tank in Kondagaon the tall erect sedge, *Elaeocharis acutangula* with triangular stems and terminal cone-shaped spikes, was common; small, delicate herbs like *Microcarpaea muscosa*, *Mitrasacme alsinoides*, *Rotala densiflora*, *R. indica*, *R. rotundifolia* and *R. verticillaris* were also found in the same region.

During these explorations a total number of 481 species representing 336 genera and 112 families, native to or naturalized in the forest, were collected.

They were identified at the Southern Circle Herbarium (MH) and Central National Herbarium (CAL), of the Botanical Survey of India; one new species (*Staurogyne perpusilla* Henry et Bal.) has been described (Henry and Balakrishnan, 1961). All the herbarium specimens of plants listed below have been incorporated in the Herbarium of the Southern Circle, Botanical Survey of India, Coimbatore. For each species mentioned in the list, the collection number is given.

Among the plants listed the largest families are: Gramineae 59; Papilionaceae 30; Acanthaceae 29; Cyperaceae 28; and Compositae 21. These five families contain 34.7% of the total flora of the forest.

LIST OF VASCULAR PLANTS

SELAGINELLACEAE

Selaginella repanda (Desv.) Spring 7166

ISOETACEAE

Isoetes coromandelina L. 7145

EQUISETACEAE

Equisetum debile Roxb. 12092

OPHIOGLOSSACEAE

Ophioglossum costatum R. Br. 8655

O. polyphyllum A. Br. 8959

O. reticulatum L. 8646

MARATTIACEAE

Angiopteris evecta (Forst.) Hoffm. 12126

SCHIZAEACEAE

Lygodium flexuosum (L.) Sw. 8606

GLEICHENIACEAE

Dicranopteris linearis (Burm. f.) Underwood 12135

CYATHEACEAE

Cyathea gigantea (Wall.) Holtt. 12119

C. latebrosa (Wall. ex Hk.) Copel. 12120

POLYPODIACEAE (*sensu lato*)

