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## RESEARCH ARTICLE

## An Enumeration of Floral diversity of Sariska tiger reserve in Aravallis.

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### Abstract

The Sariska tiger reserve in Aravallis has its own importance and specific characteristics endowed with unique biodiversity. In the present study an attempt has been made to ascertain the current status of the flora in all the possible study area. Attention is focused on one of the important reserve forest of state of Rajasthan with pace of their endemism and facing number of challenges in this reserve. In present study emphasize on taxonomic richness; genetic difference within each taxon; the communities, ecosystem and landscape occupied by this reserve. Several studies so far conducted in Aravallis like Nair and Nathawath 1957, Sharma 1958, Jain and Kotwal 1960, Mathur and Saxena 1968, Dennis et al 1977, Sharma 1978, 1983, Parmar 1985, Rogers, 1988, 1990a/b, 1991, Mathur 1991, Sharma and Prasad 1992, Khan 1995, Katewa 1996, Sekhar 1998, Jain 1970 which supported checklist of plant diversity in this natural reserve.

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### Introduction

Rajasthan, the largest state in our country, has marked difference in physiographic feature. The Aravallis, one of the oldest mountain systems, divide the state in two unequal parts. Over 30 percent of the state is covered by Aravallis and a vast expanse of arid and semi arid tract lies in the west of Aravallis. According to the Champion and Seth (1968) the forest of Aravalli region fall under the broad category of Tropical Dry forests. Study area the "Sariska Tiger reserve" (74°14' to 76° 34' N and 25° 5' to 27° 3' E) is situated in the Aravalli hill range and lies in the semi-arid part of Rajasthan (Rodgers and Panwar, 1988). It became a wild life sanctuary in 1955 and Tiger reserve in 1982. According to Department of Forest, Government of Rajasthan the total area of the Sariska Tiger Reserve is 866 sq.km, of which 302.2 sq. km. is buffer zone and 497.8 sq.km is core zone. Sariska core zone is comprised of three isolated; pockets: Core-I (273.8 sq.km), II (126.5 sq.km.) and III (97.5 sq.km). The status of the Core I has been notified as a National park in 1982. Sariska is undulating to hilly and has numerous narrow valleys. Sariska and Kankwari plateau and two large lakes Mansarovar and Somsagar. Silisad lake is situated just along the north eastern boundary of the reserve. The altitude of Sariska varies from 540 to 777 meters. Earlier Sariska was the private hunting grounds of Alwar's royal family, today only 20 percent of this vast expanse of jungle is "Tiger Habitat". The vegetation of Sariska correspond to Northern tropical dry deciduous forests (sub group 5 B; 5/E I and 5/E2) and Northern tropical thorn forest (Sub Group 6 B) (Champion and Seth, 1968). The forest being scattered and sparse over a large area on various geological and soil formation and vary greatly in composition. *Anogeissus pendula* (Dhok) is dominant species in the undulating area and on the hills. *Boswellia serrata* (Salar) and *Lannea coromandelica* (Garjan) grows on steep rocky areas. *Acacia catechu* (Khair), *Zizyphus mauritiana* (Bordi) and *Butea monosperma* (Dhak) are found in valleys. *Dendrocalamus strictus* is extremely limited in distribution and is found along the well drained reaches of the streams and moist and colder part of the hills.

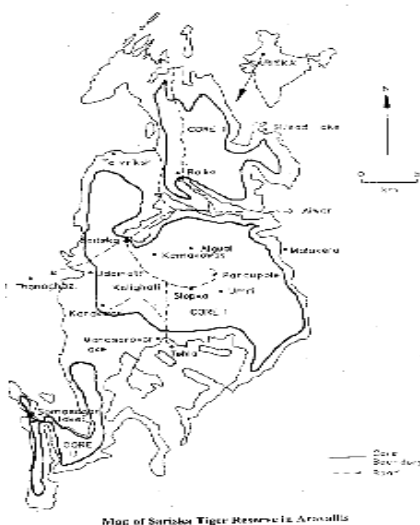
## Material and methods:

In the present study emphasis was laid on the study of floral diversity in Sariska Tiger Reserve, during January, 2001 to March, 2004. This study revealed that biodiversity of the study area was affected due to anthropogenic activities. It provides an assessment of the key human factors and their relative roles in driving the destruction of biodiversity, which are likely to operate, not only in core zone but immediately surrounding buffer zone. Personal observations were taken in the field by visiting the study area and its different landforms. It was a great help that the field staff of Sariska Tiger Reserve, Department of Forest, Government of Rajasthan was associated always in the field. Plant samples (leaf, flower etc.) were brought to Indira Gandhi Centre for Human Ecology, Environmental and Population Studies, herbarium sheets for important species were prepared and help and cooperation was sought from the "Herbarium" of Department of Botany, University of Rajasthan, Jaipur for finding out the current status of vegetation in the study area.

