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RESEARCH ARTICLE

DIVERSITY AND DISTRIBUTION OF ENDEMIC ANGIOSPERMS IN GUJARAT.

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Abstract

Endemic plants represent a small but important part of the flora of Gujarat; still they have not been assessed for their status till date. The present estimate is first of its kind that encompasses all Indian endemics found in Gujarat state that is based on literature review and field surveys. The present findings revealed documentation of 192 Indian endemics, with dicotyledons dominating the endemic flora with 137 taxa (71%) belonging to 97 genera under 33 families, whereas monocotyledons represented by 55 taxa (29%) belonging to 37 genera under 9 families. There are seven species which are exclusively endemic to Gujarat state that are *Helichrysum cutchicum*, *Ischaemum sayajiraoi*, *Rorippa cochlearioides*, *Solanum purpureilineatum*, *Spodiopogon aristatus*, *Tamarix kutchensis* and *Tephrosia jamnagarensis*. Top five families contribute 57% of the total Indian endemics reported from Gujarat; Fabaceae has the largest number (31), which is followed by Poaceae (27), Acanthaceae (20), Asteraceae (12) and Orchidaceae (10). An analysis of the life-form types shows that endemic herbs (66%) dominate the study area, followed by shrubs (12%), trees (11%), climbers (6%), undershrubs (3%) and climbing shrubs (2%). Analysis on the district-wise distribution of Indian endemics shows that the Dangs has maximum number of Indian endemics with 115 taxa, followed by Valsad (104), Narmada (71), Junagadh (63) and Panchmahal (57). In conclusion, the present study demonstrates that endemics are mostly concerted in southern Gujarat region; they are primarily herbaceous; while some of them are known with just a few additional collections.

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Introduction:-

Endemism denotes confinement of a taxon to a restricted area which may range from a small habitat to a biogeographical region, usually isolated by geographical barriers. Studies on plant endemism provide an insight into the centres of diversity and highlight the indigenous nature of its biological diversity. Endemism is a significant factor in diversity assessment and conservation. Reduction and fragmentation of wild population and habitats are occurring at an accelerating scale. These have resulted in small isolated populations (endemic plants) that are at risk

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of extinction for an increasing number of taxa. For such populations, more intensive management becomes necessary for their survival. Hence, in conservation efforts priority should be always given for endemics. So it becomes very essential that threatened taxa should be repeatedly searched for in their type localities for correct assessment of their status and proper management and conservation.

Gujarat state has about 8.7% of its total geographical area under four national parks and 23 wildlife sanctuaries which is more than double the national average and 13.8% area under wetlands which is about one third of the national area under wetland. Because of its unique geographical location, divergent climatic conditions, flat and undulating topography, vast expanse of the unique and fascinating deserts of Rann of Kachchh, the mighty ocean with a long coastline, vast grasslands, extensive thorny and dry deciduous forests in Saurashtra and northern Gujarat; moist to semi-moist forests in southern Gujarat and large area under a variety of wetlands and three hill ranges, namely, Aravalis, Vindhya and Western Ghats, Gujarat has led to harbor a unique & rich biodiversity in the state. Recent findings by Jani (2014) reveals that the angiosperm flora of Gujarat comprises of 2555 taxa (2320 species, 60 subspecies, 169 varieties and 6 forma), which represents nearly 16.8% of the national flora in its varied phytogeographical regions such as desert, semi-arid scrublands, coastal-reef-rich mangrove belts and dry-moist deciduous forests interspersed with fertile agricultural fields.

Endemic and threatened plants represent a small but important part of the flora of Gujarat. They are very susceptible to the effects of environmental change, because they occur in small populations or at scattered localities and are often confined to unique and localized habitats. The causes of such environmental change are biotic activities such as land clearing, cutting, lopping, overgrazing, the development of man-made forests (monoculture) and industrial pollution. The result of all such activities will be the dwindling of number of certain habitat-specific, wild plants because of change in their habitats. It is therefore urgently required to make an inventory of all such endemic and threatened plant species and to initiate measures to conserve the specific habitats and consequently the species occupying such habitats. The purpose of this list is to provide all relevant information on such plants of Gujarat.

Secondly, over the past years, the forest department has developed many man-made forests (mostly monocultures) in the area for different purposes like providing shelter belts, green belts and for firewood. This also has resulted in the loss of few wild habitats. Although few areas have been partially protected, many others are urgently in need of full-scale protection. Strict laws should be passed and enforced for the preservation of rare species and their habitats and strict penalties should be imposed on defaulters. Until such measures are taken up, it is proposed that the endemic and threatened plants should be brought under cultivation in central nurseries, botanical gardens, etc. and later reintroduced into their wild habitats. Then only there will be grounds for optimism for the protection of endemic and threatened plants and their habitats in Gujarat.

Studies on endemism and their conservation have received petite attention in Gujarat, and except for a few publications, there is little information on this subject. From the available literature it was determined that information on endemics in Gujarat was altogether lacking. An acute need was therefore felt to assess the present situation, locate important lacunae and stimulate studies on as large a scale as possible on threatened plants.

Study Area:-

The study site, Gujarat state, is located on the west coast of India and lies between 20°02' and 24°41' North latitudes, and 68°08' and 74°23' East longitudes covering a land area of 196,024 sq. km.

Gujarat comprises 33 districts, of which Kachchh is the largest holding 23 percent, while Dangs is the smallest holding less than one percent of its total geographical area. The state is broadly classified into Kachchh, Saurashtra, Northern, Central and Southern regions (Fig. 1).

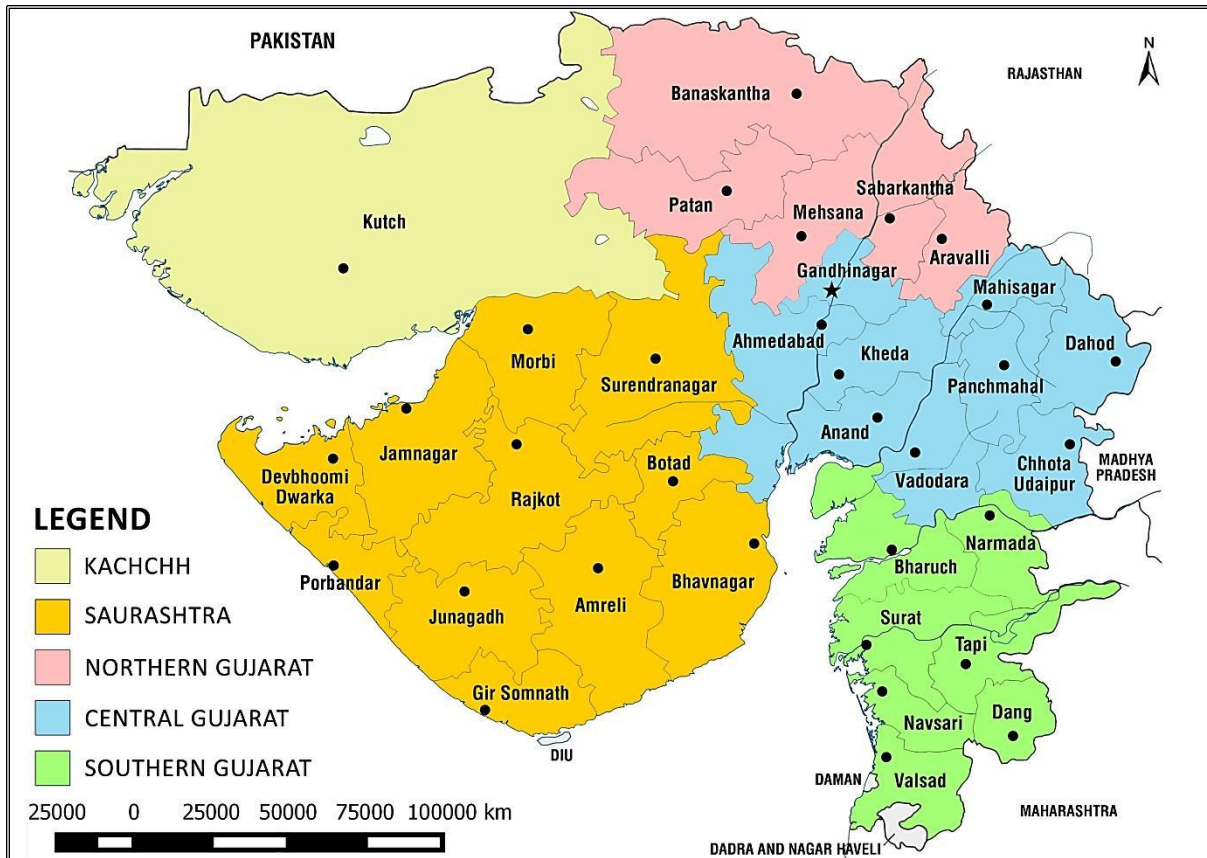


Figure 1:- Study Area.

Kachchh:-

The North-west arid region encompasses the Kachchh district. This region receives very little annual rainfall between 300 and 400 mm, rendering it totally arid. The total geographic area of the region is 40,890 sq. km. Since sandy and saline soils are not supportive of agricultural activities the region has the lowest geographical area under agriculture. The Kachchh region consists of the Ranns, which are salt-encrusted wastelands and rises only a few meters above sea level. Inundated during the monsoons they are divided into the great Rann to the north and the little Rann of Kutch to the east, the Banni Plains between the great Rann and the rocky mainland and the hilly region with the island belt of four rocky projections rising above the Rann, the Kachchh mainland, and the southern coastal plains.

Saurashtra:-

The Saurashtra region includes the districts of Amreli, Bhavnagar, Rajkot, Bhavnagar, Jamnagar, Surendranagar, Junagadh, and Porbandar. The total geographic area of the region consists of 60,950 sq. km. The climate here is dry sub-humid with very low average rainfall at 500 to 800 mm annually. The soil here is predominantly shallow to medium black and calcareous.

Northern Gujarat:-

The North Gujarat region includes the districts of Sabarkantha, Mehsana, Banaskantha, Aravalli and Patan. Its total geographic area comprises 28,910 sq. km. This region has a very small area under forests. It receives 500 to 800 mm of annual average rainfall and the climate varies from arid to semi-arid. Grey Brown loamy, alluvial soils are predominant in this region.

