

## A PRELIMINARY SURVEY OF THE FLORA OF VYARA FORESTS IN SOUTH GUJARAT.

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### ABSTRACT

An enumeration of flowering plants collected from the forests in vicinity of Mirpur, Chakdihara, Ambapani, Chinchbordi, Ubharat and Danti in Vyara forest range in December 1967 and September 1969 to March 1969, is given. In all about 420 plants have been collected of which 330 are dicotyledons and 90 monocotyledons. An account of the general pattern of vegetation is also given.

### INTRODUCTION

Though the flora of Gujarat State is now better known through the works of Saxton and Sedgwick (1918), Santapani (1954-1955, 1965), Shah (1963, 1964a, 1964b, 1967, 1969), Chavan and Oza (1966), Shah and Suryanarayana (1967) etc. it appears there are many areas which are still botanically unexplored. The Vyara forest range in South Gujarat is one such area. Since one of us (Shah) studied the flora of Dangs forest and as the Vyara forest range is adjacent to Dangs forest, their boundaries meeting at Bhoshkatri, it was thought reasonable to explore this range also. Since the vegetational aspects of the Vyara forests are somewhat different from those of Dangs, an enumeration of plants from Vyara forests, along with a short account of vegetation is given in this paper. The paper is based on collections made from the forests in vicinity of Mirpur, Chakdihara, Ambapani, Chinchbordi, Ubharat and Danti in December 1967 and in September 1968 to March 1969 from the first four areas and field notes taken during the outings. The names adopted in the list are mostly those of Cooke (1958) but where the name is changed in light of recent researches in taxonomy, the correct name is first given, followed by the one in Cooke's Flora in synonymy. The entire collection from the areas explored is housed in the herbarium of the Botany Department of Sardar Patel University, Vallabh Vidyanagar.

The area explored is almost a plain country traversed by Purna river and its tributaries. The river flows east to west in the area. The river beds at Chakdihara and Ambapani are rocky, the rocks being light black or greyish.

Vyara is a small railway station about 62 km east of Surat on Surat-Bhuvanval broad gauge line of the Western Railway. Surat is a railway junc-

tion on Bombay-Ahmedabad line, 262 km north of Bombay. Regular State Transport buses also ply between Surat and Vyara. Mirpur is about 10 km from Vyara and the State Transport buses ply only in fair season between Vyara and Dungs forest, touching Mirpur, Chakdihara and Ambapani. Chinchbordi is in the interior and no buses go there. In monsoon the buses run only up to Karjarvel, a village about 2 km off Mirpur. Mirpur forest chowki was used as the camping place by the authors during outings to different parts. Ubharat and Danti are small villages on sea coast under the jurisdiction of Vyara forest range. State Transport buses ply between Marol, a small railway station on Bombay-Surat line, about 21 km north of Surat, and Ubharat and Danti villages.

### GENERAL PATTERN OF VEGETATION

The forests at Mirpur, Chakdihara, Ambapani and Chinchbordi are dry deciduous. The vegetation of the forest can arbitrarily be divided into three layers: The top layer is made of trees 8 m and above in height. *Buca monasperma* Taub., *Tectona grandis* Lam. f. and *Terminalia crenolata* Roth form a dominant community. Other common, but not dominant, trees are *Acacia polyacantha* Willd., *Adina coratifolia* Hook. f. ex Brand., *Albizia lebbel* Benth., *Atogeissum latifolia* Redd., *Dalbergia latifolia* Roxb., *Garuga pinnata* Roxb., *Lagerstroemia parviflora* Roxb., *Mitragyna parvifolia* Korth., *Wrightia tinctoria* R. Br. etc. Occasional ones are *Bombax ceiba* Linn., *Bridelia retusa* Spreng., *Flacodendron raxburghii* Wt. & Arn., *Euribia officinalis* Gaertn., *Kydia calycina* Roxb., *Madhuca indica* Griseb., *Ougeinia sogomezia* Hocht. and *Pterocarpus marsupium* var. *acuminatus* Prain. The rare trees are *Albizia procera* Benth., *Careya arborea* Roxb., *Cordia fistula* Linn., *Diospyros me-*

*mysylon* Roxb., *Greusa villosifolia* Vahl, *Atalapha philippensis* Muell., *Schleichera olivacea* Oken, *Sterculia urens* Roxb. etc. The middle layer is composed of *Alangium salifolium* Wang., *Gardenia turgida* Roxb., *Holarrhena antidysenterica* DC. and *Morinda tomentosa* Heyne which are common. Rare ones are *Bauhinia racemosa* Lamk., *Flacourtia indica* Merr. and *Xeromphes spissosa* Keay. The undergrowth of the forests in fair season consists of the seedlings of a number of tree and shrub species varying from 0.62 m tall, scattered or subgregarious. To mention a few, they are *Adina cordifolia* Hook. f. ex Brand., *Butea monosperma* Taub., *Holarrhena antidysenterica* DC., *Moghania strabifera* Hill. ex Jacks., *Tectona grandis* Linn. f. and *Terminalia crenulata* Roth. At some places *Adina cordifolia* Hook. f. ex Brand. and *Moghania strabifera* Hill. ex Jacks. are so common and abundant that they seem to form a dominant undergrowth. Along river sides *Corchorus capularis* Linn., *Eranthemum roseum* R. Br. and *Hygrophila auriculata* Heine are fairly common and abundant. The other common components of the undergrowth flora are *Achyranthes aspera* var. *porphyristachya* Hook. f., *Bhunia nembranata* DC., *Casia tuta* Linn., *Haplantibus wulpherryanus* Wt., *Hemigraphis lachryosa* var. *heyniana* Birmek., *Spilanthes paniculata* Wall. ex DC. etc. *Asparagus racemosus* var. *javanicus* Baker, *Biophytum sensitivum* DC., *Cynodon dactyloides* Brit., *Indigofera trita* Linn. and *Trachypogon strictus* Wolf are rare.