Abacopteris multilineata (Wall. ex Hk.) Ching 8715, 12108

Adiantum caudatum L. 7165

A. philippense L. 8577

Ampelopteris prolifera (Retz.) Copel. 8683

Asplenium laciniatum D. Don 12133

Athyrium hohenackerianum (O. Ktze.) T. Moore 8582

Blechnum orientale L. 12118

Cheilanthes farinosa (Forsk.) Kaulf. 7164

C. tenuifolia (Burm.) Sw. 8656

Cyclosorus extensus (Bl.) Ching 8616, 8650, 8651

Diplazium esculentum (Retz.) Sw. 8625

Leptochilus decurrens Bl. 12147

Pteridium aquilinum (L.) Kuhn 12124

Pteris quadriaurita Retz. 12125

P. pellucida Presl 12050

Schizoloma ensifolium (Sw.) J. Sm. 12121

Sphenomeris chusana (L.) Copel. 12139

Tectaria macrodonta (Fee) C. Chr. 12053

PARKERIACEAE

Ceratopteris siliquosa (L.) Copel. 7184

MARSILEACEAE

Marsilea quadrifolia L. 11871

M. minuta L. 7271

SALVINIACEAE

Azolla pinnata R. Br. 11868

RANUNCULACEAE

Clematis gouriana Roxb. ex DC. 12029

C. smilacifolia Wall. 12071

Naravelia zeylanica (L.) DC. 12098

NYMPHAEACEAE

Nelumbo nucifera Gaertn. 8727

Nymphaea nouchali Burm. f. 7205, 7209

N. stellata Willd. 7149

CAPPARACEAE

Cleome monophylla L. 7290

FLACOURTIACEAE

Flacourtia indica (Burm. f.) Merrill 12141

COCHLOSPERMACEAE

Cochlospermum religiosum (L.) Alston 11874

POLYGALACEAE

Polygala brachystachya DC. 12155

P. furcata Roxb. 8719

P. rosmarinifolia Wt. & Arn. 8610

Salomonia oblongifolia DC. 7228

CARYOPHYLLACEAE

Polycarpaea corymbosa Lamk. 7249

THEACEAE

Eurya japonica Thunb. 12122

MALVACEAE

Abelmoschus crinitus Wall. 8687, 8691

Abutilon persicum (Burm. f.) Merrill 12040

Azanza lampas (Cav.) Alef. 8692

Kydia calycina Roxb. 8693

Sida acuta Burm. f. 7270

S. cordifolia L. 7291

S. glutinosa Cav. 12114

Urena lobata L. 7112, 8694

BOMBACACEAE

Bombax ceiba L. 11876

STERCULIACEAE

Buettneria herbacea Roxb. 7088

Helicteres isora L. 8663
Melochia corchorifolia L. 7298, 8699
Sterculia urens Roxb. 12035
Waltheria indica L. 7215

TILIACEAE

Corchorus aestuans L. 7279
C. fascicularis Lamk. 7263
Grewia abutilifolia Vent. 8706
G. hirsuta Vahl 8599
G. rothii DC. 8600
Triumfetta rhomboidea Jacq. 7129

MALPIGHIACEAE

Hiptage benghalensis (L.) Kurz 12059

OXALIDACEAE

Biophytum sensitivum (L.) DC. 7082

BALSAMINACEAE

Impatiens balsamina L. 8669

RUTACEAE

Glycosmis mauritiana (Lamk.) Tanaka 11898

BURSERACEAE

Boswellia glabra Roxb. 11873

MELIACEAE

Aglaia roxburghiana var. *beddomei* Gamb. 7259
Cipadessa baccifera (Roth) Miq. 8712
Soyimida febrifuga A. Juss. 11865

OLACACEAE

Olex scandens Roxb. 8601

OPILIACEAE

Cansjera rheedii Gmel. 12068

CELASTRACEAE

Maytenus emarginata (Willd.) Ding Hou 12058

RHAMNACEAE

Gouania tiliaefolia Lamk. 8640
Helinus lanceolatus Brand. 12045
Ventilago calyculata Tul. 11867, 12067
Zizyphus oenoplia (L.) Mill. 8660
Z. rugosa Lamk. 12076

VITACEAE

Ampelocissus tomentosa (Heyne) Planch. 8576

LEEACEAE

Leea edgeworthii Sant. 8581

ANACARDIACEAE

Anacardium occidentale L. 12159
Buchanania lanzan Spreng. 11859
Lannea coromandelica (Houtt.) Merrill 12077
Semecarpus anacardium L. f. 8593

PAPILIONACEAE

Aeschynomene indica L. 7274

Alysicarpus hupleurifolius DC. 7261
Atylosia volubilis (Blanco) Gamb. 12048
Cajanus cajan (L.) Millsp. 12128
Crotalaria albida Heyne ex Roth 7081, 8588, 11880
C. hirsuta Willd. 8667
C. linifolia L. f. 7216, 8714
C. medicaginea Lamk. 7252, 8664
C. pusilla Heyne ex Roth 7250
C. sericea Retz. 7177, 11878
Cylista scariosa Roxb. 12090
Dalbergia volubilis Roxb. 12075
Desmodium gangeticum (L.) DC. 7094
D. gyrans (L. f.) DC. 12149
D. laxiflorum DC. 8662
D. pulchellum (L.) Benth. 7220, 11897
D. triangulare var. *congestum* (Prain) Sant. 8695
Indigofera glabra L. 7293
I. hirsuta L. 8611
I. linnaei Ali 7119
I. prostrata Willd. 8703
I. pulchella Roxb. 8595
Moghania paniculata (Wall. ex Benth.) Hui 12063
M. praecox var. *angustata* Mukerjee 12066
M. strobilifera (L.) St. Hil. ex Jacks. 11896
M. stricta (Roxb.) O. Ktze. 12069
Ougeinia oojeinensis (Roxb.) Hoch. 12096
Smithia conferta Sm. 7183
Teramnus mollis Benth. 8612
Uraria lagopodioides Merrill 8631