Central Gujarat:-

The Central Gujarat region includes the districts of Kheda, Anand, Vadodara, Ahmedabad, Gandhinagar, Mahisagar, Chhota Udaipur, Panchmahals and Dahod. The total geographic area of the region comprises 34,130 sq. km. The

forested area is not extensive in the region and this region leads in agricultural development. Annual rainfall averages from 800 to 1000 mm and the climate is semi-arid while the soil is medium black in nature.

Southern Gujarat:-

The southern region includes the districts of Surat, Bharuch, Valsad, Dangs, Tapi, Narmada and Navsari. Its total geographic area is 23,220 sq. km. The region has the highest forested area in the state. Annual rainfall averages between 1,000 and 1,500 mm and the climate varies from semi-arid to dry sub humid. Deep black and coastal alluvial soil is predominant in this region.

Gujarat state is endowed with great diversity of flora distributed over 19,178 sq. km, of its forest area, nearly 9.78% to the total geographical area. 8.78% of its total geographical area is covered by four national parks and 21 sanctuaries endowed with rich flora.

Method:-

The present estimate is first of its kind that encompasses all vascular plants of the state and is based on extensive survey of literature.

A list of endemic plants from the study area was prepared using PhD thesis:

Oza, G.M. (1961); Sabnis, S.D. (1967); Bedi, S.J. (1968); Deshpande, M.B. (1968); Suryanarayana, B. (1968); Yogi, D.V. (1970); Bhatt, R.P. (1971); Patel R.M. (1971); More, P.G. (1972); Karetala, Y.Y. (1973); Padate, S.N. (1973); Vyas, K.J. (1973); Parabia M.H. (1974); Thaker, D.N. (1974); Bhatt, R.G. (1975); Desai, M.J. (1976); Sanjappa, M. (1977); Menon, A.R.R. (1979); Yadav, S.R. (1979); Bhagwanani P.P. (1980); Joshi, J.V. (1980); Vora, H.M. (1980); Rao, K.S.S. (1981); Gopal, G.V. (1983); Joshi, M.C. (1983); Reddy, A.S. (1987); Thakrar, N.K. (1987); Oza, A.R. (1991); Bhatt, J.B. (1993); Binojkumar, M.S. (1993); Pradeepkumar, G. (1993); Raole, V.M. (1993); Joshi, K.I. (1994); Anjaria, K.B. (2002); Desai, B.S. (2002); Rao, V.R. (2002); Baxi, U.S. (2003); Sisodia, P.S. (2007); Patel, M.K. (2009); Sharma, A.K. (2010); Desai, R.J. (2012); Rao, V.H. (2012); Patel, S.L. (2013); Tadvi, D.S. (2013); Jani, M.D. (2014); Bhambra, G.P. (2015), and from available floristic works:

Thaker, J.I. (1910); Saxton, W.T. and Sedgwick, L.G. (1918); Santapau, H. (1953); Santapau, H. and Raizada, M.B. (1954); Phatak, V.G. and Joshi, B.B. (1955); Chavan, A.R. and Sabnis, S.D. (1958); Cooke, T. (1958); Chavan, A.R. and Mehta, A.R. (1958a); Chavan, A.R. and Mehta, A.R. (1958b); Bharati S.G. (1959); Phatak, V.G. and Oza, G.M. (1959); Chavan, A.R. and Oza, G.M. (1960); Chavan, A.R. and Sabnis, S.D. (1960); Chavan, A.R. and Oza, G.M. (1962); Sabnis, S.D. (1962); Santapau, H. (1962); Sanjappa, M. (1992); Chavan, A.R., Bedi S.J. and Sabnis, S.D. (1963); Patel, R.I. (1965); Chavan, A.R. and Oza, G.M. (1966); Santapau, H. and Kapadia, Z. (1966); Shah, G.L. (1967); Bedi, S.J., Sabnis, S.D. and Bhatt, R.P. (1968); Inamdar, J.A. (1968); Rao, R.S. and Deshpande, U.R. (1968); Shah G.L. and Suryanarayana B. (1968); Padate, S.N. (1969); Inamdar, J.A. and Patel, R.M. (1971); Patel, R.I. (1971); Sabnis, S.D. and Bedi S.J. (1971); Shah G.L. and Patel A.I. (1971); Bhatt R.P. and Sabnis S.D. (1972); Malhotra, S.K. and Wadhwa, B.M. (1973); Shah G.L. and Yogi D.V. (1974); Bahadur K.N. and Bennet S.S.R. (1978); Shah, G.L. (1978); Raghavan, R.S., Wadhwa, B.M., Ansari, M.Y. and Rao, R.S. (1981); Patil, S.N. and Sabnis, S.D. (1982); Shah, G.L. (1983); Bole, P.V. and Pathak, J.M. (1988); Mathew, T. and Nayar, M.P. (1989); Shetty, B.V. and Pandey, R.P. (1992); Nagar P.S., Sata S.J., and Pathak S.J. (2003); Parmar, P.J. and Singh, V. (2003); Nagar, P.S. (2005); Nagar, P.S. (2007); Nagar, P.S. (2008); Pandey R.P., Singh V. and Parmar P.J. (2009); Rajendrakumar, S. and Kalavathy, S. (2010); Raole V.M., Desai R.J. and Veldkamp, J.F. (2011); Patel Y.S., Patel R.M., Joshi P.N. and Dabgar Y.B. (2011); Singhadiya, M.K., Padhye, P.M. and Pandey, R.P. (2011); Joshi, P.N., Joshi, E.B. and Jain B.K. (2012); Meena, S.L. (2012); Parmar, P.J. (2012); Joshi, P.N., H.B. Soni, Sunderraj S.F.W. and Joshua J. (2013); Bhatt, M.R. and Nagar, P.S. (2014); Meena, S.L. (2014a); Meena, S.L. (2014b); Patel R., Patel Y., Kumar A., Mahato R. and Kumar V. (2014); Meena, S.L. and Krishna P.H. (2015); Punjani, B.L., Desai, P. and Patel, S.K. (2015); Satish K.V., Pasha S.V., Hari Krishna P. and Reddy C.S. (2015); Singh P., Karthigeyan K., Lakshminarasimhan P. and Dash S. S. (2015).

Preliminary field observations were carried out in the study area for endemics. A computerized database was generated incorporating details on their distribution, life-form type, habitat, phenology and local names.

Consulting the published literature, unpublished research reports and PhD dissertations pertained to the flora of Gujarat; a comprehensive checklist of angiosperms of Gujarat has been prepared. A few field surveys were organized in various geographic zones of Gujarat in order to enumerate some selected species. Plants were identified

using regional, national and international Floras. This checklist is further processed through the following steps in order to construct taxonomically rich and accurate database.

- Each and every scientific name is looked for the correct orthography from the reliable International Plant Names Index (www.ipni.org) database and corrected wherever required.
- Scientific names are checked for their validity and legitimacy. Also, basionyms and synonyms are provided.
- Distribution data is updated based on the information gathered from the published literature.
- Field surveys were organized in various geographic zones of Gujarat in order to get field data. During these surveys various species were collected, processed and identified using relevant floras.
- The Botanical Survey of India, Arid Zone Circle, Jodhpur; the Botanical Survey of India, Western Regional Center, Pune; Sardar Patel University, Vallabh Vidyanagar; Veer Narmad South Gujarat University, Surat; Government Science College, Gandhinagar; GUIDE, Kachchh; Sahjeevan, Bhuj; Junagadh Agriculture University, Junagadh; Anand Agricultural University, Anand; B.K.M. science college, Valsad, and Waghai Botanical Garden, Dangs were visited for consulting relevant literature so as to update the distribution data of the enumerated species.

Results:-

The survey resulted in the documentation of 192 Indian endemic taxa found in Gujarat state. Recently, Singh *et al.* (2015) enumerated a total of 4303 flowering plant species and infraspecific taxa recorded as strict endemics to the Indian political boundary. Among them, dicotyledons dominate the endemic flora with 3170 taxa (72%) belonging to 723 genera under 127 families, whereas monocots are represented by 1133 taxa (26%) belonging to 254 genera under 27 families. As per the records, Gujarat ranks 25th having six species exclusively endemic to the state *i.e.*, *Ischaemum sayajiraoi*, *Spodiopogon aristatus*, *Tephrosia jamnagarensis*, *Tamarix kutchensis*, *Helichrysum cutchicum* and *Pycneus dwarkensis*. But *Pycneus dwarkensis* has been reported in Pakistan (eFloras, 2017), so it is no more an endemic. But, *Rorippa cochlearioides* and *Solanum purpureilineatum* are also exclusively endemic to Gujarat. So as per the present analysis, there are total seven species exclusively endemic to Gujarat state.

In the endemic vascular plants of India database (Singh *et al.*, 2015) only 55 endemic taxa have reported Gujarat as a locality, but the present study added 137 more such Indian endemics being reported from Gujarat state which are marked with an asterisk (*).

Araceae Juss:-

***Amorphophallus commutatus** (Schott) Engl.

Herb; *Fl. and Fr.*: June – August

Dahod Dt.: Ratanmahal (Bedi, 1968); Dang Dt.: Galkund (Yadav, 1979), Ahwa, Malegaon, Pipaldahad, Subir (Suryanarayana, 1968); Gir somnath Dt. (Sisodia, 2007); Junagadh Dt.: Chorwad (Bole and Pathak, 1988); Narmada Dt. (Patel, 1971): Mathavali, Sagai, Waghumar (Pradeepkumar, 1993); Panchmahal Dt.: Pavagadh (Oza, 1961); Surat Dt.: Umarpada (Yadav, 1979); Valsad Dt. (Inamdar and Patel, 1971): Pindval (Reddy, 1987), Kaprada (Rao, 2012), Parnera (Yadav, 1979), Dharampur, Nana Pondha (Vora, 1980), Pardi (More, 1972)

***Arisaema murrayi** (J.Graham) Hook.

Herb; *Fl. and Fr.*: June – August

Dahod Dt.: Kanjeta (Bedi, 1968); Dang Dt. (Tadvi, 2013): Ahwa, Don, Malegaon, Saputara; Valsad Dt. (Vora, 1980): Dahikhed (Rao, 2012)

Amaryllidaceae J. St.-Hil:-

***Crinum brachynema** Herb.

Herb; *Fl. and Fr.*: July – August

Valsad Dt. (Inamdar and Patel, 1971): Dharampur (Inamdar, 1968; Vora, 1980), Kaprada (Rao, 2012)

***Pancratium parvum** Dalzell

Herb; *Fl. and Fr.*: June – July

Bhavnagar Dt. (Oza, 1991); Valsad Dt. (Inamdar and Patel, 1971)

Asparagaceae Juss:-

***Chlorophytum borivilianum** Santapau and R.R.Fern.

Herb; *Fl. and Fr.*: June – July

Banaskantha Dt.: Danta (Meena, 2012), Jessore wildlife sanctuary; Dang Dt. (Shah, 1978; Tadvi, 2013): Ahwa (Shah and Suryanarayana, 1967), Malegaon (Suryanarayana, 1968), Bardipada, Kalibel, Mahal, Subir, Waghai (Rao, 2002), Ghoghli, Pimpri, Shivghat; Narmada Dt. (Sharma, 2010): Dediapada, Sagai; Sabarkantha Dt.: Vijaynagar; Surat Dt.