A number of climbers are found in the forests, belonging to several families such as Combrretaceae, Convolvulaceae, Dioscoreaceae, Menispermaceae, Papilionaceae, Ranunculaceae, Rhannaceae etc., of which *Combretum walifolium* Roxb., *Millettia racemosa* Benth., *Pentelogo denticulata* Willd. and *Zizyphus rugosa* Lamk. are worth mentioning.

The forest composition along river sides is the same as described above, but *Alangium salifolium* Wang. and *Dendrocalamus strictus* Nees are more common and abundant along river sides. *Calotropis gigantea* R. Br., *Pongamia pinnata* Pierr., *Securinaga virosa* Bail., *Trema orientalis* Lour. and *Woodfordia fruticosa* Kurz are rather common, forming a middle layer on hilly slopes along river banks.

#### VEGETATION OF RIVER BEDS

In the stony river beds *Homonoia riparia* Lour., *Syzygium cumini* (Linn.) Skeels, *S. heyniana* Wall. ex Wt. & Arn. and *Tamarix ericoides* Roth. are

very common and abundant, often forming dense thickets, 1-54 m high. *Rotula squarosa* Lour. is common in the stony ground and rock crevices along water courses, often forming pure patches. *Rotula verghifolia* Birmek. occurs in large patches on flat rocks and is often conspicuous by the masses of reddish purple plants. *Cryptocaryne reticulata* Kunth forms very large patches in water-logged stony soil. In alluvial moist soil in river beds and along water courses *Agrotium conyzoides* Linn., *Ammania bacifera* Linn., *Bimbia eriantha* DC., *Conococlo diffusa* R. Br., *Cordamine trichocarpa* Hochst., *Eclipta prostrata* Linn., *Hydrocotyle zeylanica* Vahl, *Glinus tomentosus* Linn., *Salola plicata* R. Br., *Sphaeranthus indicus* Linn. and *Siemada wicazoa* Roxb. are very common and abundant, often in pure or mixed patches. Occasional ones are *Amaranthus spinosus* Linn., *Argemone mexicana* Linn., *Caesulia axillaris* Roxb., *Corchorus fascicularis* Lamk., various members of Cyperaceae, *Polygonum plebeium* R. Br., *Solanum cuscutense* Baum. f. etc. *Bianca mollis* Don., *Cleome ebullientis* Linn. f., *Heliotropium ovalifolium* Forsk., *Vahlia digyna* O. Kuntze, *Suares dissecta* Walp. and *Verbascum chinense* Sant. are rare.

#### WEEDS OF CULTIVATED FIELDS

The following plants are extensively cultivated in the area. *Cajanus cajan* Millsp., *Cynopsis tetragonoloba* Taub., *Dehchoa lablab* Linn., *Hibiscus subdariffa* Linn., *Oryza sativa* Linn., *Solanum melongena* Linn. and *Sorghum vulgare* Pers. *Crotalaria pinnata* is also cultivated at some places on a small scale. From these fields after harvest, a number of weeds were collected. *Ammania bacifera* Linn., *Bimbia eriantha* DC., *P. oxyodon* DC., *Caesulia axillaris* Roxb., *Celastrus argentea* Linn., *Cyperus diflorus* Linn., *Dicranthium articulatum* Stapf, *Eragrostis diarrhena* Steud., *Sphaeranthus indicus* Linn., and *Tridax procumbens* Linn. are very common and abundant, often in pure or mixed patches. At Ubarat Alhagi *pseudohagi* Desv. and *Crotalaria cretica* Linn. are dominant weeds in cultivated fields, occurring by themselves or mixed, sometimes covering entire fields. The occasional plants are *Bergia ammannioides* Roxb. ex Roth., *Corchorus tridens* Linn., *Crotalaria albida* Heyne ex Roth., *C. triquetra* Dalz., *Dactyloctenium repens* Forst., *Rangia repens* Nees etc. Plants like *Chenopodium prostratum* Dalz., *Corchorus fascicularis* Lamk., *Dermotachya bipinnata* Stapf and *Enicostema hirsutifolium* Verd. are but rare.

VEGETATION ALONG SEA-SHORE AT  
CIBHARAT AND DANTI

*Casuarina equisetifolia* Forst. has been extensively cultivated along sea-shore by the forest department for the last seven years as a sand binder. *Prosopis juliflora* DC. is also introduced for the same purpose and it thrives well. The sand vegetation is rather poor consisting of a few plants like *Cyperus arenarius* Retz., *Fimbristylis jalcata* Kunth, *Indigofera cordifolia* Heyne ex Roth, *Ipomoea pes-caprae* Sw., *Launaea sermentosa* Abt. and *Phyla nodiflora* Greene, occur in small or large, pure or mixed, patches. At some places *Cenchrus* sp. and *Aristida* sp. are very common and abundant often forming very dense patches, and at times difficult to wade through. *Borassus flabellifera* Linn. is the only tree common on sandy shores. *Phoenix sylvestris* Roxb. occurs as a bush at some places.

The vegetation near about the villages is of a scrub forest type, the dominant tree being *Atacia nilotica* sp. *indica* Brenan and the bushes of *Euphorbia nerifolia* Linn., *Zizyphus mauritiana* Lamk. and *Z. nummularia* Wt. & Arn. Scattered along road sides are patches of *Allioge pseudalbagi* Desv. and *Malachra capitata* Linn.

*Capparis septaria* Linn., *Clerodendrum multiflorum* O. Kuntze, *Salvadora oleoides* Decne. and *S. persica* Linn. form dense hedges along road sides. On these hedges *Abrus precatorius* Linn., *Conocarpus glabatus* DC., *Coccinia indica* Wt. & Arn., *Clenolepis versiformis* Hook. f., *Maerua oblongifolia* A. Rich., *Leptadenia reticulata* Wt. & Arn. and *Pergularia daemia* Chin. are found.