**Landwise floral composition of Sariska Tiger reserve in Aravallis :** Sariska Tiger reserve nestled amidst the Aravallis which used to be hunting place (Sikargrah) of princely state Alwar in the past, is now a days a tiger reserve of international reputation. Sariska is very rich in biodiversity with wide spectrum of flora and ample of wild life. According to the latest " Revised forest types of India " by Sir H.G. Champion and Shri S.K. Seth, the forests, met within the division fall under group 5 "Tropical dry deciduous forest" and group 6 "Tropical thorn forests" under the broad category 'Dry tropical forests'. The main economically valuable species are dhok (*Anogeissus pendula*) salar (*Boswellia serrata*), khair (*Acacia catechu*), bamboos (*Dendrocalamus strictus*), dhak (*Butea monosperma*), kair (*Cappais decidua*), ber (*Zizyphus mauritiana*) with having lot of ground flora comprised of shrubs, herbs, grasses and sedges etc. The forest being scattered over a large area and occurring on various geological and soil formation vary greatly in composition and quality. Approximately 35 percent of the forest area is either occupied by bare rocks or covered specially with degraded and poor type of scrub growth. The growth of the principal trees is generally slow and the height poor. On average the height varies from 4.5 meters to 7.5 meters, in favorable localities like core area the height reaching unto 12 meters. The diameter increment, too is slow and most of the principal species over 30 cm wide in width. The dominating species with occurrence in particular height are divided into upper canopy, middle canopy and ground flora as grasses and sedges mainly. The forests being scattered and sparse over a large area on various geological and soil formations, vary greatly in composition. In the valleys where better soil and moisture conditions exist, the vegetation is comparatively denser.

*Anogeissus pendula* is the dominant tree species, covering over 90 percent area of the forests. *Boswellia serrata* and *Lanea coromandelica* grow on rocks and dry slopes. *Acacia catechu* is common in valleys, where *Dendrocalamus strictus* is extremely limited and are found along well drained reaches of the streams and moist and cooler parts of the hills. The trees are generally slow growing an attain poor height. *Albizia lebbeck*, *Diospyros melanoxylon*, *Syzygium cumini*, *Tamarindus indica* and *Ficus* spp. which are found in moist localities attain large size both in crown grows gregariously, where valleys fan out. and becoming flat and wide. On the basis of their composition. The forests of Sariska Tiger Reserve can be classified as follows (i):*Anogeissus pendula* forest (ii)*Boswellia serrata* forest (iii) *Acacia catechu* forest and (iv) Miscellaneous type of forests which can further be divided into three categories namely (a)*Butea monosperma* forest (b) Forests along nallahs (c) Scrub forest.

## Result and Discussion:



Current status of vegetation in Sariska Tiger Reserve:

A total number of 403 indigenous and naturalised plant species belonging to 271 genera under 86 families can be observed in Sariska Tiger Reserve. This also includes four species of Petriodophytes belonging to three genera and three families, and a species of Gymnosperm. Table(a) includes the number of families, genera and species, under Dictoyledons and Monocotyledons, Pteridophytes and Gymnosperm.

**Table(a).**Shows current status of vegetation in Sariska Tiger Reserve

	<b>Families</b>	<b>Genera</b>	<b>Species</b>
Angiosperm			
Monocotyledons	13	59	90
Dicotyledons	69	208	308
<b>Total</b>	<b>82</b>	<b>267</b>	<b>398</b>
Pteridophytes	3	3	4
Gymnosperm	1	1	1
<b>Total</b>	<b>86</b>	<b>271</b>	<b>403</b>

Except for Poaceae (56 species) and Cyperaceae (17 species) the Monocotyledons are poorly represented. The remaining 16 species of Monocotyledons belong to 10 different families.