***Chlorophytum malabaricum** Baker

Herb; *Fl. and Fr.*: June

Dang Dt. (Shah, 1978; Tadvi, 2013): Ahwa (Suryanarayana, 1968)

Hyacinthaceae:-

Dipcadi ursulae var. **longiracemosum** Deb and S.Dasgupta

Herb; *Fl. and Fr.*: August

Jamnagar Dt.: Rozi (Bole and Pathak, 1988); Junagadh Dt.: Girnar hill (Shah, 1983)

Orchidaceae Juss:-

***Aerides maculosa** Lindl.

Herb; *Fl. and Fr.*: July – January

Dang Dt. (Tadvi, 2013; Nagar and Bhatt, 2015): Ahwa, Malegaon, Subir (Suryanarayana, 1968); Junagadh Dt.: Sasan-Gir; Navsari Dt.: Bansda; Panchmahal Dt. (Nagar and Bhatt, 2015): Pavagadh (Oza, 1961); Valsad Dt. (Nagar and Bhatt, 2015): Dhamni, Pangarbari (Reddy, 1987), Kaprada (Rao, 2012)

***Dendrobium barbatulum** Lindl.

Herb; *Fl. and Fr.*: March – May

Dang Dt. (Tadvi, 2013): Ahwa, Malegaon (Suryanarayana, 1968), Don (Nagar and Bhatt, 2015); Narmada Dt. (Nagar and Bhatt, 2015): Mohbi (Pradeepkumar, 1993); Panchmahal Dt. (Nagar and Bhatt, 2015); Valsad Dt. (Nagar and Bhatt, 2015): Girnara, Pangarbari (Reddy, 1987), Morai, Varoli Talat (Rao, 2012)

***Dendrobium microbulbon** A.Rich.

Herb; *Fl. and Fr.*: December – May

Dang Dt. (Tadvi, 2013; Nagar and Bhatt, 2015): Ahwa, Malegaon (Suryanarayana, 1968), Bardipada, Dunderda, Galkund, Kalibel, Kasa, Mahal, Subir (Rao, 2002); Narmada Dt.: Kokam, Mathavali, Sagai, Waghumar (Pradeepkumar, 1993), Dediapada, Fulsar, Piplod (Rao, 2002), Ninai; Navsari Dt.: Khambhala, Tadpada (Desai, 1976), Bansda; Surat Dt.: Zankhri; Valsad Dt.: Kaprada

***Dendrobium ovatum** (L.) Kraenzl. [= *Epidendrum ovatum* L.]

Herb; *Fl. and Fr.*: February – March

Dang Dt. (Tadvi, 2013): Subir (Suryanarayana, 1968), Ganja, Kansa; Valsad Dt.: Kaprada

***Eulophia ochreatea** Lindl.

Herb; *Fl. and Fr.*: June – October

Dang Dt.: Galkund (Rao, 2002), Ahwa (Nagar and Bhatt, 2015), Mahal; Narmada Dt.: Kelda; Panchmahal Dt.: Khodwa (Santapau and Kapadia, 1966)

***Habenaria foliosa** A.Rich. [= *Habenaria foliosa* A.Rich. var. *gibsonii* (Hook.f.) Bennet; *Habenaria gibsonii* Hook.f. var. *foetida* Blatt. and McCann; *Habenaria gibsonii* Hook.f. var. *gibsonii*; *Habenaria gibsonii* Hook.f. var. *foliosa* (A. Rich.) Santapau and Kapadia]

Herb; *Fl. and Fr.*: July – September

Chhota udepur Dt.; Dang Dt. (Tadvi, 2013; Nagar and Bhatt, 2015): Malegaon (Suryanarayana, 1968); Junagadh Dt.: Datar (Bhatt & Nagar); Narmada Dt.: Namgir (Pradeepkumar, 1993), Ghatoli; Navsari Dt.: Kanai khadi, Mankunia, Vati, Vedchha; Valsad Dt. (Nagar and Bhatt, 2015): Dungri, Ghadoi

***Habenaria grandifloriformis** Blatt. and McCann

Herb; *Fl. and Fr.*: July – August

Dang Dt. (Tadvi, 2013; Nagar and Bhatt, 2015): Malegaon, Saputara (Suryanarayana, 1968); Valsad Dt. (Nagar and Bhatt, 2015): Pindval, Sutharpada (Reddy, 1987), Vavar (Rao, 2012)

***Habenaria longicorniculata** J.Graham

Herb; *Fl. and Fr.*: August – September

Chhota udepur Dt.; Dang Dt. (Tadvi, 2013): Malegaon (Suryanarayana, 1968), Chinchli, Saputara; Valsad Dt.: Sanjan

***Oberonia brunoniana** Wight [= *Malaxis brunoniana* (Wight) Rchb. f.]

Herb; *Fl. and Fr.*: February – March

Dang Dt.: Kansa

***Peristylus stocksii** (Hook.f.) Kraenzl. [= *Habenaria stocksii* Hook.f.]

Herb; *Fl. and Fr.*: July – September

Dang Dt. (Tadvi, 2013): Waghai; Narmada Dt.: Mohbi (Pradeepkumar, 1993); Panchmahal Dt.; Valsad Dt. (Nagar and Bhatt, 2015)

Cyperaceae Juss:-

***Fimbristylis lawiana** (Boeckeler) J.Kern [= *Scirpus lawianus* Boeckeler]

Herb; *Fl. and Fr.*: August – October

Anand Dt.: Umeta; Dang Dt.: Ahwa, Malegaon, Saputara (Suryanarayana, 1968; Parabia, 1974); Vadodara Dt.: Nimeta (Parabia, 1974); Valsad Dt.: Kaprada (Reddy, 1987), Malghar (Rao, 2012)

***Fimbristylis woodrowii** C.B. Clarke

Herb; *Fl. and Fr.*: August – October

Bharuch Dt.: River Dhadhar at Shahpura; Dang Dt.: Ahwa (Suryanarayana, 1968), Waghai (Parabia, 1974); Narmada Dt. (Patel, 1971); Panchmahal Dt.: Tuwa (Deshpande, 1968; Parabia, 1974); Surat Dt.: Dumas (Joshi, 1980); Vadodara Dt. (Parabia, 1974): riverbank of Dhadhar at Shahpura (Sabnis, 1962); Valsad Dt. (Inamdar and Patel, 1971): Pangarbari (Reddy, 1987), Panas (Rao, 2012), Dharampur, Kaprada, Nana Pondha (Vora, 1980)

***Fuirena tuwensis** M.B. Deshp. and G.L. Shah

Herb; *Fl. and Fr.*: October – November

Dadra Nagar Haveli (Sabnis and Bedi, 1971); Panchmahal Dt.: Bakrol, Navagam, Tuwa, Veganpura (Deshpande, 1968; Parabia, 1974)

***Pycreus malabaricus** C.B. Clarke

Herb; *Fl. and Fr.*: August – November

Dang Dt. (Tadvi, 2013): Ahwa (Suryanarayana, 1968; Parabia, 1974); Navsari Dt.: Maroli; Porbandar Dt.: Bileshwar (Menon, 1979); Tapi Dt.: Hindla, Songadh; Valsad Dt.: Pindval (Reddy, 1987), Kaprada (Rao, 2012), Manda

***Scleria stocksiana** Boeckeler

Herb; *Fl. and Fr.*: August – September

Sabarkantha Dt. (Sabnis, 1962): Talod (Saxton and Sedgwick, 1918); Vadodara Dt.: Nimetta (Chavan and Sabnis, 1958)

Eriocaulaceae Martinov:-

***Eriocaulon cuspidatum** Dalzell

Herb; *Fl. and Fr.*: September – November

Chhota udepur Dt.: Kavant (Thaker, 1974)

***Eriocaulon elenoriae** Fyson

Herb; *Fl. and Fr.*: September – October

Mehsana Dt. (Shah and Yogi, 1974); Narmada Dt. (Patel, 1971): Kokam (Pradeepkumar, 1993), Vankol (Yadav, 1979); Panchmahal Dt.: Tuwa (Deshpande, 1968); Sabarkantha Dt.: Idar; Valsad Dt. (Inamdar and Patel, 1971): Dharampur (Reddy, 1987), Kaprada (Rao, 2012), Nana Pondha (Vora, 1980)

Poaceae Barnhart:-

***Arthraxon inermis** Hook.f.

Herb; *Fl. and Fr.*: August – November

South Gujarat (Patel, 1965); Dang Dt. (Desai, 2012; Tadvi, 2013); Junagadh Dt.: Petwad (Menon, 1979); Narmada Dt.: Dabka, Namgir, Sagai (Pradeepkumar, 1993); Navsari Dt. (Desai, 2012); Valsad Dt. (Desai, 2012)

***Arthraxon meeboldii** Stapf

Herb; *Fl. and Fr.*: August – October

South Gujarat (Patel, 1965); Dang Dt.; Valsad Dt.