Along mud flats near water courses the only mangrove seen is *Avicennia marina* var. *acutissima* Stapf & Mold. which forms dense thickets. On mud flats proper *Sesuvium portulacastrum* Linn. and *Suaeda frutescens* Forsk. are occasionally met with.

## DIMERIZATION

## RANUNCULACEAE = 2

*Clematis bedysurifolia* DC.

## ANNONACEAE

*Annona squamosa* Linn.*Millettia tomentosa* (Roxb.) Sinc.*Saccopetalum tomentosum* Hk. f. & Th.

## MENISPERMACEAE

*Cissampelos pareira* Linn.*Cocculus hirsutus* (Linn.) Diels*C. villosus* DC.*Tinospora cordifolia* (Willd.) Hook. f. & Thoms.

## NYMPHAEACEAE

*Nymphaea* sp.

## PAPAVERACEAE

*Argemone mexicana* Linn.

## BRASSICACEAE (CRUCIFERAE)

*Cardamine trichocarpa* Hochst. ex A. Rich.*C. sambellata* Hk. f. & Th.

## CAPPARACEAE

*Capparis septaria* Linn.*Cleome chelidoni* Lindl. f.*Crataeva nurata* Buch. Ham.*C. religiosa* auct. non Forst.*Maerua oblongifolia* A. Rich.*M. ovalifolia* Camb.

## FLACOURTIACEAE

*Casuarina graveolens* Dalz.*Flacourtia indica* (Burm. f.) Merr.*F. latifolia* Cooke

## CARYOPHYLLACEAE

*Polycarpon prostratum* (Forsk.) Aschers. & Schweinf.*P. laefingiae* Bth.

## TAMARICACEAE

*Tamarix ericoides* Rottl.

## PORTULACACEAE

*Portulaca oleracea* Linn.

## ELATINACEAE

*Bergia ammannioides* Roxb. ex Roth*B. odorata* Edgew.

## MALVACEAE

*Abelmoschus esculentus* (Linn.) Moench.*Hibiscus esculentus* L.*A. manihot* (Linn.) Medic.*Hibiscus verticillatus* Roxb.*Abutilon indicum* (Linn.) Sw.*A. glaucum* (Cav.) Sw.*A. muticum* G. Don*Azanza lampas* (Cav.) Alef.*Thespesia macrophylla* Bl.*Gossypium herbaceum* Linn.*Hibiscus cannabinus* Linn.*H. lobatus* (Murr.) O. Kuntze*H. solarata* L' Her.*H. subdariffa* Linn.*H. vitifolius* Linn.*Kydia calycina* Roxb.*Malachra capitata* Linn.

- Pavonia zeylanica* Cav.  
*Sida mysorensis* Wt. & Arn.  
*S. glutinosa* auct.  
*S. orientalis* Cav.  
*S. rhombifolia* var. *rhomboides* Mast.  
*S. retusa* Linn.  
*S. rhombifolia* var. *retusa* Mast.  
*S. spinosa* Linn.  
*S. veronicaefolia* Lamk.  
*Thespesia populnea* (Linn.) Soland. ex Corr.  
*Urena lobata* Linn.

## BOMBACACEAE

- Adansonia digitata* Linn.  
*Bombax ceiba* Linn.  
*B. malabaricum* DC.

## STERGULIACEAE

- Helicteres isora* Linn.  
*Melochia corchorifolia* Linn.  
*Sterculia urens* Roxb.

## TILIACEAE

- Cochlosorus aestivus* Linn.  
*C. acutangulus* Lamk.  
*C. capsularis* Linn.  
*C. fascicularis* Lamk.  
*C. olitorius* Linn.  
*C. trilobularis* Linn.  
*C. tridens* Linn.  
*Grewia tiliaefolia* Vahl  
*G. tenax* (Vorsk.) Fiori  
*G. populifolia* Vahl  
*Triumfetta pentandra* A. Rich.  
*T. rhomboides* Jant.  
*T. rotundifolia* Lamk.

## BALSAMINACEAE

- Impatiens kleinii* Wt. & Arn.

## OXALIDACEAE

- Biophytum sensitivum* (Linn.) DC.

## RUTACEAE

- Argie marmelos* (Linn.) Corr.

## SIMARUBACEAE

- Allanfus esculus* Roxb.

## BURSERACEAE

- Garuga pinnata* Roxb.

## MELIACEAE

- Azadirachta indica* A. Juss.  
*Melia composita* Willd.  
*Soymida febrifuga* A. Juss.

## CELASTRACEAE

- Elaeodendron roxburghii* Wt. & Arn.  
*E. glaucum* auct. non Pers.

## RHAMNACEAE

- Ventilago denticulata* Willd.  
*V. colyculata* Tulas.  
*Zizyphus mauritiana* Lamk.  
*Z. jujuba* Lamk. non Mill.  
*Z. nummularia* (Buem. f.) Wt. & Arn.  
*Z. rotundifolia* Lamk.  
*Z. rugosa* Lamk.  
*Z. xylopyrus* Willd.

## VITACEAE

- Cayratia carnosia* (Lamk.) Gagnep.  
*Vitis trifolia* auct. non Linn.  
*Cissus repanda* Vahl  
*Vitis repanda* Vahl  
*Lecy. indica* (Burm. f.) Merr.  
*L. sambucina* Willd.  
*L. microphylla* Roxb. ex Hornem.

## SAPINDACEAE

- Cardiospermum halicacabum* Linn.  
*Schleichera olonosa* (Lour.) Oken  
*S. trifuga* Willd.

## ANAGARDIACEAE

- Lannea coronandolica* (Houtt.) Merr.  
*Odina wodey* Roxb.  
*Mangifera indica* Linn.

## MORINGACEAE

- Moringa concanensis* Nimmo  
*M. oleifera* Lamk.  
*M. pterygosperma* Gaertn.