**Table(b)** Contains number of Genera and Species in each of plants occurring in Sariska Tiger Reserve

Families	Genera	Species
Anonaceae	2	2
Menispermaceae	2	2
Nelumbonaceae	1	1
Papaveraceae	1	2
Capparaceae	3	4
Flacourtiaceae	1	1
Portulacaceae	1	1
Malvaceae	7	15
Bombacaceae	1	1
Sterculaceae	4	4
Tiliaceae	3	8
Zygophyllaceae	1	2
Oxalidaceae	1	1
Rutaceae	3	3
Balanitaceae	1	1
Burseraceae	2	2
Meliaceae	3	3
Celastraceae	2	2
Rhamnaceae	1	2
Vitaceae	2	2
Sapindaceae	1	1

Anacardiaceae	3	3
Moringaceae	1	1
Fabaceae	16	30
Caesalpinaceae	4	7
Minosaceae	6	13
Rosaceae	1	1
Combretaceae	2	4
Myrtaceae	1	1
Lythraceae	2	3
Onagraceae	1	2
Trapaceae	1	1
Cucurbitaceae	6	10
Cactaceae	1	1
Aizoaceae	2	2
Molluginaceae	1	1
Alangiaceae	1	1
Rubiaceae	5	5
Asteraceae	24	28
Verbenaceae	5	6
Lamiaceae	4	9
Nyctaginaceae	2	3
Amaranthaceae	8	16
Chenopodiaceae	1	2
Basellaceae	1	1
Polgonaceae	2	4
Proteaceae	1	1
Loranthaceae	1	1
Euphorbiaceae	7	4
Ulmaceae	1	1
Moraceae	2	7
Ceratophyllaceae	1	1
Hydrocharitaceae	4	4
Campanulaceae	1	1
Plumbaginaceae	2	2
Sapotaceae	1	1
Ebenaceae	1	1
Oleaceae	2	2

Apocynaceae	5	5
Asclepiadaceae	4	4
Gentianaceae	1	1
Boraginaceae	2	3
Ehretiaceae	2	3
Convolvulaceae	3	9
Cuscutaceae	1	1
Solanaceae	6	9
Scrophulariaceae	8	1
Bignoniaceae	2	2
Pedaliaceae	1	1
Martyniaceae	1	1
Acanthaceae	6	9
Liliaceae	1	1
Commelinaceae	3	4
Pandanaceae	1	1
Arecaceae	1	1
Typhaceae	1	1
Araceae	1	1
Lemnaceae	1	1
Potamogetonaceae	1	3
Zannichelliaceae	1	1
Cyperaceae	6	17
Poaceae	41	55
Gymnosperm		
Pinaceae	1	1
Pteritophytes		
Adiantaceae	1	2
Pteridaceae	1	1
Equisetaceae	1	1

Among the Dicotyledons, Fabaceae is the largest family with 30 species and Asteraceae occupy second place with 23 species, the other families having more than ten species are : Acanthaceae (17 species), Amaranthaceae (16 species), Malvaceae (15 species), Euphorbiaceae (14 species), Mimosaceae (13 species) and Scrophulariaceae (12 species). It is interesting to note that out of the 69 families of Dicotyledons, 50 families are represented by less than 5 species and more than 50 percent of that i.e. 27 families are represented by only a single species.

**Pteridophytes****Adiantaceae**

Adiantum capillus-veneris L.

Adiantum incisum Forsk.

**Pteridaceae**

Actinopteris radiata (Sw.)

Link

Equisetaceae

Equisetum ramosissimum

Desf.

**Gymnosperm****Pinaceae**

Pinus roxburghii Sar

**Angiosperms****Annonaceae**

Annona squamosa L.

*Miliusa tomentosa* (Roxb.)  
Sinclair

**Menispermaceae**

*Cissampelos pareira* L.  
*Cocculus hirsutus* (L.) Diels

**Nelumbonaceae**

*Nelumbo nucifera* Gaertn.

**Papaveraceae**

*Argemone mexicana* L.  
*Argemone ochroleuca* Sweet

**Capparaceae**

*Capparis decidua* (Forsk.)  
Edgew.  
*Capparis sepiaria* L.  
*Crataeva adansonii* Dc.  
subsp. *odora* (Buch.-Ham.)  
Jacobs

*Maerua arenaria* (DC.) Hook.  
f. & Thomas.