***Arundinella ciliata** (Roxb.) Nees ex Miq.

Herb; *Fl. and Fr.*: August – October

Dang Dt. (Desai, 2012; Tadvi, 2013); Navsari Dt. (Desai, 2012); Valsad Dt. (Desai, 2012): Kaprada, Lavkar, Mandva, Nana Pondha

***Arundinella metzii** Hochst. ex Miq.

Herb; *Fl. and Fr.*: September – November

South Gujarat, on nalla-banks (Patel, 1965); Banaskantha Dt.: Dantiwada, Palanpur (Patel, 2009); Dang Dt.: Saputara (Yadav, 1979); Narmada Dt.: Kanjal, Sagai, Mohbi, Waghumar (Pradeepkumar, 1993); Valsad Dt. (Vora, 1980): Tutarkhed (Reddy, 1987), Kaprada (Rao, 2012)

***Arundinella tuberculata** Munro ex LisboaHerb; *Fl. and Fr.*: August

Rajkot Dt.: Valadhari (Bole and Pathak, 1988)

***Capillipedium filiculme** (Hook.f.) Stapf [= *Andropogon filiculmis* Hook.f.]Herb; *Fl. and Fr.*: August – September

Gujarat (Patel, 1965); Bhavnagar Dt.: Palitana (Menon, 1979); Dang Dt.: Galkund (Yadav, 1979); Jamnagar Dt. (Bole and Pathak, 1988); Panchmahal Dt.: Pavagadh (Chavan and Mehta, 1958b; Oza, 1961); Porbandar Dt.: Barda hill (Bole and Pathak, 1988); Surat Dt. (Desai, 2012); Tapi Dt. (Desai, 2012); Vadodara Dt.: Shardashungri (Padate, 1973), Savli (Padate, 1969); Valsad Dt.: Pendha (Yadav, 1979), Parnera (More, 1972)

***Capillipedium huegelii** (Hack.) A. Camus [= *Andropogon huegelii* Hack.]Herb; *Fl. and Fr.*: August – September

South Gujarat (Patel, 1965); Amreli Dt. (Menon, 1979); Dahod Dt.: Bendol, Ratanmahal temple (Bedi, 1968); Narmada Dt.: Kalvat, Kelda, Ninaighat (Pradeepkumar, 1993); Rajkot Dt.: Hingolghat (Menon, 1979); Sabarkantha Dt.: Khedbrahma (Bhatt, 1971; Bhatt and Sabnis, 1972); Valsad Dt.: Pendha (Yadav, 1979)

***Coelorachis clarkei** (Hack.) Blatt. and McCann [= *Rottboellia clarkei* Hack.; *Mnesithea clarkei* (Hack.) de Koning and Sosef; *Manisuris clarkei* (Hack.) Bor ex Santapau]Herb; *Fl. and Fr.*: September – October

Narmada Dt.: Khamar, Kokam, Sagai (Pradeepkumar, 1993); Valsad Dt.: Kaprada (Desai, 2012)

***Cymbopogon gidarba** (Buch.-Ham. ex Steud.) A. Camus [= *Andropogon gidarba* Steud.]Herb; *Fl. and Fr.*: December – March

Bharuch Dt.; Junagadh Dt.: Girnar (Menon, 1979); Mehsana Dt.: Kadi (Yogi, 1970); Narmada Dt.: Rajpipla; Porbandar Dt.: Bileshwar (Menon, 1979); Sabarkantha Dt.: Khedbrahma (Yogi, 1970; Bhatt, 1971; Bhatt and Sabnis, 1972), Mahudi, Pahada (Shah and Yogi, 1974; Yogi, 1970)

***Cynodon barberi** Rang. and Tadul.Herb; *Fl. and Fr.*: September

Sabarkantha Dt.: Himmatnagar; Surat Dt.: Vadpada (Desai, 2012)

***Dimeria stapfiana** C.E. Hubb. and Pilg.Herb; *Fl. and Fr.*: September – November

Valsad Dt.: Dharampur, Kaprada (Desai, 2012)

***Glyphochloa forficulata** (C.E.C. Fisch.) Clayton [= *Manisuris forficulata* C.E.C.Fisch.]Herb; *Fl. and Fr.*: September – December

Dang Dt. (Tadvi, 2013); Gadvihir (Desai, 2012)

***Heteropogon ritchiei** (Hook.f.) Blatt. and McCann [= *Andropogon ritchiei* Hook.f.]Herb; *Fl. and Fr.*: October – December

Gujarat (Patel, 1965); Bhavnagar Dt.: Thadsar; Junagadh Dt.: Rukhmani Dungar, Tulsishyam (Bole and Pathak, 1988); Valsad Dt.: Kaprada (Desai, 2012)

***Isachne elegans** Dalzell ex Hook.f.Herb; *Fl. and Fr.*: October – December

Surat Dt.: Udhna-Magdalla road (Joshi, 1980)

***Ischaemum bombaiense** BorHerb; *Fl. and Fr.*: September – December

Surat Dt.: Umarpada (Desai, 2012)

***Ischaemum diplopogon** Hook.f.Herb; *Fl. and Fr.*: September – October

Gujarat (Patel, 1965); Panchmahal Dt.: Pavagadh (Chavan and Mehta, 1958b); Dang Dt. (Desai, 2012; Tadvi, 2013)

***Ischaemum santapau** BorHerb; *Fl. and Fr.*: September – November

Dang Dt. (Tadvi, 2013); Girmal fall (Desai, 2012); Tapi Dt. (Desai, 2012); Valsad Dt.: Sanjan

Ischaemum sayajiraoui Raole and R.J. DesaiHerb; *Fl. and Fr.*: September – DecemberDang Dt. (Desai, 2012; Tadvi, 2013); Surat Dt.: Umarpada (Desai, 2012); Tapi Dt. (Desai, 2012); Vadodara Dt.: Bacrol, Bhayli (Raole *et al.*, 2011)***Isilema antheophoroides** Hack.Herb; *Fl. and Fr.*: July – October

Gujarat (Patel, 1965); Anand Dt.: Khambhat (Bhagwanani, 1980); Chhota udepur Dt.: Kavant (Thaker, 1974); Gandhinagar Dt.: Mansa (Meena, 2014a); Narmada Dt.: Rajipla (Yadav, 1979); Panchmahal Dt.: Pavagadh (Chavan and Mehta, 1958b; Oza, 1961); Vadodara Dt. (Chavan and Mehta, 1958a); Harni (Sabnis, 1967)

***Lophopogon tridentatus** (Roxb.) C.E.Hubb. [= *Andropogon tridentatus* Roxb.]

Herb; *Fl. and Fr.*: September – December

Gujarat (Patel, 1965); Panchmahal Dt.: Sulatpur (Chavan and Mehta, 1958b), Pavagadh (Oza, 1961)

***Parahyparrhenia bellariensis** (Hack.) Clayton [= *Andropogon bellariensis* Hack.]

Herb; *Fl. and Fr.*: August – October

Rajkot Dt. (Thakrar, 1987)

***Spodiopogon aristatus** R.J. Desai and Raole

Herb; *Fl. and Fr.*: October – December

Dang Dt. (Desai, 2012; Tadvi, 2013); Navsari Dt. (Desai, 2012); Surat Dt. (Desai, 2012); Tapi Dt.: Bunadha (Desai and Raole, 2012); Valsad Dt.: Dabkhal (Desai and Raole, 2012)

***Spodiopogon rhizophorus** (Steud.) Pilg. [= *Andropogon rhizophorus* Steud.]

Herb; *Fl. and Fr.*: September – January

Saurashtra (Patel, 1965); Banaskantha Dt.: Jessore wildlife sanctuary, Balaram-Ambaji wildlife sanctuary (Meena, 2012); Chhota udepur Dt.: Kavant (Thaker, 1974); Dang Dt. (Desai, 2012; Tadvi, 2013); Galkund (Yadav, 1979); Devbhumi dwarka Dt.: Abhapara, Venu (Nagar, 2005); Junagadh Dt.: Junvaniya, Sasan (Bole and Pathak, 1988); Narmada Dt.: Rajipla (Shah, 1967); Pachmahal Dt.: Pavagadh (Chavan and Mehta, 1958b; Oza, 1961); Sabarkantha Dt.: Khedbrahma (Bhatt, 1971; Bhatt and Sabnis, 1972); Tapi Dt. (Desai, 2012); Valsad Dt. (Desai, 2012); Sidhumbar, Tutarkhed (Reddy, 1987), Tiskari (Rao, 2012)

***Trilobachne cookei** (Stapf) Schenck ex Henrard [= *Polytoxa cookei* Stapf]

Herb; *Fl. and Fr.*: September – November

Saurashtra (Patel, 1965); Dang Dt. (Tadvi, 2013); Bhensatri (Desai, 2012); Junagadh Dt.: Girnar foothill (Bole and Pathak, 1988); Valsad Dt.: Kapurnya, Moti Korval, Tamachhadi (Reddy, 1987), Tiskari (Rao, 2012)

***Tripogon ramosissimus** (Hack.) Bor [= *Ischaemum ramosissimum* Hack.]

Herb; *Fl. and Fr.*: October

Dang Dt. (Desai, 2012; Tadvi, 2013); Tapi Dt.: Tapti riverbank (Patel, 1965); Valsad Dt.: Kodba, Tamachhadi (Reddy, 1987), Kaprada (Rao, 2012)

***Tripogon jacquemontii** Stapf

Herb; *Fl. and Fr.*: August – September

South Gujarat (Patel, 1965); Ahmedabad Dt.; Banaskantha Dt.: Amirgarh hills (Meena, 2012); Chhota udepur Dt.: Kavant (Thaker, 1974); Dang Dt. (Desai, 2012); Gandhinagar Dt.: Kalol (Meena, 2014a); Jamnagar Dt.: Jamvali (Bole and Pathak, 1988); Sabarkantha Dt.: Khedbrahma (Bhatt, 1971; Bhatt and Sabnis, 1972); Surat Dt. (Desai, 2012); Tapi Dt. (Desai, 2012)

***Tripogon lisboae** Stapf

Herb; *Fl. and Fr.*: July – October

Chhota udepur Dt.: Kavant (Thaker, 1974); Dang Dt.; Narmada Dt.: Kevadiya

Zingiberaceae Martinov:-

***Curcuma decipiens** Dalzell

Herb; *Fl. and Fr.*: June – December

Banaskantha Dt.: Hathidhara forest (Meena, 2012); Narmada Dt.: Fulsar, Sagai; Valsad Dt.: Kaprada

***Curcuma inodora** Blatt. [= *Curcuma purpurea* Blatt.]

Herb; *Fl. and Fr.*: August – September

Banaskantha Dt.: Khaiwad, Danta (Meena, 2012); Chhota udepur Dt.: Ambadungar, Kadipani, Mithibor (Desai, 2002), Kavant (Thaker, 1974); Dahod Dt.: Ratanmahal (Bedi, 1968), Devgadhi Baria; Dang Dt. (Tadvi, 2013); Ahwa, Malegaon, Subir (Suryanarayana, 1968); Gir somnath Dt. (Santapau and Raizada, 1954; Sisodia, 2007); Junagadh Dt.: Sapnes, Sasan (Menon, 1979), Girnar, Junvaniya (Bole and Pathak, 1988); Mehsana Dt. (Shah and Yogi, 1974); Narmada Dt.: Mathavali, Sagai, Shisha (Pradeepkumar, 1993); Panchmahal Dt.: Machi (Phatak and Oza, 1959), Pavagadh (Oza, 1961); Sabarkantha Dt.: Khedbrahma (Bhatt, 1971; Bhatt and Sabnis, 1972); Surat Dt.: Umarpada (Yadav, 1979); Valsad Dt. (Inamdar and Patel, 1971; Patel RM, 1971); Amba Talat, Moolgam (Reddy, 1987), Kaprada (Rao, 2012), Nana Pondha (Vora, 1980), Chival, Parnera, Udwarda (More, 1972)

***Curcuma pseudomontana** J. Graham

Herb; *Fl. and Fr.*: July – October

Dahod Dt.; Narmada Dt.; Panchmahal Dt.: Machi (Chavan and Oza, 1960; Oza, 1961)

***Zingiber nimmonii** (J. Graham) Dalzell [= *Alpinia nimmonii* J. Graham; *Zingiber cernuum* Dalzell]

Herb; *Fl. and Fr.*: January – February

Dang Dt. (Tadvi, 2013): Mahal (Suryanarayana, 1968)

Ranunculaceae Juss:-

Clematis hedysarifolia DC.