## PAPILIONACEAE

- Abrus precatorius* Linn.  
*Aeschynomene indica* Linn.  
*Alhagi pseudalhagi* (Bieb.) Desv.  
*A. camelorum* Fisch.  
*Alysicarpus bupleurifolius* (Linn.) DC.  
*A. longifolius* (Spreng.) Wt. & Arn.  
*A. procumbens* (Roxb.) Schindl.  
*A. hamosus* Edgew.  
*A. scariosus* Grah. ex Thw.  
*A. rugosus* var. *heyneanus* Baker  
*A. vaginalis* (Linn.) DC.  
*Arachis hypoeaga* Linn.  
*Butea monosperma* (Lamk.) Taub.  
*B. frondosa* Koen. ex Roxb.  
*Cajanus cajan* (Linn.) Millsp.  
*C. indicus* Spreng.

- Cunavalia gladiata* (Jacq.) DC.  
*C. ensiformis* auct. non DC.  
*Cicer arctinum* Linn.  
*Clitoria ternatea* Linn.  
*Crotalaria albida* Hayne ex Roth  
*C. juncea* Linn.  
*C. leptostachya* Benth.  
*C. latifolia* Linn. f.  
*C. mysorensis* Roth  
*C. nana* Bern. f.  
*C. triquetra* Dalz.  
*Cyamopsis tetragonoloba* (Linn.) Turrill.  
*C. pomiloides* DC.  
*Cylista scariosa* Roxb.  
*Dalbergia latifolia* Roxb.  
*D. paniculata* Roxb.  
*D. volubilis* Roxb.  
*Desmodium gangeticum* (Linn.) DC.  
*D. dichotomum* (Koenig ex Willd.) DC.  
*D. diffusum* DC.  
*D. laxiflorum* DC.  
*D. triangulare* var. *congestum* (Prain) Sant.  
*D. ephalata* var. *congestum* Prain  
*D. triflorum* (Linn.) DC.  
*D. velutinum* (Willd.) DC.  
*D. latifolium* DC.  
*Dolichos lablab* Linn.  
*Erythrina suberosa* Roxb.  
*Indigofera astragalina* DC.  
*I. hirsuta* auct. non Linn.  
*I. cordifolia* Heyne ex Roth  
*I. glandulosa* Roxb. ex Willd.  
*I. linnei* Al.  
*I. cinnaphylla* auct. non Linn.  
*I. prostrata* Willd.  
*I. trita* Linn.  
*Melilotus indica* All.  
*Milletia racemosa* Benth.  
*Moghania strobilifera* (Linn.) Ste-Hil. ex Jacke  
*Mucuna pruri* Hook. f.  
*M. trautoni* auct. non DC.  
*Ougeinia oogelensis* (Roxb.) Hochr.  
*O. dalbergoides* Bth.  
*Phaseolus radiatus* Linn.  
*P. sublobatus* Roxb.  
*Pongamia pinnata* (Linn.) Pier.  
*P. glabra* Vent.  
*Pterocarpus marsupium* Roxb. var. *acuminatus* Prain  
*Rhynchosia minima* DC.  
*Sesbania bispinosa* (Jacq.) W. F. Wight  
*S. acabrata* (Willd.) Pers.

- S. bispinosa* (Jacq.) W. F. Wight var. *cannabina* Sant.  
*Smilthia conferta* Sm.  
*Tephrosia purpurea* (Linn.) Pers.  
*Teramnus labialis* (Linn. f.) Spreng.  
*Uraria picta* Desv.  
*U. rufescens* (DC.) Schindl.  
*Vigna onguiculata* (Linn.) Walp.  
*V. sativae* Walp.  
*Zornia gibbosa* Benth.  
*Z. diphylla* auct. non Pers.

## CASSIAPINACEAE

- Bauhinia purpurea* Linn.  
*B. racemosa* Lamk.  
*Cassia fistula* Linn.  
*C. pumila* Lamk.  
*C. sinica* Lamk.  
*C. tora* Linn.  
*Delonix elata* (Linn.) Gamble  
*Poinciana elata* Linn.  
*D. regia* (Boj.) Raf.  
*Poinciana regia* Boj.  
*Piliostigma toveolatum* (Dalz.) Thunb.  
*Rauhinia toveolata* Dalz.  
*Tamarindus indica* Linn.

## KIMOSAGEAE

- Acacia chundra* (Roxb.) Willd.  
*A. catechu* var. *suandra* Prain  
*A. nilotica* (Linn.) Willd. sp. *indica* (Benth.) Brenan  
*A. arabica* auct. non (Lamk.) Willd.  
*A. pennata* (Linn.) Willd.  
*A. polyacantha* Willd.  
*A. sena* Boeh-Ham. ex Voigt  
*Albizia lebbek* (Linn.) Benth.  
*A. odoratissima* (Linn. f.) Benth.  
*A. procera* (Roxb.) Benth.  
*Leucaena leucocephala* (Lamk.) de Wit  
*Leucaena glauca* Bth.  
*Prosopis juliflora* DC.  
*Samanea saman* (Jacq.) Merr.  
*Psittacobium saman* Bth.

## VAHILIACEAE

- Vahlia digyna* (Retz.) O. Kuntze  
*V. viscosa* Roxb.

## COMBRETACEAE

- Anogeisus latifolia* (Roxb.) Bedd.  
*Combretum ovalifolium* Roxb.  
*Terminalia bellirica* (Gaertn.) Roxb.

**Terminalia crenulata** Roth*T. tomentosa* Auct. non Wt. & Arn.

## MYRTACEAE

**Syzygium cumini** (Linn.) Skeels*Eugenia jambolana* Lamk.**S. heyneana** Wall. ex Wt. & Arn.*Eugenia heyneana* Dulac

## LECYTHIDACEAE

**Careya arborea** Roxb.

## LYTHRACEAE

**Ammannia baccifera** Linn.**Lagerstroemia parviflora** Roxb.**Lawsonia inermis** Linn.**Rotala indica** (Willd.) Koehne*Ammannia peploides* Spreng.**R. serpyllifolia** (Roth) Benth.*Ammannia tenuis* Cke.**Woodfordia fruticosa** (Linn.) Kurz*W. floribunda* Salish.