**Flacourtiaceae**

*Flacourita indica* (Burm. f.)  
Merr.

**Portulacaceae**

*Portulaca pilosa* L.

**Malvaceae**

*Ablemoschus pungens*  
(Roxb.) Voight  
*Abutilon bidentatum* A. Rich.  
*Abutilon indicum* (L.) Sweet  
*Abutilon ramosum* (Cav.)  
Guill. & Perr.  
*Hibiscus lobatus* (J. A.  
Murray) Kuntze  
*Hibiscus micranthus* L.f.  
*Hibiscus vitifolius* L.  
*Kydia calycina* Roxb.  
*Malvastrum*  
*coromandelianum* (L.)  
Garcke  
*Pavonia zeylanica* Cav.  
*Sida acuta* Burm. f.  
*Sida cordifolia* L.  
*Sida mysorensis* Wight &  
Arn.  
*Sida rhombifolia* L.  
*Sida yunnanensis* Hu

**Bombacaceae**

*Bombax ceiba* L.

**Sterculiaceae**

*Helicteres isora* L.

*Melhania futtyporensis*  
Munro ex Mast.  
*Melochia corchorifolia* L.  
*Sterculia urens* Roxb.

**Tiliaceae**

*Corchorus aestuans* L.  
*Corchorus depressus* (L.)  
Stocks  
*Corchorus olitorius* L.  
*Corchorus trilocularis* L.  
*Grewia damine* Gaertn.  
*Grewia flavescens* A. Juss.  
*Grewia subinaequalis* DC.  
*Triumffeta pentandra* A.  
Rich.

**Zygophyllaceae**

*Tribulus lanuginosus* L.  
*Tribulus terrestris* L.

**Oxalidaceae**

*Oxalis corniculata* L.

**Rutaceae**

*Aegle marmelos* (L.) Corr.  
*Limonia acidissima* L.  
*Naringi crenulata* (Roxb.)  
Nicolson

**Balanitaceae**

*Balanites aegyptiaca* (L.) Del.

**Burseraceae**

*Boswellia serrata* Roxb. ex  
Coleb.

*Commiphora wightii* (Arn.)  
Bhandri

*Melia azedarach* L.  
*Azadirachta indica* A. Juss.  
*Soymida febrifuga* (Roxb.)  
A. Juss.

**Celastraceae**

*Celastrus paniculatus* Willd.  
*Maytenus emarginatus*  
(Willd.) Ding Hou

**Rhamnaceae**

*Ziziphus mauritiana* Lam.  
*Ziziphus nummularia* (Burn.  
F.) Wight & Arn.

**Vitaceae**

*Ampelocissus latifolia*  
(Roxb.) Planch.

*Cayratia trifolia* (L.) Domin.

**Sapindaceae**

*Cardiospermum halicacabum*  
L.

**Anacardiaceae**

*Lannea coromandelica*  
(Houtt.) Merr.  
*Mangifera indica* L.  
*Rhus mysorensis* G. Don

**Moringaceae**

*Moringa pterygosperma*  
Gaertn.

**Fabaceae**

*Abrus precatorius* L.  
*Aeschynomene indica* L.  
*Alysicarpus monilifer* (L.)  
DC  
*Alysicarpus vaginalis* (L.)  
DC.  
*Butea monosperma* (Lam.)  
Taub.  
*Crotalaria hirsuta* Willd.  
*Crotalaria medicagenia* Lam.  
*Dalbergia sisoo* Roxb.  
*Desmodium gangeticum* (L.)  
DC.  
*Desmodium repandum* (Vahl)  
DC.  
*Desmodium triflorum* (L.)  
DC.  
*Desmodium velutinum*  
(Willd.) DC.  
*Erythrina suberosa* Roxb.  
*Indigofera astragalina* DC.  
*Indigofera cordifolia* Heyne  
ex Roth  
*Indigofera linnaei* Ali  
*Indigofera tinctoria* L.  
*Indigofera trita* L.f.  
*Mucuna pruriens* (L.) DC.  
*Psoralea odorata* Blatt. &  
Hallb.  
*Rhynchosia minima* (L.) DC.  
Var. *laxiflora* (Camb.) Baker  
*Rhynchosia rothii* Benth. ex  
Aitch.  
*Sesbania sesban* (L.) Merr.  
*Tephrosia pumila* (Lam.)  
Pers.  
*Tephrosia subtriflora* Hochst.  
ex Baker.