Climber; *Fl. and Fr.*: October – December

Dang Dt. (Tadvi, 2013): Shamgahan (Patel, 2013), Ahwa (*MCJ157* Joshi, 1978), Borkhal, Sunda (Yadav, 1979), Saputara, Subir (Suryanarayana, 1968), Malegaon, Sagbara (Gopal, 1983); Narmada Dt.: Sagbara; Panchmahal Dt.: Vajpur (Patel, 2013); Tapi Dt.: Songadh, Vyara; Valsad Dt.: Pangarbari, Tamachhadi (Reddy, 1987; Patel, 2013), Penda (Yadav, 1979), Pindval, Vagval (Reddy, 1987), Varoli (Rao, 2012), Jogvel, Malanpada, Nana Pondha, Vahial (Vora, 1980), Rabada, Parnera (More, 1972)

***Clematis heynei** M.A. Rau [= *Clematis triloba* B. Heyne ex Roth]

Climber; *Fl. and Fr.*: October – March

Dang Dt.: Saputara (Patel, 2013); Narmada Dt.; Navsari Dt.: Unai; Porbandar Dt.: Barda; Valsad Dt.: Dhamni (Patel, 2013), Varoli Talat (Rao, 2012)

Begoniaceae C. Agardh:-

***Begonia crenata** Dryand.

Herb; *Fl. and Fr.*: September – October

Bhavnagar Dt. (Oza, 1991); Chhota udepur Dt. (Karetala, 1973); Mogra, Marchipani (Desai, 2002); Dang Dt. (Tadvi, 2013); Narmada Dt.: Ninaighat (Pradeepkumar, 1993)

Cucurbitaceae Juss:-

***Corallocarpus conocarpus** (Dalzell and A.Gibson) Hook.f. [= *Aechmandra conocarpa* Dalzell and A.Gibson]

Climber; *Fl. and Fr.*: June – August

Ahmedabad Dt.: Dhandhuka (Patel *et al.*, 2014); Arvalli Dt.: Dhansura (Patel, 2013); Bharuch Dt.: Malpore (Patel, 2013); Gir somnath Dt. (Sisodia, 2007); Jamnagar Dt.; Junagadh Dt.; Kachchh Dt. (Patel *et al.*, 2011): Sural Pith, Bhuj, Wadasar, Tregdi (Joshi *et al.*, 2013), Lala bustard sanctuary on Mandavi-Naliya road, Chamra, Bhujpar, Kharai village on Vayor road; Kheda Dt.: Malana Muvada, Ladvel (Patel, 2013); Sabarkantha Dt.: Netrawali (Parmar, 2012), Bayad, Merhan (Patel, 2013)

***Solena amplexicaulis** (Lam.) Gandhi [= *Bryonia amplexicaulis* Lam.]

Climber; *Fl. and Fr.*: July – October

Chhota udepur Dt.; Dang Dt. (Tadvi, 2013): Shamgahan (Patel, 2013); Narmada Dt.: Dediapada (Patel, 2013), Mathavali, Ninaighat, Patvali (Pradeepkumar, 1993); Panchmahal Dt.: Pavagadh (Oza, 1961); Tapi Dt.: Vyara; Valsad Dt.: Dharampur, Pariya-Pardi, Navtad (Patel, 2013), Kaparada (Rao, 2012)

Fabaceae Lindl:-

***Alysicarpus hamosus** Edgew. [= *Alysicarpus procumbens* (Roxb.) Schindl.; *Hedysarum procumbens* Roxb.]

Herb; *Fl. and Fr.*: August – October

Anand Dt.: Khambhat (Bhagwanani, 1980); Banaskantha Dt.: Koteswar (Meena, 2012); Bharuch Dt.: Gumandev; Bhavnagar Dt.: Palitana (Menon, 1979; Meena, 2014b); Chhota udepur Dt.: Kavant (Thaker, 1974); Dahod Dt.: Ratanmahal (Bedi, 1968), Devgadhi baria; Dang Dt. (Tadvi, 2013): Ahwa, Subir (Suryanarayana, 1968); Devbhumi dwarka Dt.: Abhapar, Kileshwar, Ghumli, (Nagar, 2005); Gandhinagar Dt.: Halisa (Meena, 2014a), Mansa; Gir somnath Dt. (Santapau and Raizada, 1954; Sisodia, 2007); Junagadh Dt.: Sasan (Menon, 1979), Kansianes; Kachchh Dt.: Meva Rakhil (Bhatt, 1993), Guhar (Pandey *et al.*, 2009), Ningal; Mehsana Dt.: Kadi; Narmada Dt.: Fulsar, Gichad, Namgir, Zadoli (Pradeepkumar, 1993), Gora, Gumandev, Kevadiya, Rajpipla (Patel, 1971); Navsari Dt.: Panchmahal Dt.: Pavagadh (Oza, 1961), Tuwa (Deshpande, 1968); Patan Dt.; Porbandar Dt.: Godhana, Satvirda, Adityana, Ranavav (Nagar, 2005); Sabarkantha Dt.: Khedbrahma (Bhatt, 1971), Samalaji, Bamaraji (Parmar, 2012), Idar, Prantij; Surat Dt. (Joshi, 1980): Pataldevi, Umarpada, Vankal (Yadav, 1979); Tapi Dt.; Vadodara Dt. (Sabnis, 1967): Savli (Padate, 1973); Valsad Dt.: Dhamni (Yadav, 1979), Avdha, Tutarkhed (Reddy, 1987), Umbergaon (Bhagwanani, 1980), Kaprada (Rao, 2012), Nana Pondha (Vora, 1980)

Alysicarpus pubescens J.S.Law

Herb; *Fl. and Fr.*: September – December

Amreli Dt.: Dhari (Gopal, 1983); Bharuch Dt.; Jamnagar Dt.: Ranjit Sagar (Santapau, 1962)

Bauhinia foveolata Dalzell [= *Piliostigma foveolatum* (Dalzell) Thoth.]

Tree; *Fl. and Fr.*: October – March

Ahmedabad Dt. (Meena, 2014a); Dang Dt. (Shah, 1978; Tadvi, 2013): Ahwa (Yadav, 1979), Malegaon, Pipaldahad, Saputara (Suryanarayana, 1968), Bardipada, Don; Narmada Dt. (Sharma, 2010); Navsari Dt.: Mankunia, Raybor; Panchmahal Dt.; Surat Dt.: Divtan; Tapi Dt.: Hindla; Valsad Dt.: Fatepur, Ulaspedhi (Reddy, 1987), Mandva (Rao, 2012), Moti Korval (Rao, 2002), Kaprada, Nana Pondha (Vora, 1980), Chavshala

***Cajanus sericeus** (Baker) Maesen [= *Atylosia sericea* Baker]

Shrub; *Fl. and Fr.*: August – December

Chhota udepur Dt.: Ambadungar (Thaker, 1974); Dang Dt. (Chavan and Oza, 1966); Valsad Dt.: Moti Korval, Pangarbari (Reddy, 1987)

Clitoria annua J.Graham [= *Clitoria biflora* Dalzell]

Herb; *Fl. and Fr.*: July – October

Ahmedabad Dt. (Meena, 2014a); Anand Dt.: Umeta; Banaskantha Dt.: Rinchhidiya (Meena, 2012); Chhota udepur Dt.: Dolariya (Desai, 2002), Kavant (Thaker, 1974; Desai, 2002); Dahod Dt.: Ratanmahal (Bedi, 1968); Dang Dt. (Tadvi, 2013): Ahwa, Malegaon, Subir (Suryanarayana, 1968); Devbhumi dwarka Dt.: Abhapar, Ghumli, (Nagar, 2005); Gir somnath Dt. (Sisodia, 2007); Junagadh Dt.: Sasan (Menon, 1979), Junvaniya (Santapau, 1962); Kachchh Dt. (Patel *et al.*, 2011); Mehsana Dt. (Shah and Yogi, 1974); Narmada Dt.: Gumina, Mathavali, Sagai (Pradeepkumar, 1993), Kevadia, Gora, Jhagadiya (Patel, 1971); Panchmahal Dt.: Pavagadh (Oza, 1961); Porbandar Dt.: Godhana (Thaker, 1910); Sabarkantha Dt. (Parmar, 2012): Khedbrahma (Bhatt, 1971); Vadodara Dt.: Laxmi Vilas palace compound; Valsad Dt. (Patel RM, 1971): Ghotan (Rao, 2012), Kaprada, Nana Pondha (Vora, 1980), Hedri

***Crotalaria filipes** Benth. [= *Crotalaria filipes* var. *filipes*]

Herb; *Fl. and Fr.*: October – February

Dang Dt. (Tadvi, 2013): Ahwa (Suryanarayana, 1968), Waghai (Gopal, 1983); Junagadh Dt.: Girnar (Santapau, 1962); Kachchh Dt. (Patel *et al.*, 2011); Kheda Dt.: Utkantheshwar (Gopal, 1983); Narmada Dt.; Porbandar Dt. (Thaker, 1910); Valsad Dt. (Patel RM, 1971; Vora, 1980); Avdha, Kaprada (Rao, 2012)

***Crotalaria filipes** var. **trichophora** (Baker) T.Cooke [= *Crotalaria trichophora* Benth. ex Baker f.]

Herb; *Fl. and Fr.*: October – March

Dang Dt. (Tadvi, 2013): Don; Gir somnath Dt. (Santapau and Raizada, 1954); Junagadh Dt.: Junvaniya (Santapau, 1962); Surat Dt.: Nana Varachha (Joshi, 1980); Valsad Dt. (Patel RM, 1971)

Crotalaria leptostachya Benth.