## ONAGRACEAE

**Ludwigia perennis** Linn.*L. parviflora* Roxb.

## CARIACEAE

**Carica papaya** Linn.

## MOLLUGINACEAE

**Glinos lotoides** Linn.*Mollugo kiria* Thunb.**Mollugo pentaphylla** Linn.

## AJZOACEAE

**Sesuvium portulacastrum** Linn.

## CUCURBITACEAE

**Citrullus colocynthis** (Linn.) Schrad.**Ctenolepis cerasiformis** (Storks) Hook. f.*Blastaria fimbriatipala* Fenzl.**Cucumis callosus** (Rottl.) Cogn. ex Cogn. & Harms.*C. trigonus* Roxb.**Cucurbita maxima** Duch.**Diplocyclos palmatus** (Linn.) Jeffrey*Bryonopsis laciniata* auct. non Naud.**Lagenaria leucantha** (Linn.) Rusby*L. vulgaris* Ser.**Luffa acutangula** Roxb.**L. cylindrica** (Linn.) M. Roem.*L. aegyptiaca* Mill.**Momordica charantia** Linn.**Mukia maderaspatana** (Linn.) Roem.*Melothria maderaspatana* Cogn.

## APIACEAE (UMBELLIFERAE)

**Trachyspermum stictocarpum** Woll. var. *stictocarpum**Carum stictocarpum* Clarke

## ALANGIACEAE

**Alangium salviifolium** (Linn. f.) Wang.*A. lamarekii* Thw.

## RUBIACEAE

**Adina cordifolia** (Roxb.) Hook. f. ex Brandis**Boreria articulatis** (Linn. f.) F. N. Wul.*Spermocoe laspala* Linn.**B. stricta** (Linn. f.) Schum.*Spermocoe stricta* Linn. f.**Dentella repens** Forsk.**Gardenia turgida** Roxb.**Meyna laxiflora** Robyns**Mitragyna parvifolia** Korth.**Moriola tomentosa** Heyne ex Roth*M. tomentosa* var. *tomentosa* Hk. f.**Oldenlandia corymbosa** Linn.**Xeromphic spinosa** (Thunb.) Keay*Randia dimerorum* Lamk.

## ASTERACEAE (COMPOSITAE)

**Ageratum conyzoides** Linn.**Amberboa ramosa** (Roxb.) Jaffr.*Voluntaria thyrsata* Bth.**Blainvillaea acmella** (Linn.) Philp.*B. rhomboides* Cass.**Blumea bifoliata** DC.**B. eriantha** DC.**B. membranacea** DC.**B. mollis** (Don) Merr.**B. oxydonta** DC.**Caesulia axillaris** Roxb.**Cyathocline purpurea** (Don) O. Kuntze*C. lyrata* Cass.**Echinops echinatus** Roxb.**Eclipta prostrata** (Linn.) Linn.*E. erecta* Linn.**Emilia sonchifolia** (Linn.) DC.**Gnaphalium indicum** Linn.**Goniochaeton indicum** (Klein ex Willd.) Clarke*G. glaberrimum* Cass.**Grangea maderaspatana** (Lamk.) Poir.**Launaea fallax** (Jaub. & Spach) O. Kuntze*L. nudicaulis* Hook. f.**L. sarmentosa** (Willd.) Ait.*L. pennatifida* Cass.**Sphaeranthus indicus** Linn.

- Spilanthes paniculata* Wall. ex DC.  
*S. acmella* auct. non Mart.  
*Tagetes* sp.  
*Tridax procumbens* Linn.  
*Vernonia anthelmintica* (Linn.) Willd.  
*V. cinerea* Less.  
*Vicia indica* (Willd.) DC.  
*Wedelia urticifolia* DC.  
*Xanthium strumarium* Linn.
- CAMPANULACEAE  
*Lobelia alsinoides* Lamk.  
*L. trigona* Roxb.
- SAPOTACEAE  
*Madhuca indica* Gmel.  
*Bassia latifolia* Roxb.
- EBENACEAE  
*Diospyros melanoxylon* Roxb.
- APOCYNACEAE  
*Cassia congesta* Wt.  
*C. carandas* auct. non Linn.  
*Holarthra antidysenterica* (Heyne ex Roth) A. DC.  
*Nerium indicum* Mill.  
*Wrightia tinctoria* R. Br.  
*W. tomentosa* Roem. & Schult.
- ASCLEPIADACEAE  
*Calotropis gigantea* (Linn.) R. Br.  
*Holostemma annularium* (Roxb.) K. Schum.  
*H. rheedarum* auct. non Spreng.  
*Leptadenia reticulata* W. & A.  
*Marsdenia tenacissima* (Roxb.) Moon  
*Pentstemon spiralis* (Forsk.) Derne.  
*P. cynanchoides* R. Br.  
*Pergularia daemia* (Forsk.) Chiov.  
*Daemia extensa* R. Br.
- PERILOACEAE  
*Cryptolepis buchanani* Roem. & Schult.  
*Hemidesmus indicus* (Linn.) Schult.
- LOGANIACEAE  
*Cynoctonum mitreola* (Linn.) Britt.  
*Mitreola oldenlandioides* Wall.
- SALVADORACEAE  
*Salvadora oleoides* Decne.  
*S. persica* Linn.
- GENTIANACEAE  
*Cassipourea diffusa* (Vahl) R. Br.  
*Centaurium roxburghii* (Don) Druce  
*Erythra roxburghii* Don
- Enicostema hyssopifolium* (Willd.) I. C. Verd.  
*E. littorale* Bl.
- HYDROPHYLACEAE  
*Hydrolea zeylanica* (Linn.) Vahl
- BORAGINACEAE  
*Coldenia procumbens* Linn.  
*Cordia dichotoma* Forst. f.  
*C. myxa* auct. non Linn.  
*C. gharaf* (Forsk.) Ehrenb. ex Asch.  
*C. rostris* R. & S.  
*Heliotropium ovalifolium* Forsk.  
*H. spinum* Linn.  
*Rotula aquatica* Lour.  
*Rhabdia lycioides* Mart.  
*Trichodesma zeylanicum* (Burm. f.) R. Br.
- CONVOLVULACEAE  
*Convolvulus microphyllus* Sieb.  
*Cressa cretica* Linn.  
*Cuscuta reflexa* Roxb.  
*Evolvulus alsinoides* (Linn.) Linn.  
*Ipomoea aquatica* Forsk.  
*I. fistulosa* Mart. ex Choisy  
*I. carota* auct. non Jacq.  
*I. hederifolia* Linn.  
*Quamoclit coccinea* auct. non Moench.  
*I. mauritiana* Jacq.  
*I. digitata* L.  
*I. nil* (Linn.) Roth  
*I. hederacea* auct. non Jacq.  
*I. pescaprae* (Linn.) Sw.  
*L. sepriaria* Roxb.  
*Merremia aegyptia* (Linn.) Urb.  
*M. pentaphylla* Hall. f.  
*M. gangetica* (Linn.) Hall. f.  
*M. emarginata* Hall. f.  
*M. quinquefolia* (Linn.) Hall. f.  
*M. vitifolia* (Burm. f.) Hall. f.  
*Operculina turpethum* (Linn.) Silva-Manso  
*Rivea hypocrateriformis* Choisy
- SOLANACEAE  
*Capsicum annum* Linn. var. *acuminatum* Fing.  
*Datura innoxia* Mill.  
*D. metel* Linn.  
*Lycopersicon lycopersicum* (Linn.) Sant.  
*Physalis minima* Linn.  
*Solanum melongena* Linn.  
*S. surattense* Burm. f.  
*S. xanthocarpum* Schrad. & Wendl.