CAESALPINIACEAE

Cassia fistula L. 11893
C. occidentalis L. 7214
Lasiobema retusum (Roxb.) de Wit 11890
Phanera vahlii (Benth.) Wt. & Arn. 11875
Piliostigma malabaricum (Roxb.) Benth. 8642

MIMOSACEAE

Acacia leucophloea Willd. 8591
Mimosa berberi Gamb. 8696
M. pudica L. 7283

DROSERACEAE

Drosera burmanni Vahl 7229, 12078
D. indica L. 7207

COMBRETACEAE

Anogeissus acuminata (Roxb.) Wall. ex Bedd. 12099
A. latifolia (DC.) Wall. ex Bedd. 8708
Combretum ovalifolium Roxb. 12102
C. roxburghii Spreng. 7117, 12018
Terminalia gella Dalz. 8605

MELASTOMATACEAE

Melastoma malabathricum L. 8652
Memecylon umbellatum Burm. f. 7256, 12101
Osbeckia chinensis L. 8633

Osbeckia zeylanica Willd. 7100

LYTHRACEAE

Rotala densiflora (Roth) Koehne 7193

R. illecebroides (Clarke) Koehne 7230

R. indica (Willd.) Koehne 7110

R. rotundifolia (Roxb.) Koehne 12140

R. verticillaris L. 12088

Woodfordia fruticosa (Linn.) Kurz 11852

ONAGRACEAE

Ludwigia octovalvis (Jacq.) Raven 7159

L. perennis L. 7288

TRAPACEAE

Trapa natans var. *bispinosa* (Roxb.) Makino 8725

SAMYDACEAE

Casearia elliptica Willd. 12107

CUCURBITACEAE

Melothria perpusilla Cogn. 8578

BEGONIACEAE

Begonia picta Sm. 8705

MOLLUGINACEAE

Mollugo pentaphylla L. 8659

UMBELLIFERAE

Carum stictocarpum Clarke 12146

Pimpinella heyneana Wall. ex Kurz 7116

RUBIACEAE

Adina cordifolia (Roxb.) Hk. f. ex Brandis 8594

Borreria articularis (L. f.) F. N. Will. 7179

B. stricta (L. f.) K. Sch. 8613

Canthium dicoccum var. *umbellatum* (Gamb.) Sant. & Merch. 12109

Exallage auricularia (L.) Brem. 8649

Gardenia resinifera Roth 12060

Gonotheca ovatifolia (Cav.) Sant. & Wagh 8632, 8721

Ixora arborea Roxb. ex Sm. 11863

Knoxia sumatrensis (Retz.) DC. 7085, 12150

Oldenlandia affinis (Roem. & Sch.) DC. 7083

O. corymbosa L. 7189, 11883

Wendlandia gamblei Cowan 12070, 12132

W. heynei (Roem. & Sch.) Sant. & Merch. 12056

COMPOSITAE

Acanthospermum hispidum DC. 7272

Ageratum conyzoides L. 7264

Blepharispermum subsessile DC. 7225

Blumea fistulosa (Roxb.) Kurz 11853

B. mollis (D. Don) Merr. 11858

B. virens DC. 12062

Caesulia axillaris Roxb. 7137

Cyathocline purpurea (Don) O. Ktze. 11866

Eclipta prostrata (L.) L. 7201

Elephantopus scaber L. 7194

Emilia sonchifolia (L.) DC. 7178

Gnaphalium indicum L. 11866

Grangea maderaspatana (L.) Poir. 12158

Laggera aurita (Willd.) Sch.-Bip. 12064

L. flava (DC.) Benth. ex Clarke 11879

Senecio corymbosus Wall. ex DC. 12131

Sphaeranthus indicus L. 7275

Vernonia cinerea (L.) Less. 11854