Shrub; *Fl. and Fr.*: October – November

Dahod Dt.: Kanvara dungar, Padaliya (Bedi, 1968); Dang Dt. (Tadvi, 2013): Ahwa, Pipaldahad (Suryanarayana, 1968); Devbhumi dwarka Dt.: Abhapar, Kileshwar, Venu, Ghumli (Nagar, 2005); Gir somnath Dt. (Sisodia, 2007); Junagadh Dt.: Junvaniya, Sasan (Santapau, 1962); Kheda Dt.: Shamariya; Narmada Dt.: Kalvat, Shamariya (Pradeepkumar, 1993); Navsari Dt.: Bansda; Porbandar Dt.: Godhana, Satvirda, Adityana, Ranavav (Nagar, 2005); Tapi Dt.: Vyara; Valsad Dt.: Hedri, Kaprada (Rao, 2012)

Crotalaria notonii Wight and Arn.

Shrub; *Fl. and Fr.*: September – November

Kachchh Dt. (Patel *et al.*, 2011); Surat Dt.: Dumas

Crotalaria pusilla DC.

Herb; *Fl. and Fr.*: September – October

Chhota udepur Dt.: Kavant, Luni; Sabarkantha Dt.: Bavsar (Saxton and Sedgwick, 1918)

Crotalaria vestita Baker

Herb; *Fl. and Fr.*: October – December

Arvalli Dt.: Shamlaji; Dang Dt. (Tadvi, 2013): Malegaon, Saputara (Suryanarayana, 1968); Devbhumi dwarka Dt.: Abhapar, Kileshwar, Venu, Ghumli (Nagar, 2005); Jamnagar Dt.: Motwa Matli (Santapau, 1962); Junagadh Dt.: Bordevi (Santapau, 1962); Porbandar Dt.: Godhana, Satvirda, Adityana, Ranavav (Nagar, 2005); Valsad Dt.

***Dalbergia horrida** (Dennst.) Mabb. [= *Amerimnon horridum* Dennst.]

Climbing shrub; *Fl. and Fr.*: January – April

Dahod Dt.: Devgadh baria, Ratanmahal (Bedi, 1968)

Derris heyneana (Wight and Arn.) Benth. [= *Pongamia heyneana* Wight and Arn.]

Climbing shrub; *Fl. and Fr.*: June – July

Gujarat (Singh *et al.*, 2015)

Desmodiastrum belgaumense (Wight) A.Pramanik and Thoth. [= *Alysicarpus belgaumensis* Wight]

Herb; *Fl. and Fr.*: September – October

Panchmahal Dt.: Pavagadh (Oza, 1961)

***Desmodiastrum racemosum** var. **rotundifolium** (Baker) A.Pramanik and Thoth. [= *Desmodium rotundifolium* Baker; *Alysicarpus beddomei* Schindl.; *Desmodium ritchie* Sanjappa]

Herb; *Fl. and Fr.*: August – September

Banaskantha Dt.: Balaram-Ambaji wildlife sanctuary (Meena, 2012); Dang Dt. (Sanjappa, 1977; Tadvi, 2013); Malegaon, Saputara (Suryanarayana, 1968), Subir; Gir somnath Dt. (Santapau, 1962; Sisodia, 2007); Panchmahal Dt.: Pavagadh (Oza, 1961)

Flemingia tuberosa Dalzell [= *Moghania tuberosa* (Dalzell) Kuntze]

Herb; *Fl. and Fr.*: September

Gujarat (Sanjappa, 1992); Valsad Dt.: Arnala (Patel, 2013)

***Geissaspis tenella** Benth.

Herb; *Fl. and Fr.*: August – December

Dang Dt. (Tadvi, 2013)

Hardwickia binata Roxb.

Tree; *Fl. and Fr.*: October – February

Ahmedabad Dt. (Meena, 2014a); Anand Dt. (Anjaria, 2002); Chhota udepur Dt.: Kavant (Thaker, 1974), Lachhras (Desai, 2002), Hampeshwar (*DNT1051*, Thakar, 1970); Dang Dt.: Waghai; Gir somnath Dt. (Sisodia, 2007); Junagadh Dt.: Girnar (Santapau, 1962); Panchmahal Dt.: Shivrajpur; Surat Dt.: Cotton Research Farm nursery (Joshi, 1980); Valsad Dt.: Parnera (More, 1972)

Indigofera angulosa Edgew.

Shrub; *Fl. and Fr.*: August – October

Junagadh Dt.: Gir forest (Sanjappa, 1977); Narmada Dt.: Gora, Junaraj (Patel, 1971), Lal-Darvaja, Thevadia (Shah and Patel, 1971); Sabarkantha Dt.: Khedbrahma (Bhatt, 1971; Sanjappa, 1977), Derol Jagir (Parmar, 2012)

Indigofera coerulea var. **monosperma** (Santapau) Santapau [= *Indigofera articulata* var. *monosperma* Santapau]

Shrub; *Fl. and Fr.*: September – October

Gujarat (Sanjappa, 1992); Devbhumi dwarka Dt.: Dwarka railway line, Okha; Gir Somnath Dt.: Veraval (Gopal, 1983); Jamnagar Dt. (Malhotra and Wadhwa, 1973): Latipur (Rao, 2002), Laloi, Ranjit Sagar (Santapau, 1962), Vijarkhi (Nagar, 2005), Jamjodhpur; Junagadh Dt.: Petwad (Menon, 1979), on Rajkot road; Kachchh Dt. (Shah, 1978; Patel *et al.*, 2011): Bhadreswar (Rao, 1981), Mindhiyari (Pandey *et al.*, 2009), Tapkeshwari (Joshi *et al.*, 2012); Patan Dt.; Porbandar Dt.: Ranavav, Barda; Rajkot Dt.: Hingolghadh (Menon, 1979), Chibhda, Gondal, Jetalsar, Khirsara, Pradhyuman Park (Santapau, 1962; Nagar, 2008); Sabarkantha Dt.: Bhaderesar (Parmar, 2012); Surendranagar Dt.: Chotila (Santapau, 1962), Jupara

***Indigofera dalzellii** T.Cooke [= *Indigofera triquetra* Dalzell]

Herb; *Fl. and Fr.*: July – September

Narmada Dt.: Shoolpaneshwar

Indigofera prostrata Willd.

Herb; *Fl. and Fr.*: August – December

Dahod Dt.: Ratanmahal (Bedi, 1968); Dang Dt. (Tadvi, 2013); Malegaon, Saputara, Subir (Suryanarayana, 1968); Valsad Dt. (Vora, 1980): Viraxet (Rao, 2012), Ghadoi (Patel RM, 1971)

***Indigofera uniflora** Roxb.

Herb; *Fl. and Fr.*: July – March

Gujarat (Singh *et al.*, 2015)

Mimosa prainiana Gamble

Tree; *Fl. and Fr.*: August – December

Gujarat (Singh *et al.*, 2015)

Pterocarpus marsupium subsp. **acuminatus** (Prain) Thoth. [= *Pterocarpus marsupium* var. *acuminatus* Prain]

Tree; *Fl. and Fr.*: April – July

Banaskantha Dt.: Jessore (Punjani *et al.*, 2015); Bhavnagar Dt.: Kadambagiri (Meena, 2014b); Chhota udepur Dt.: Alwa (Thaker, 1974), Mithibor at Dolariya (Desai, 2002); Dahod Dt.: Ratanmahal (Bedi, 1968); Dang Dt. (Tadvi, 2013): Ahwa, Subir (Suryanarayana, 1968); Devbhumi dwarka Dt.: Abhapar, Ghumli, (Nagar, 2005); Jamnagar Dt.: Laloi (Santapau, 1962); Junagadh Dt. (Santapau, 1962); Narmada Dt.: Junaraj, Mathavali, Ninaighat (Pradeepkumar, 1993), Kevadiya; Panchmahal Dt. (Bhatt, 1975); Porbandar Dt.: Barda (Thaker, 1910), Godhana, Satvirda (Nagar, 2005); Sabarkantha Dt.: Khedbrahma (Bhatt, 1971), Damavas (Bhatt and Sabnis, 1972); Valsad Dt. (Inamdar and Patel, 1971; Vora, 1980): Parnera (More, 1972), Marala (Patel RM, 1971), Hedri

Senna montana (Roth) V.Singh [= *Cassia montana* Roth]

Shrub; *Fl. and Fr.*: July – October

Devbhumi dwarka Dt.: Kileshwar; Junagadh Dt. (Santapau, 1962); Bordevi, Ramnath; Porbandar Dt.: Barda (Thaker, 1910), Naliadhar, Satvirda

Sesbania procumbens (Roxb.) Wight and Arn. [= *Aeschynomene procumbens* Roxb.]

Herb; *Fl. and Fr.*: February – March

Vadodara Dt. (Sabnis, 1967)

Smithia setulosa Dalzell

Herb; *Fl. and Fr.*: September – October

Dang Dt. (Tadvi, 2013); Saputara (Suryanarayana, 1968); Valsad Dt.: Dharampur

Tephrosia collina V.S.Sharma

Shrub; *Fl. and Fr.*: August – October

Gujarat (Sanjappa, 1992); Jamnagar Dt.: Jamjodhpur (Nagar, 2007; Bhambra, 2015); Kachchh Dt.: Adesar (Raghavan *et al.*, 1981); Mehsana Dt.: Salipur, Vadnagar; Narmada Dt.: Rajpipla (Shah, 1978), Junaraj; Sabarkantha Dt.: Dhandha (Parmar, 2012)

Tephrosia jamnagarensis Santapau [= *Tephrosia axillaris* A.R.Sm.]