## SCROPHULARIACEAE

- Bacopa monnieri* (Linn.) Penn.  
*Monnina cuneifolia* Mich.  
*Limnophila indica* (Linn.) Druce  
*L. granuloides* R. Br.  
*L. racemosa* Bth.  
*Lindenbergia muraria* (Roxb.) P. Bruchl.  
*L. urticifolia* Lohm.  
*Lindernia ciliata* (Colum.) Penn.  
*Bonnaya brachiata* L. & O.  
*L. crustacea* (Linn.) F. Muell.  
*Vandellia crustacea* Bth.  
*L. oppositifolia* (Retz.) Muk.  
*Bonnaya oppositifolia* Spreng.  
*L. parviflora* (Roxb.) Haines  
*Ilysanthes parviflora* Bth.  
*Sopubia delphinifolia* (Roxb.) G. Don  
*Stemodia viscosa* Roxb.  
*Striga angustifolia* (Don) Sahlb.  
*S. euphrasimides* Bth.  
*S. lutea* Lour.  
*Sutera dissecta* (Del.) Walp.  
*S. glandulosa* Bth.  
*Verbasicum chinense* (Linn.) Sant.  
*Clelia caromandelana* Vahl

## BIGNONIACEAE

- Dolichandrone falcata* Seem. var. *lawii* (Secur.)  
Haines  
*Heterophragma quadriloculare* (Roxb.) K. Schum.  
*H. roxburghii* A. DC.  
*Orosylum indicum* (Linn.) Vahl  
*Stereospermum personatum* (Hassk.) Charr.  
*S. chelonoides* auct. non nisi partim DC.

## PEDALJACEAE

- Pedaliium murex* Linn.  
*Sesamum indicum* Linn.

## MARTYNIACEAE

- Martynia annua* Linn.

## ACANTHACEAE

- Barleria prattensis* Sant.  
*Blepharis repens* (Vahl) Roth  
*B. molluginifolia* Pers.  
*Carvia callosa* (Nees) Bremek.  
*Dicliptera roxburghiana* Nees  
*Dipteracanthus prostratus* (Poir.) Nees  
*Rutiba prostrata* var. *dejecta* Clk.  
*Eranthemum roseum* (Vahl) R. Br.  
*Dandalecanthus roseus* T. Anders.  
*Haplanthus neilgherryensis* Wt.  
*H. tentaculatus* Nees

- H. verticillata* (Roxb.) Nees  
*Hemidaphnopholus polyspermus* Nees  
*Hygrophila polysperma* T. Anders.  
*Hemigraphis lutebrosa* Nees var. *heyneana* Bremek.  
*Hygrophila auriculata* (Schum.) Heine  
*Asteracanthus longifolia* Nees  
*H. scrypfilum* (Nees) T. Anders.  
*Lepidagathis trinervis* Wall. ex Nees  
*Neuracanthus sphaerostachyus* (Nees) Dalz.  
*Peristrophe bicalyculata* (Retz.) Nees  
*Rungia pectinata* (Linn.) Nees  
*R. parviflora* var. *pectinata* Clk.  
*R. repens* (Linn.) Nees

## VERBENACEAE

- Avicennia marina* Vierh. var. *acutissima* Stapf & Mold.  
*A. alba* Bl.  
*Clerodendrum multiflorum* (Burm. f.) O. Kuntze  
*C. philomidis* Linn. f.  
*Gmelina arborea* Roxb.  
*Lantana camara* Linn. var. *aculeata* Mold.  
*L. camara* auct. non Linn.  
*Phyla nodiflora* (Linn.) Greene  
*Lippa nodiflora* A. Rich.  
*Tectona grandis* Linn. f.  
*Vitex negundo* Linn.

## LAMIACEAE (LABIATAE)

- Acrocephalus indicus* (Burm. f.) O. Kuntze  
*A. capitatus* Bth.  
*Anisomeles heyneana* Benth.  
*A. indica* (Linn.) O. Kuntze  
*A. otata* R. Br.  
*Leonotis nepetifolia* R. Br.  
*Leucas aspera* (Willd.) Spreng.  
*L. biflora* R. Br.  
*Ocimum canum* Sm.  
*Pogostemon parviflorus* Benth.  
*Salvia plebeia* R. Br.