*Tephrosia strigosa* (Dalz.)  
Sant. & Mahesh.  
*Tephrosia villosa* (L.) pers.  
*Vigna radiata* (L.) Wilczek.  
*Vigna unguiculata* (L.) Walp.  
subsp. *unguiculata* Zornia  
*gibbosa* Span.

**Caesalpiniaceae**

*Bauhinia racemosa* Lam.  
*Cassia alba* L.  
*Cassia fistula* L.  
*Cassia obtusifolia* L.  
*Cassia pumila* Lam.  
*Parkinsonia aculeata* L.  
*Tamarindus indica* L.

**Mimosaceae**

*Acacia catechu* (L.f.) Willd.  
*Acacia jacquemontii* Benth.  
*Acacia leucophloea* (Roxb.)  
Willd.  
*Acacia nilotica* (L.) Del.  
subsp. *indica* (Benth.) Brenan  
*Acacia nilotica* (L.) Del.  
subsp. *indica* (Benth.) Brenan  
*cupressiformis* (Stewart) Ali  
and Faruqi.  
*Acacia senegal* (L.) willd.  
*Albizia lebbek* (L.) Benth.  
*Dichrostachys cinerea* (L.)  
Wight & Arn.  
*Leucaena latisiliqua* (L.)  
Gillis.  
*Mimosa hamata* Willd.  
*Mimosa himalayana* Gamble  
*Prosopis cineraria* (L.) Druce  
*Prosopis juliflora* (Sw.) DC.

**Rosaceae**

*Potentilla supina* L.

**Combretaceae**

*Anogeissus latifolia* (Roxb.  
ex DC.) Wall. ex Guill &  
Perr.  
*Anogeissus pendula* Edgew.  
*Terminalia arjuna* (Roxb. ex  
DC.) Wight & Arn.  
*Terminalia bellirica* (Gaertn.)  
Roxb.

**Myrtaceae**

*Syzygium cumini* (L.) Skeels

**Lythraceae**

*Ammannia baccifera* L.

*Ammannia multiflora* Roxb.  
*Woodfordia fruticosa* (L.)  
Kurz

**Onagraceae**

*Ludwigia perennis* L.  
*Ludwigia prostrata* Roxb.

**Trapaceae**

*Tarпа natans* L. var.  
*bispinosa* (Roxb.) Makino

**Cucurbitaceae**

*Bryonopsis lanciniosa* (L.)  
Naud.  
*Coccinia grandis* (L.) Voight

*Cucumis callosus* (Rottl.)  
Cong.

*Luffa acutangula* (L.) Roxb.  
var. *amara* Cl.

*Momordica balsamina* L.  
*Momordica charantia* L. var.  
*muricata* (Willd.)  
Chakravarty

*Momordica dioica* Roxb. ex  
Willd

*Trichosanthes cucumerina* L.  
*Trichosanthes tricuspidata*  
Lour.

**Cactaceae**

*Opuntia elatior* Mill.

**Aizoaceae**

*Trianthema portulacastrum* L.  
*Zaleya govindia* (Buch. Ham.  
ex. D. Don) Nair

**Molluginaceae**

*Glinus lotoides* L.

**ALANGIACEAE**

*Alangium salvifolium* (L.f.)  
Wang.

**Rubiaceae**

*Adina cordifolia* (Roxb.)  
Benth. & Hook. f. ex Brandis  
*Mitragyna parvifolia* (Roxb.)  
Koerth.

*Oldenlandia corymbosa* L.

*Spermacoce pusilla* Wall

*Xeromphis spinosa* (Thunb.)  
Keay

**Asteraceae**

*Acanthospermum hispidum*  
DC.

*Ageratum conyzoides* L.

*Bidens biternata* (Lour.)  
Merr. and Sherff

*Blainvillea acmella* (L.)  
Philip.

*Blumea membranacea* DC.

*Blumea mollis* (D. Don)  
Merr.

*Blumea lacera* (Burm. f.) DC.

*Blumea sinuata* (Lour.) Merr.

*Carthamus oxanthocantha*  
Bieb.

*Cotula hemispherica* Wall.

*Cyathocline purpurea* (D.  
Don) Kuntze

*Echinops echinatus* Roxb.

*Eclipta alba* (L.) Hassk.