Herb; *Fl. and Fr.*: September – October

Gujarat (Sanjappa, 1992); Bharuch Dt.: Bhadbhut (Vyas, 1973; Shah, 1978); Jamnagar Dt.: Victoria bridge, near Rozi island (Santapau, 1962), Khadkhambhaliya vidi (Nagar *et al.*, 2003; Bhambra, 2015), Rasi forest, Roji-Valsura; Junagadh Dt.: Sagdividi; Surat Dt.: Udhna (Joshi, 1980)

Vigna khandalensis (Santapau) Sundararagh. and Wadhwa [= *Phaseolus khandalensis* Santapau]

Herb; *Fl. and Fr.*: September – October

Dang Dt. (Tadvi, 2013); Saputara (Suryanarayana, 1968); Valsad Dt.: Kaprada

Euphorbiaceae Juss:-

***Acalypha malabarica** Müll.Arg. [= *Ricinocarpus malabaricus* (Müll.Arg.) Kuntze]

Herb; *Fl. and Fr.*: July – October

Ahmedabad Dt. (Meena, 2014a); Banaskantha Dt.: Palanpur (Meena, 2012); Bhavnagar Dt. (Oza, 1991); Chhota udepur Dt.: Kavant (Thaker, 1974); Gir somnath Dt. (Santapau and Raizada, 1954); Junagadh Dt.: Sasan (Bole and Pathak, 1988; Baxi, 2003); Rajkot Dt.: Gondal irrigation lake, Pradhyuman park (Bole and Pathak, 1988); Sabarkantha Dt. (Parmar, 2012); Damavas (Bhatt, 1971)

Euphorbia coccinea B.Heyne ex Roth [= *Chamaesyce coccinea* (B.Heyne ex Roth) Soják]

Herb; *Fl. and Fr.*: June – October

Daman: Daman airport, Delvada (29.6.1964, M.Y. Ansari 98538, BSI)

***Euphorbia deccanensis** V.S.Raju

Herb; *Fl. and Fr.*: October

Devbhumi dwarka Dt.: Beyt; Jamnagar Dt.

Euphorbia elegans Spreng. [= *Chamaesyce elegans* (Spreng.) Soják]

Herb; *Fl. and Fr.*: Mar – May

Porbandar Dt.: Bhad, Garej, Kadachh, Madhavpur (Bole and Pathak, 1988; Baxi, 2003)

***Euphorbia perbracteata** Gage [= *Tithymalus perbracteatus* (Gage) Soják]

Herb; *Fl. and Fr.*: December – April

Anand Dt.: Dhuvanar; Bharuch Dt.: Kavi; Daman: Dabel near tank (4.6.1963, R.S. Rao 89002, CAL); Dang Dt. (Tadvi, 2013): Malegaon, Saputara; Surat Dt. (Joshi, 1980); Vadodara Dt.: Savli (Padate, 1973), Chokari

Euphorbia pycnostegia Boiss. [= *Euphorbia pycnostegia* var. *pycnostegia*]

Herb; *Fl. and Fr.*: October – December

Dang Dt. (Tadvi, 2013): Saputara (Suryanarayana, 1968), Malegaon; Junagadh Dt.: Visavadar (Bole and Pathak, 1988; Baxi, 2003); Rajkot Dt. (Bole and Pathak, 1988)

***Euphorbia pycnostegia** var. **zornioides** (Boiss.) Santapau [= *Euphorbia zornioides* Boiss.]

Herb; *Fl. and Fr.*: August – October

Daman: Savardem, Valpai road (3.10.1970, N.P. Singh, 124958 BSI); Surat Dt.: Bhimpur, Dumas, Magdalla; Vadodara Dt.: Pratapnagar (Patil and Sabnis, 1982)

Euphorbia sebastinei Binojk. and N.P.Balacr. [= *Chamaesyce sebastinei* (Binojk. and N.P.Balacr.) V.S.Raju]

Herb; *Fl. and Fr.*: March – June

Devbhumi dwarka Dt. (Binojkumar, 1993)

***Homonoia retusa** (Graham ex Wight) Müll.Arg. [= *Adelia retusa* Graham ex Wight]

Shrub; *Fl. and Fr.*: November – April

Narmada Dt.: Gora, Kevadia (Patel, 1971), Surpan

***Mallotus polycarpus** (Benth.) Kulju and Welzen [= *Trewia polycarpa* Benth.; *Trewia nudiflora* var. *polycarpa* (Benth.) Susila and N.P.Balacr.]

Tree; *Fl. and Fr.*: December – June

Narmada Dt.; Dang Dt.: Ahwa; Valsad Dt.: Barpuda, Gundiya, Pangarbari, Kaprada (Reddy, 1987), Amba (Rao, 2012), Jogvel, Lavkar, Ozarda, Sildha (Vora, 1980)

Malpighiaceae Juss:-

***Aspidopterys cordata** (B.Heyne ex Wall.) A.Juss. [= *Hiraea cordata* B.Heyne ex Wall.]

Climber; *Fl. and Fr.*: September – January

Dang Dt. (Chavan and Oza, 1966): Saputara (Patel, 2013), Ahwa, Malegaon, Pipaldahad, Shamgahan (Suryanarayana, 1968); Navsari Dt.: Mankunia; Valsad Dt.: Pangarbari, Sutharpada (Reddy, 1987; Patel, 2013)

Phyllanthaceae Martinov:-

***Bridelia montana** (Roxb.) Willd. [= *Clutia montana* Roxb.]

Shrub; *Fl. and Fr.*: August – January

Valsad Dt.: Amba, Avdha, Lavkar, Mandva, Nandgam, Sanjan, Sildha, Umbergaon

***Phyllanthus lawii** J.Graham [= *Diasperus lawii* (J.Graham) Kuntze; *Phyllanthus juniperinoides* Müll.Arg.]

Shrub; *Fl. and Fr.*: November

Bharuch Dt.: Kabirvad; Chhota udepur Dt.: Hampheshwar; Narmada Dt.: Garudeshwar, Kevadiya

Salicaceae Mirb:-

***Flacourtia montana** J.Graham

Tree; *Fl. and Fr.*: December – January

Dang Dt.: Ahwa, Mahal, Malegaon; Gir somnath Dt. (Sisodia, 2007); Junagadh Dt.; Panchmahal Dt.: Pavagadh (Oza, 1961; Chavan and Oza, 1962), Narukot

Rhamnaceae Juss:-

***Ziziphus caracutta** Buch.-Ham. ex Roxb.

Tree; *Fl. and Fr.*: April – June

Dang Dt.: Malegaon; Junagadh Dt.: Sasan (Hiran river); Valsad Dt.

***Ziziphus horrida** Roth

Shrub; *Fl. and Fr.*: July – December

Ahmedabad Dt. (Meena, 2014a): Kadi (Yogi, 1970); Amreli Dt.: Dhari (Menon, 1979); Banaskantha Dt.: Ambaji (Meena, 2012); Dang Dt.: Ahwa (Suryanarayana, 1968); Gir somnath Dt.: Una (Menon, 1979); Junagadh Dt.: Ramnath, Visavadar (Menon, 1979); Mahisagar Dt.: Lunawada; Mehsana Dt. (Shah and Yogi, 1974); Narmada Dt.: Kevadiya (Patel, 1971); Panchmahal Dt. (Bhatt, 1975): Pavagadh (Oza, 1961); Surat Dt.: Chandrapada, Umarpada

Ziziphus williamii Bhandari and Bhansali

Tree; *Fl. and Fr.*: August – October

Ahmedabad Dt.; Bharuch Dt.; Devbhumi dwarka Dt.: Beyt, Shankhodhar island; Kachchh Dt.: Rudramata

Brassicaceae Burnett:-

***Rorippa cochlearioides** (Roth) Al-Shehbaz and Jonsell [= *Alyssum cochlearioides* Roth; *Cochlearia cochlearioides* (Roth) Santapau and Mahesw.]

Herb; *Fl. and Fr.*: December – January

Chhota udepur Dt.: Hampheshwar (Thaker, 1974), Moti Chikli, Ambadungar; Narmada Dt.: Chopadi, Kalvat, Ninaighat (Pradeepkumar, 1993), Gora, Kevadiya (Patel, 1971), Suryakhadi (Shah and Patel, 1971), Rajpipla; Panchmahal Dt.: Pavagadh

Cleomaceae Bercht. and J. Presl:-

Cleome simplicifolia Hook.f. and Thomson

Herb; *Fl. and Fr.*: August – September

Bhavnagar Dt. (Oza, 1991): Palitana (Menon, 1979), Hathab, Shatrunjaya dam (Meena, 2014b); Chhota udepur Dt. (Desai, 2002): Kavant (Thaker, 1974); Dahod Dt.: Ratanmahal (Bedi, 1968), Pipargota (*BEDI2162* Bedi, 1962), Tokarva (*BEDI3396* Bedi, 1962), Devgadhi Baria; Devbhumi dwarka Dt.: Bhanvad (Santapau, 1962); Gandhinagar Dt.: Mansa; Gir somnath Dt. (Sisodia, 2007); Jamnagar Dt.: Vijarkhi dam (Santapau, 1962), Abhapar, Kileshwar, Venu, Ghumli (Nagar, 2005); Junagadh Dt.: Sapnes, Sasan (Menon, 1979); Kachchh Dt. (Patel *et al.*, 2011):

Nakhatrana (Bhatt, 1993), Mindhiyari (Pandey *et al.*, 2009); Kheda Dt.: Matar (*BEDI772* Bedi, 1960); Panchmahal Dt.: Chari (*BEDI1906* Bedi, 1961); Porbandar Dt.: Godhana, Satvirda, Adityana, Ranavav (Thaker, 1910; Nagar, 2005); Rajkot Dt.: Hingolghadh (Menon, 1979), Gondal, Pradhyuman park (Santapau, 1962); Sabarkantha Dt.: Dan Mahudi (*RPB1463*, Bhatt, 1968), Khedbrahma (Yogi, 1970; Bhatt, 1971; Parmar, 2012); Surat Dt.: Rander (Joshi, 1980); Vadodara Dt.: Savli (Padate, 1969; Padate, 1973), Wasanpura (*SNP1605*, Padate, 1961), Lacchanpur (*SNP701*, Padate, 1959), Mokshi (*SNP3867*, Padate, 1972), Manjusar (*SNP1301*, Padate, 1960)

Malvaceae Juss:-

Abelmoschus manihot subsp. **tetraphyllus** var. **megaspermus** Hemadri [= *Abelmoschus manihot* var. *megaspermus* Hemadri]

Undershrub; *Fl. and Fr.*: October – November

Chhota udepur Dt. (Desai, 2002); Hampsheshwar; Mehsana Dt.: Kadi

Abelmoschus tuberculatus var. **deltoidifolius** T.K.Paul and M.P.Nayar

Undershrub; *Fl. and Fr.*: August – October

Kachchh Dt.: Narayan sarovar (Parmar and Singh, 2003), Mindhiyari (Pandey *et al.*, 2009)

***Erinocarpus nimmonii** J.Graham [= *Erinocarpus nimmoanus* Mast.]

Tree; *Fl. and Fr.*: September – February

Dang Dt: Waghai; Valsad Dt.