## NYCTAGINACEAE

- Boerhavia diffusa* Linn.  
*Bougainvillea spectabilis* Willd.

## AMARANTHACEAE

- Achyranthes aspera* Linn.  
*A. aspera* Linn. var. *porphyristachya* Hook. f.  
*Aerva monsoniae* (Linn. f.) Marr.  
*A. sanguinolenta* (Linn.) Blume  
*A. scandens* Wall.  
*Alternanthera sessilis* (Linn.) R. Br.  
*A. tranchea* Lamk.



- Amaranthus hybridus* Linn. sp. cruentus (Linn.)  
Thell. var. *puniculatus* (Linn.) Thell.  
*A. paniculatus* Linn.  
*A. spinosus* Linn.  
*Celosia argentea* Linn.  
*C. cristata* Linn.  
*Gomphrena globosa* Linn.  
*Papalia lappacea* (Linn.) Juss.

## CHENOPODIACEAE

- Suaeda nudiflora* Forsk. ex Gmel.

## POLYGONUMAE

- Polygonum barbatum* Linn. var. *gracile* Steudal  
*P. serrulatum* Lagasc.  
*P. glabrum* Willd.  
*P. plebeium* R. Br.

## LORANTHACEAE

- Dendrophthoe falcata* (Linn. f.) Etingg. var. *coccinea*  
(Talbot) Santapau  
*Loranthus longifolius* var. *coccineus* Talb.

## EUPHORBACEAE

- Baliospermum montanum* (Willd.) Modl. Arg.  
*B. axillare* Bl.  
*Bridelia retusa* (Linn.) Spreng.  
*Chrozophora prostrata* Dalz.  
*C. rotifera* (Geis.) Juss. ex Spreng.  
*C. plicata* Voigt  
*Emblica officinalis* Gaertn.  
*Phyllanthus evahica* Linn.  
*Euphorbia hirta* Linn.  
*E. pilulifera* Auct. non Linn.  
*E. meriiifolia* Linn.  
*E. orbiculata* H. B. K.  
*E. microplicata* Heyne  
*E. parviflora* Linn.  
*E. hypericifolia* var. *parviflora* Prain  
*E. thymifolia* Linn.  
*E. tirucalli* Linn.  
*Homonoida riparia* Lour.  
*Jatropha curcas* Linn.

- Kirganelia reticulata* (Poir.) Baill.  
*Phyllanthus reticulatus* Poir.  
*Mallotus philippensis* (Lam.) Muell. Arg.  
*Phyllanthus asperulatus* Hitchcok.  
*P. urtic* Auct. non Linn.  
*P. maderaspatensis* Linn.  
*P. simplex* Retz.  
*P. ornatrix* Linn.  
*Securinea virosa* (Roxb. ex Willd.) Pax & Hoffm.  
*Thugga virosa* Bl.

## ELMACEAE

- Holoptelea integrifolia* (Roxb.) Planch.  
*Tecma orientalis* (Linn.) Blume

## URTICACEAE

- Distemon indicum* Willd.

## MORACEAE

- Ficus amplissima* Sol.  
*F. vaha* Roxb.  
*F. amottiana* Miq.  
*F. asperifera* Roxb.  
*F. benghalensis* Linn.  
*F. hispida* Linn. f.  
*F. racemosa* Linn.  
*F. glomerata* Roxb.

## CASIARIACEAE

- Casuarina equisetifolia* Forst.

## HYDROCHARITACEAE

- Vallisneria spiralis* Linn.

## ORCHIDACEAE

- Vanda tessellata* (Renz.) Hook. f. ex G. Don  
*V. toxburghii* R. Br.

## MUSACEAE

- Musa paradisiaca* Linn.

## ZINGIBERACEAE

- Costus speciosus* (Köck.) Sol.

## AMARYLLIDACEAE

- Crinum pratense* Herbert

## AGAVACEAE

- Agave* sp.

## DIOSCOREACEAE

- Dioscorea bulbifera* Linn.  
*D. oppositifolia* Linn.

## LILIACEAE

- Allium cepa* Linn.  
*Aloe barbadensis* Mill.  
*Asparagus racemosus* Willd. var. *javanicus* Baker

## COMMELINACEAE

- Commelina benghalensis* Linn.  
*C. diffusa* Burd. f.  
*C. nudiflora* Auct. non Linn.  
*C. hasskarlii* Clarke  
*C. kurzii* Clarke  
*C. paludosa* Wurm

## ARECACEAE (PALMAE)

- Borassus flabellifer* Linn.  
*Phoenix sylvestris* (Linn.) Roxb.

## ARACEAE

- Amorphophallus conmutatus* (Schott) Engler  
*Colocasia esculenta* (Linn.) Schott  
*C. antiquorum* Schott  
*Cryptocoryne retrospiralis* Kunth

## ALISMACEAE

- Limnophyton obtusifolium* (Linn.) Miq.

## ERICACEAE

- Eriocaulon* sp.

## CYPERACEAE

- Bulbostylis barbata* Kunth  
*Stenophyllis barbata* Cooke  
*Cyperus stulatus* Kern  
*C. arenarius* Retz.  
*C. difformis* Linn.  
*C. iria* Linn.  
*C. michelianus* (Linn.) Link. sp. *pygmaeus* (Roth.)  
 Aichers. & Griseb.  
*C. pygmaeus* Roth.  
*C. pangorei* Roth.  
*C. pseudokyllingoides* Kükenth.  
*Courtonia cyperoides* Nees  
*C. pumilus* Linn.  
*C. rotundus* Linn.  
*Fimbristylis bisumbellata* (Forsk.) Bob.  
*F. dichotoma* auct. non Vahl  
*F. falcata* (Vahl) Kunth  
*F. junceaformis* Kunth  
*F. nulliacea* (Linn.) Vahl  
*F. quinqueangularis* Kunth  
*Scirpus articulatus* Linn.  
*S. littoralis* Schrad. var. *subulatus* (Vahl) Chiov.  
*S. littoralis* auct. non Schrad.  
*S. maritimus* Linn.  
*S. roylei* (Nees) Parker  
*S. quinquefarius* Ham.