V. divergens (Roxb.) Edgw. 12023

V. roxburghii Less. 7221

V. teres Wall. ex DC. 11895

CAMPANULACEAE

Cephalostigma erectum (Roth) Vatke 7104

LOBELIACEAE

Lobelia alsinoides Lamk. 7102

L. heyneana Roem. & Schult. 7093

PLUMBAGINACEAE

Plumbago zeylanica L. 7265

PRIMULACEAE

Anagallis pumila Sw. 7103

MYRSINACEAE

Embelia ribes Burm. 12136

SAPOTACEAE

Madhuca indica Gmel. 11877

EBENACEAE

Diospyros peregrina Gurke 12057

SYMPLOCACEAE

Symplocos laurina (Retz.) Wall. ex G. Don 12116

OLEACEAE

Jasminum scandens Vahl 11899

J. undulatum Ker. 12093

Linociera ramiflora (Roxb.) Wall. ex G. Don 12095, 12153, 12154

Nyctanthes arbor-tristis L. 7115

APOCYNACEAE

Ichnocarpus frutescens (L.) R. Br. 7242, 12036

Rauvolfia serpentina (L.) Benth. ex Kurz 12065

LOGANIACEAE

Mitrasacme alsinoides R. Br. 7231

GENTIANACEAE

Canscora decussata Roem. & Sch. 7092

C. diffusa R. Br. 7097

Exacum bicolor Roxb. 8713

Hoppea dichotoma Willd. 7111

Nymphoides cristatum (Roxb.) O. Ktze. 7144

N. indicum (L.) O. Ktze. 7141

Swertia angustifolia Buch.-Ham. var. *pulchella* Burk. 7181

HYDROPHYLLACEAE

Hydrolea zeylanica (L.) Vahl 12100

BORAGINACEAE

Cynoglossum furcatum Wall. 8575*Trichodesma indicum* (L.) R. Br. 7289*T. sedgewickianum* Banerjee 7236

EHRETIACEAE

Rotula aquatica Lour. 7257

CONVOLVULACEAE

Argyrea setosa (Roxb.) Choisy 7243*Evolvulus nummularius* (L.) L. 7196, 12079*Ipomoea angulata* Lamk. 7267*I. aquatica* Forsk. 11869*I. paniculata* R. Br. 8643*I. purpurea* Roth 7269*Merremia hederacea* (Burm. f.) Hall. f. 7262*M. umbellata* (L.) Hall. f. 11900

CUSCUTACEAE

Cuscuta reflexa Roxb. 7136, 12157

SOLANACEAE

Solanum nigrum L. 7199*S. torvum* Sw. 8580

SCROPHULARIACEAE

Buchnera hispida Buch.-Ham. 7253*Centranthera tranquebarica* (Spreng.) Merr. 7235*C. nepalensis* D. Don 7237*Dopatrium junceum* (Roxb.) Buch.-Ham. ex Benth. 8679*Limnophila indica* (L.) Druce 7155, 8628, 11870, 12089*L. rugosa* (Roth) Merrill 8686*L. sessilis* (Benth.) Fisch. 7219*Lindernia ciliata* (Colsm.) Pennell 7105*L. crustacea* (Linn.) F. v. Muell. 7163, 7233, 8589, 12151*L. hyssopioides* (L.) Haines 7182, 8680, 12080*Microcarpaea muscosa* R. Br. 7202*Scoparia dulcis* L. 7217*Sopubia delphinifolia* (Roxb.) G. Don 7208*Striga angustifolia* (Don) Saldanha 7158

OROBANCHACEAE

Aeginetia indica L. 8609

LENTIBULARIACEAE

Utricularia aurea Lour. 7148*U. bifida* L. 7211*U. caerulea* L. 7162*U. gibba* L. subsp. *exoleta* (R. Br.) P. Taylor 11872*U. uliginosa* Vahl 12033