*Emilia sonchifolia* (L.) DC.

*Gnaphalium polycaulon* Pers.

*Lactuca runcinata* DC.

*Launaea procumbens* (Roxb.)

Ramayya & Rajgopal

*Sonchus asper* (L.) Hill

*Tridax procumbens* L.

*Vernonia anthelmintica* (L.)  
Willd.

*Eltraria acaulis* (L.f.) Linden

*Eranthemum purpurascens*  
Nees

*Hemiodaphnolobos polyspermus*  
(Roxb.) Nees

*Justicia procumbens* L.

*Justicia quinqueangularis*  
Koen. ex. Roxb. var.

*peploides* (Nees) Clarke

*Lepidagathis cristata* Willd.

*Peristrophe bicalyculata*  
(Retz.) Nees

*Rungia parviflora* Nees

**Verbenaceae**

*Clerodendrum phlomidis* L. f.

*Gmelina arborea* Roxb.

*Lantana camara* L. var.  
*aculeata* (L.) Mold.

*Lantana salvifolia* Jacq.

*Phyla nodiflora* (L.) Greene

*Vitex negundo* L.

**Lamiaceae**

*Anisochilus carnosus* Wall.  
ex. Benth.

*Anisomeles indica* (L.)  
Kuntze

*Leucas cephalotes* Roth  
(Sprengal)

*Leucas flaccida* R. Br.

*Leucas montana* Sprengal

*Leucas pilosa* Benth.

*Ocimum basilicum* L.

*Ocimum canum* Sims.

*Ocimum tenuiflorum* L.

#### **Nyctaginaceae**

*Boerhavia diffusa* L.

*Commicarpus boissieri*  
(Heimerl) Cufod.

*Commicarpus chinensis* (L.)  
Heimerl

#### **Amaranthaceae**

*Achyranthes aspera* L. var.  
*aspera*

*Achyranthes aspera* L. var.  
*argentea* Hook. f.

*Achyranthes aspera* L. var.  
*porphyristachya* Hook. f.

*Aerva sanguinolenta* (L.) Bl.

*Alternanthera pungens* Kunth

*Alternanthera sessilis* (L.)  
DC.

*Amaranthus graecizans* L.

*Amaranthus hybridus* L.

*Amaranthus lividus* L.

*Amaranthus spinosus* L.

*Amaranthus tricolor* L.

*Amaranthus viridis* L.

*Celosia argentea* L.

*Digera muricata* (L.) Mart.

*Gomphrena celosioides* Mart.

*Pupalia lappacea* (L.) Juss.

#### **Chenopodiaceae**

*Chenopodium album* L.

*Chenopodium murale* L.

#### **Basellaceae**

*Basella rubra* L.

#### **Polygonaceae**

*Polygonum plebeium* R. Br.

*Polygonum barbatum* L.

*Polygonum glabrum* Willd.

*Rumex dentatus* L.

#### **Proteaceae**

*Grevillea robusta* Cunn. ex.  
R. Br.

#### **Loranthaceae**

*Dendrophthoe falcata* (L.f.)  
Ettingsh.

#### **Euphorbiaceae**

*Acalypha ciliata* Forsk.

*Acalypha indica* L.

*Bridelia crenulata* Roxb.

*Emblica officinalis* Gaertn.

*Euphorbia caducifolia* Haines

*Euphorbia hirta* L.

*Euphorbia hypericifolia* L.

*Euphorbia nivulia* Buch.-  
Ham.

*Euphorbia prostrata* Ait.

*Euphorbia thymifolia* L.

*Mallotus philippensis* (Lam.)  
Muell.-Arg.

*Phyllanthus amarus* Schum.  
and Thonp

*Phyllanthus virgatus* Forst. f.

*Ricinus communis* L.

#### **Ulmaceae**

*Holoptelea integrifolia*  
(Roxb.) Planch.

#### **Moraceae**

*Ficus benghalensis* L.

*Ficus infectoria* Roxb.

*Ficus infectoria* Roxb. var.  
*wightiana* King

*Ficus palmata* Forssk.

*Ficus racemosa* L.

*Ficus tomentosa* Roxb.

*Morus alba* L.

#### **Ceratophyllaceae**

*Ceratophyllum demersum* L.

#### **Hydrocharitaceae**

*Hydrilla verticillata* (L.f.)