## POACEAE (GRAMINEAE)

- Aeluropus lagopoides* (Linn.) Trin.  
*A. villosus* Trin.  
*Aplusa nutica* Linn.  
*A. varia* subsp. *aristata* Hack.  
*Aristida* sp.  
*Arthraxon lanceifolius* (Trin.) Hochst.  
*A. prionodes* (Steud.) Dandy  
*A. lanceolatus* Hack.  
*Arundinella metzii* Hochst. ex Miq.  
*Brachiaria ramosa* (Linn.) Stapf  
*Panicum ramosum* Linn.  
*Capillipedium bogelii* (Hack.) Stapf  
*Andropogon rugens* Hack.  
*Cenchrus* sp.  
*Chloris virgata* Sw.  
*Coix lachryma-jobi* Linn.  
*Cynodon dactylon* (Linn.) Pers.  
*Dactyloctenium aegyptium* (Linn.) P. Beauv.  
*Echinochloa aegyptiaca* Desf.  
*Dendrocalamus strictus* Nees  
*Desmostachya bipinnata* (Linn.) Stapf  
*Eragrostis cynosuroides* Beauv.  
*Dicanthium annulatum* (Forsk.) Stapf  
*Andropogon annulatus* Presl.  
*D. caricicum* (Linn.) A. Camus  
*Digitaria adscendens* (H. B. K.) Henr. var. *cris-*  
*iformis* Henr.  
*D. angustifolia* var. *obovata* Prain  
*D. oviculata* (Nees) A. Camus  
*Digitaria stricta* Roth. ex Roem. & Schult. var. *stricta*  
*D. ovata* Prain  
*Dinebra retroflexa* (Vahl) Panz.  
*D. arabica* Jent.  
*Echinochloa colozum* (Linn.) Linn.  
*Panicum colozum* Linn.  
*E. frumentacea* (Roxb.) Link.  
*Panicum frumentaceum* Trin.  
*Eleusine coracana* (Linn.) Gaertn.  
*E. indica* (Linn.) Gaertn.  
*Elytrophorus spicatus* (Willd.) A. Camus  
*E. villosatus* Beauv.  
*Fragrostis ciliaris* (Linn.) R. Br.  
*E. diarrhena* (Schult.) Steud.  
*E. interrupta* auct. non R. Br.  
*E. japonica* (Thunb.) Trin.  
*E. tenella* (Linn.) Beauv. ex Roem. & Schult. var.  
*tenella*  
*E. viscosa* (Retz.) Trin.  
*E. senilis* var. *cisena* Stapf  
*E. unioloides* (Retz.) Nees ex Steud.  
*Häckelochloa granulata* (Linn. f.) O. Kuntze  
*Monocarya granulata* Linn. f.  
*Heteropogon contortus* (Linn.) Beauv. ex Roem. &  
 Schult.  
*Andropogon contortus* Beauv.  
*Isachne glabosa* (Horn.) O. Kuntze  
*Ischaemum indium* (Horn.) Merrill  
*I. aristatum* auct. non Linn.  
*I. rugosum* Salisb.  
*Oplismenus burmannii* P. Beauv.  
*Oryza sativa* Linn.  
*Panicum polypodium* Trin.

- Paspalidium flavidum** (Retz.) A. Camus  
*Panicum flavidum* Retz.  
**Paspalum scrobiculatum** Linn.  
**Pennisetum typhoides** (Burro. f.) Stapf & Hubb.  
*P. typhoides* Burro. f.  
**Saccharum officinarum** Linn.  
**S. spontaneum** Linn.  
**Setaria pallide-fusca** (Schum.) Stapf & Hubb.  
**Sorghum vulgare** Pers.  
**Spodiopogon rhizophorus** (Sicud.) Pilger.  
*S. albidus* Bth.  
**Sporobolus diander** (Retz.) P. Beauv.  
**Tetrapogon tenellus** (Roxb.) Chiov.  
*Chloris tenella* Roxb.  
**T. villosus** Desl.  
*Chloris villosa* Pers.  
**Themeda quadrivalvis** (Linn.) O. Kuntz.

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## REFERENCES

- CHODAS, A. R. AND G. M. OZA. The Flora of Patalgadh Hill, Gujarat State, India. *M. S. Univ. Baroda Bot. Mem.* 1: 1-296, 1956.  
SARABHAI, H. Contributions to the Botany of the Dangs Forest, British India. *J. Gujarat Res. Soc.* 10: 297-323, 1954; *Ibid.* 17: 1-23, 1955.  
— *Flora of Assam*. 1: 1-59 & 1-479, Rajkot, 1962.  
SAXENA, W. T. AND L. J. SWARUP. Plants of Northern Gujarat. *Res. bot. Ass. India* 6(7): 267-335, index pp. + ill., 1918.  
SIKAR, G. L. Further contribution to the vegetation of Baroda. *Indian For.* 95(4): 286-290, 1963.  
— Floriculture of South India Branch—1. *J. Bombay Nat. Hist. Soc.* 51(2): 274-283, 1954(a).  
— Limitations of plants from Doodh. II. *J. Gujarat Univ.* 1(1): 167-169, 1946(b).  
— A contribution to the Flora of Rajkot Forest in Gujarat State. *Indian For.* 35: 617-633, 1907.  
— A contribution to the Flora of Mohi Talukas. *Ibid.* 35(4): 276-277, 1907.  
— AND B. SURYANARAYANA. Additions to the Flora of Dangs Forest, Gujarat. *J. Bombay Nat. Hist. Soc.* 61: 136-138, 1967.