GESNERIACEAE

Epithema carnosum Benth. 8644

BIGNONIACEAE

Oroxylum indicum (L.) Vent. 8711*Stereospermum suaveolens* (Roxb.) DC. 12049

PEDALIACEAE

Sesamum indicum L. 8665

MARTYNIACEAE

Martynia annua L. 8615

THUNBERGIACEAE

Thunbergia laevis Nees 12072

ACANTHACEAE

Andrographis ovata Roxb. 12073*A. paniculata* (Burm. f.) Nees 7096*Asteracantha longifolia* (L.) Nees 7200*Barleria cristata* L. 7099*B. prionitis* L. 7286*B. strigosa* Willd. 7120, 12027*Blepharis maderaspatensis* (L.) Roth 7255*Dicliptera beddomei* Clarke 12024*Dyschoriste vagans* (Wt.) O. Ktze. 12148*Eranthemum purpurascens* Nees 7079, 11888*Hemigraphis latebrosa* Nees var. *heyneana* Brem. 7241, 11889*H. venosa* Clarke 11892*Hygrophila polysperma* (Roxb.) T. And. 7195, 11862*H. salicifolia* (Vahl) Nees 8648*Justicia betonica* L. 12031*J. prostrata* (Clarke) Gamble 7080, 7273*J. quinqueangularis* Koen. ex Roxb. 7204, 8674*J. simplex* D. Don 7167, 7251*Lepidagathis incurva* D. Don 12019*Nelsonia canescens* (Lamk.) Spreng. 12030*Perilepta auriculata* (Nees) Brem. 7091*Peristrophe bicalyculata* (Retz.) Nees 7266*Petalidium barlerioides* (Roth) Nees 12074*Phaulopsis dorsiflora* (Retz.) Sant. 7281, 12020*Phlebophyllum jeyporensis* (Bedd.) Brem. 12117*Rhinacanthus nasuta* (L.) Kurz 12052*Rungia pectinata* (L.) Nees 7087*Staurogyne perpusilla* Henry & Bal. 12160*S. polybotrya* (Nees) O. Ktze. 7287

VERBENACEAE

Callicarpa arborea Roxb. 12138*Clerodendrum indicum* (L.) O. Ktze. 8697*C. serratum* (L.) Moon 8586*C. viscosum* Vent. 12037*Gmelina arborea* Roxb. 12055*Lantana camara* L. var. *aculeata* (L.) Molden. 7282*Lippia alba* (Mill.) N. E. Br. 7284*Stachytarpheta urticaefolia* (Salisb.) Sims 8636

LABIATAE

Acrocephalus indicus (Burm.) O. Ktze. 7089*Anisochilus carnosus* Wall. 7090*Anisomeles indica* (L.) O. Ktze. 7084*Colebrookea oppositifolia* Sm. 12041*Coleus forskohlii* (Poir.) Briq. 8666

Dysophylla griffithii Hk. f. 11882
Hyptis suaveolens (L.) Poit. 12039
Leonotis nepetaefolia (L.) R. Br. 7226
Leucas mollisima Wall. var. *scaberula* Hk. f. 7086,
 8579, 12115

Ocimum gratissimum L. 7285
Orthosiphon rubicundus Benth. 8634
O. spiralis (Lour.) Merrill 8682
Plectranthus mollis (Ait.) Spreng. 8647
Pogostemon plectranthoides Desf. 12026

NYCTAGINACEAE

Boerhavia diffusa L. 12038

AMARANTHACEAE

Aerva lanata (L.) Juss. 7173
A. sanguinolenta (L.) Bl. 11891
Alternanthera sessilis (L.) DC. 7190
Celosia argentea L. 7246, 8670
Psilotrichum ferrugineum (Roxb.) Moq. 7227
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