Royle

*Vernonia cinerea* (L.) Less.

*Vicoa indica* (L.) DC.

*Xanthium strumarium* L.

#### **Campanulaceae**

*Campanula benthamii* Wall.  
ex Kitamura

#### **Plumbaginaceae**

*Dyerophytum indicum* (Gibs.  
ex Wight) Kuntze

*Plumbago zeylanica* L.

#### **Sapotaceae**

*Mimusops elengi* L.

#### **Ebenaceae**

*Diospyros melanoxylon*  
Roxb.

#### **Oleaceae**

*Nyctanthes arbortristis* L.

*Schrebera swietenoides*  
Roxb.

#### **Apocynaceae**

*Carissa carandas* L.

*Ichnocarpus frutescens* (L.)  
R. Br.

*Nerium indicum* Mill.

*Thevetia peruviana* (Pers.) K.  
Schum.

*Wrightia tinctoria* R. Br.

#### **Asclepiadaceae**

*Calotropis procera* (Ait.) R.  
Br.

*Leptadenia pyrotechnica*  
(Forsk.) Decne.

*Pergularia daemia* (Forsk.)  
Chiov.

*Wattakaka volubilis* (L.f.)  
Stapf

#### **Gentianaceae**

*Nymphoides cristatum*  
(Roxb.) Kuntze

#### **Boraginaceae**

*Heliotropium ellipticum*  
Ledeb.

*Heliotropium strigosum*  
Willd.

*Trichodesma indica* (L.) R.  
Br.

#### **Ehretiaceae**

*Cordia dichotoma* Forst. f.

*Ehretia aspera* Roxb.

*Ehretia laevis* Roxb.

#### **Convolvulaceae**

*Convolvulus prostratus*  
Forsk.

*Ipomoea carnea* Jacq. subsp.  
*fistulosa* (Mart. ex. Choisy)  
Austin

*Ipomoea nil* (L.) Roth

*Ipomoea muricata* (L.) Jacq.

*Ipomoea pes-tigridis* L.

*Ipomoea sepiaria* Roxb.

*Ipomoea sindica* Stapf

*Rivea hypocrateriformis*  
Choisy

*Rivea laotica* Ooststr.



**Cuscutaceae**

*Capsicum annuum* L.  
*Datura innoxia* Mill.  
*Nicotiana plumbaginifolia* Viv.  
*Physalis minima* L.  
*Solanum anguini* Lam.  
*Solanum incanum* L.  
*Solanum nigrum* L.  
*Solanum surattense* Burm. f.  
*Withania somnifera* (L.) Dunal

**Scrophulariaceae**

*Bacopa monnieri* (L.) Pennell  
*Kickxia ramosissima* (Wall.) Janch.  
*Limnophila indica* (L.) Druce  
*Limnophila rugosa* (Roth) Merr.  
*Lindenbergia indica* (L.) Vatke  
*Lindenbergia muraria* (Roxb. ex D. Don) Bruehl  
*Lindernia ciliata* (Colsm.) Pennell  
*Lindernia crustacea* (L.) F. Muell.  
*Lindernia multiflora* (Roxb.) Mukherjee  
*Mimulus strictus* Benth.  
*Verbascum chinense* (L.) Santapau  
*Veronica anagallis-aquatica* L.

**Bignoniaceae**

*Kigelia africana* (Lam.) Benth.  
*Tecomella undulata* (Seem) Sm.

**Pedaliaceae**

*Sesamum malayanum* Nair

**Martyniaceae**

*Martynia annua* L.

**Acanthaceae**

*Adhatoda zeylancia* Medic.  
*Barleria cristata* L.  
*Barleria prionitis* L. var. *prionitis*  
*Barleria prionitis* L. var. *dicantha* Blatt. & Hallb.

*Blepharis madaraspatisensis* (L.) Roth.  
*Blepharis repens* (Vahl) Roth  
*Dicliptera verticillata* (Forsk.) Chirst  
*Dipteracanthus patulus* (Jacq.) Nees  
*Vallisneria spirallis* L. var. *denseserrulata* Makino.

**Liliaceae**

*Urginea Indica* (Roxb.) Kunth

**Commelinaceae**

*Commelina benghalensis* L.  
*Commelina erecta* L.  
*Cyanotis cristata* (L.) D. Don  
*Murdannia nudiflora* (L.) Brenan

**Pandanaceae**

*Pandanus odoratissimus* L. f.

**Arecaceae**

*Phoenix sylvestris* (L.) Roxb.

**Typhaceae**

*Typha domingensis*

**Pers.Araceae**

*Cryptocoryne retrospiralis* Fisch. Ex Wydler

**Lemnaceae**

*Spirodela polyrrhiza* (L.) Schleid.

**Potamogetonaceae**

*Potamogeton crispus* L.  
*Potamogeton pectinatus* L.  
*Potamogeton perfoliatus* L.

**Zannichelliaceae**

*Zannichellia palustris* L.

**Cyperaceae**

*Cyperus alopecuroides* Rottb.  
*Cyperus alulatus* Kern  
*Cyperus benghalensis* Spr.  
*Cyperus compressus* L.  
*Cyperus flavescens* L.  
*Cyperus laevigatus* L.

*Cyperus nutans* Vahl var. *elusinooides* (Kunth) Haines

*Cyperus pangorei* Rottb.  
*Cyperus pygmaeus* Rottb.  
*Cyperus rotundus* L.  
*Eleocharis dulcis* (Burm. f.) Trin.ex Henschel  
*Eriophorum comosum* (Wall.) Wall. ex Nees  
*Fimbristylis bisumbellata* (Forsk.) Bub.

*Fimbristylis miliacea* (L.) Vahl

*Kyillinga nemoralis* (Forst. f.) Dandy ex Hutchinson & Dalz.

*Scirpus affinis* Roth  
*Scirpus litoralis* Schard.

**Poaceae**

*Alloteropsis cimicina* (L.) Stapf.  
*Apluda mutica* L.  
*Aristida adscensionis* L.  
*Arthraxon lancifolius* (Trin.) Hochst.  
*Arthraxon lanceolatus* (Roxb.) Hochst.

*Bothriochloa pertusa* (L.) A. Camus

*Brachiaria distachya* (L.) Stapf

*Brachiaria ramosa* (L.) Stapf

*Cenchrus setigerus* vahl

*Chloris dolichostachya* Lagasca

*Chloris virgata* Sw.

*Cymbopogon martinii* (Roxb.) Wats

*Cynodon dactylon* (L.) Pers.  
*Dactyloctenium aegyptium* (L.) Willd.

*Dactyloctenium sindicum* Boiss.

*Dendrocalamus strictus* (Roxb.) Nees

Dichanthium annulatum (Forsk.) Stapf	Oplismenus burmanii (Retz.) P. Beauv.	Schoenefelia gracilis Kunth
Digitaria abludens (Roem. & Schult.) Veldk.	Oropetium thomaeum (L.f.) Trin	Setaria intermedia Roem. & Schult.
Digitaria ciliaris (Retz.) Koeler	Panicum antidotale Retz.	Setaria verticillata (L.) P. Beauv.
Echinochloa colona (L.) link	Panicum maximum Jacq.	Setaria pumila (Poir.) Roem. & Schult.
Eleusine indica (L.) Gaertn	Panicum trypheron Schult.	Sorghum halepense (L.) Pers.
Elionurus royleanus Nees ex A. Rich.	Paspalum distichum L.	Sporobolus coromandelianus (Retz.) Kunth
Eragrostis ciliaris (L.) R. Br.	Paspalidium flavidum (Retz.) A. Camus	Sporobolus diander (Retz.) P. Beauv.
Eragrostis japonica (Thunb.) Trin.	Pennisetum orientale L. C. Rich.	Sporobolus tenuissimus (Schrank.) Kuntze
Eragrostis tenella (L.) P. Beauv. ex Roem. & Schult	Pennisetum pedicellatum Trin.	Tetrapogon tenellus (Koen. Ex Roxb.) Chiov.
Hemarthria compressa (L.f.) R. Br.	Perotis indica (L.) Kuntze	Themeda quadrivalvis (L.) Kuntze
Heteropogon contortus (L.) P. Beauv. ex Roem. & Schult.	Phragmites karka (Retz.) Trin. Ex Steud.	Urochloa panicoides P. Beauv.
Imperata cylindrica (L.) Racuschel	Polypogon monspeliensis (L.) Desf.	Vetiveria zizanioides (L.) Nash
	Rottboellia exaltata L. f.	
	Saccharum bengalense Retz.	
	Saccharum spontaneum L.	

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