Eriolaena stocksii Hook.f. and Thomson ex Mast.

Tree; *Fl. and Fr.*: June – August

Dang Dt. (Tadvi, 2013): Waghai (Gopal, 1983), Gira, Giri, Taola hills (Suryanarayana, 1968), Saputara (Shah and Suryanarayana, 1968), Kalibel; Junagadh Dt.: Sapnes (Menon, 1979); Narmada Dt.: Rajpipla (Gopal, 1983), Gora, Piplod, Sagai (Sharma, 2010), Thavadia; Valsad Dt.

Combretaceae R. Br:-

Anogeissus sericea var. **nummularia** King ex Duthie [= *Anogeissus rotundifolia* Blatt. and Hallb.]

Tree; *Fl. and Fr.*: January – April

Arvalli Dt.: Mahudi, Modasa, Vatrak; Banaskantha Dt.: Balaram temple (Rajendrakumar and Kalavathy, 2010; Meena, 2012), Jessore wildlife sanctuary (Rajendrakumar and Kalavathy, 2010); Gandhinagar Dt.: Mansa; Kheda Dt.; Mehsana Dt.: Juna Sudarsana, Taranga hill (Rajendrakumar and Kalavathy, 2010); Panchmahal Dt.: Tuwa, Pavagadh; Sabarkantha Dt.: Modasa (Parmar, 2012); Vadodara Dt.: Karachiya (Rao, 2002)

Anogeissus sericea Brandis

Tree; *Fl. and Fr.*: January – April

Ahmedabad Dt. (Meena, 2014a); Anand Dt. (Anjaria, 2002); Arvalli Dt.: Mahudi (Yogi, 1970), Modasa, Vatrak (Saxton and Sedgwick, 1918); Banaskantha Dt.: Jessore (Meena, 2012; Punjani *et al.*, 2015); Gandhinagar Dt.: Mansa (Yogi, 1970), Moti Pavathi (Gopal, 1983); Junagadh Dt.: Ghodawadi (Menon, 1979); Panchmahal Dt.: Pavagadh (Shah, 1978), Tuwa (Deshpande, 1968); Sabarkantha Dt.: Khedbrahma (Bhatt, 1971), Mama na pipla (Bhatt and Sabnis, 1972)

Lythraceae J. St.-Hil:-

Ammannia nagpurensis T.Mathew and M.P.Nayar

Herb; *Fl. and Fr.*: October – November

Junagadh Dt.: Sasangir to Junvaniya (Mathew and Nayar, 1989); Navsari Dt.: Unai (Mathew and Nayar, 1989)

***Lagerstroemia microcarpa** Wight

Tree; *Fl. and Fr.*: May – December

Ahmedabad Dt. (Meena, 2014a); Chhota udepur Dt.: Kadipani, Adtia, Satun, Raipur Kundai, Ghantoli-songir (Desai, 2002), Kavant (Thaker, 1974); Dang Dt. (Suryanarayana, 1968); Narmada Dt.: Junaraj, Kevadiya (Patel, 1971), Kelda, Kokati, Ninaighat, Sagai, Shisha; Valsad Dt.: Bildha, Jogvel, Nana Pondha, Panas (Vora, 1980), Hedri, Pendha, Umli (Rao, 2012)

Myrtaceae Juss:-

***Syzygium salicifolium** (Wight) J.Graham [= *Eugenia salicifolia* Wight; *Syzygium heyneanum* (Duthie) Gamble; *Eugenia heyneana* Duthie]

Tree; *Fl. and Fr.*: April – May

Arvalli Dt.: Modasa, Vatrak (Saxton and Sedgwick, 1918), Mahudi; Banaskantha Dt.: Gannapipadi, Ambaji (Meena, 2012); Chhota udepur Dt.: Kavant (Thaker, 1974); Dahod Dt.: Ratanmahal (Bedi, 1968), Bhuvera (Gopal, 1983);

Dang Dt. (Tadvi, 2013); Gandhinagar Dt. (Meena, 2014a); Gir somnath Dt. (Sisodia, 2007); Junagadh Dt. (Menon, 1979); Narmada Dt.: Rajpipla (Gopal, 1983), Kelda, Sagai, Waghumar (Pradeepkumar, 1993); Panchmahal Dt.; Sabarkantha Dt.: Khedbrahma (Yogi, 1970; Bhatt, 1971; Bhatt and Sabnis, 1972), Pahada (Yogi, 1970), Vijainagar, Dholwani (Parmar, 2012); Surat Dt.: Zankhvav (Yadav, 1979); Vadodara Dt.: Kamalpura; Valsad Dt. (Vora, 1980); Hedri, Pendha (Yadav, 1979), Kaprada (Rao, 2012)

Burseraceae Kunth:-

***Boswellia serrata** Roxb. ex Colebr.

Tree; *Fl. and Fr.*: December – April

Ahmedabad Dt.: Kundal; Arvalli Dt.: Modasa; Banaskantha Dt.: Jessore (Meena, 2012), Dantiwada, Palanpur (Patel, 2009); Bharuch Dt.; Bhavnagar Dt.: Palitana, Shatrunjaya hill (Meena, 2014b); Chhota udepur Dt.: Kevdi, Kundal, Satun (Desai, 2002), Kavant (Thaker, 1974), Ambadungar (*DNT1518*, Thakkar, 1971); Dahod Dt.: Ratanmahal (Bedi, 1968), Devgad Baria (Chavan *et al.*, 1963), Dhanpur (*BEDI1222*, Bedi, 1961); Dang Dt. (Tadvi, 2013): Subir (Suryanarayana, 1968); Gir somnath Dt. (Santapau and Raizada, 1954; Sisodia, 2007); Jamnagar Dt.: Laloi (Santapau, 1962); Junagadh Dt.: Sapnes, Tulsishyam (Menon, 1979), Kankai (Santapau, 1962), Sasan (Gopal, 1983); Kachchh Dt. (Patel *et al.*, 2011); Kheda Dt.: Matar (*BEDI2423* Bedi, 1962); Mahisagar Dt.; Narmada Dt.: Gora, Junaraj (Patel, 1971), Dhirkhadi, Mokhdi, Surpan, Thavadia (Pradeepkumar, 1993); Navsari Dt.; Panchmahal Dt.: Machi, Pavagadh (Oza, 1961); Patan Dt.: Satun; Rajkot Dt.: Hadala (Menon, 1979); Sabarkantha Dt.: Khedbrahma (Bhatt, 1971), Idar (Yogi, 1970), Kotda (Parmar, 2012), Modasa (Saxton and Sedgwick, 1918; Parmar, 2012); Surat Dt.: Kevdi; Surendranagar Dt.: Chotila (Santapau, 1962), Rampara; Valsad Dt.: Chavshala (Yadav, 1979), Dharampur (Gopal, 1983; Reddy, 1987), Kaprada, Nana Pondha (Vora, 1980)

Amaranthaceae Juss:-

***Achyranthes coynei** Santapau

Shrub; *Fl. and Fr.*: September – March

Kachchh Dt.: Kalo Dungar (Satish *et al.*, 2015)

Tamaricaceae Link:-

Tamarix kutchensis B.V.Shetty and R.P.Pandey

Shrub; *Fl. and Fr.*: November – January

Kachchh Dt.: Mundra – Mandvi (Shetty and Pandey, 1992), Narayan sarovar tank side (Pandey *et al.*, 2009)

Loranthaceae Juss:-

Dendrophthoe falcata var. **coccinea** (Talbot) Santapau [= *Loranthus longiflorus* var. *coccinea* Talbot]

Shrub; *Fl. and Fr.*: February – March

Arvalli Dt.: Modasa; Chhota udepur Dt.: Kavant (Thaker, 1974); Junagadh Dt.: Girnar (Bole and Pathak, 1988); Narmada Dt.: Rajpipla (Shah, 1967); Valsad Dt.: Kaprada (Rao, 2012)

Balsaminaceae A. Rich:-

***Impatiens minor** (DC.) Bennet [= *Balsamina minor* DC.; *Impatiens kleinii* Wight and Arn.]

Herb; *Fl. and Fr.*: August – November

Dahod Dt.: Banvaro (*BEDI457*, Bedi, 1961; *BEDI3012* Bedi, 1962), Pipargota (*BEDI1439*, Bedi, 1961); Dang Dt. (Tadvi, 2013): Ahwa, Malegaon (Suryanarayana, 1968); Mehsana Dt.: Medha; Narmada Dt.: Shisha (Pradeepkumar, 1993); Navsari Dt.: Bansda, Vati; Tapi Dt.: Gaumukh, Vyara; Valsad Dt.: Pangarbari (Reddy, 1987), Ozarda (Rao, 2012), Bilpudi, Boralai

Boraginaceae Juss:-

***Adelocaryum coelestinum** (Lindl.) Brand [= *Cynoglossum coelestinum* Lindl.; *Paracaryum coelestinum* (Lindl.) C.B.Clarke]

Herb; *Fl. and Fr.*: September – November

Dang Dt. (Tadvi, 2013): Don, Saputara; Narmada Dt.: Shisha (Pradeepkumar, 1993), Ninaighat

***Cordia domestica** Roth

Tree; *Fl. and Fr.*: May – August

Ahmedabad Dt. (Meena, 2014a); Chhota udepur Dt. (Shah, 1978): Koraj (Desai, 2002); Dahod Dt.: Popatkuwa (Rao, 2002); Dang Dt. (Tadvi, 2013): Mahal (Yadav, 1979); Junagadh Dt.: Mangrol (Santapau, 1953; Bole and

Pathak, 1988); Panchmahal Dt. (Shah, 1978); Sabarkantha Dt.: Bayad (Parmar, 2012); Valsad Dt.: Kaprada (Reddy, 1987)

Apocynaceae Juss:-

Brachystelma laevigatum Hook.f. [= *Eriopetalum laevigatum* Wight]

Herb; *Fl. and Fr.*: August

Kachchh Dt.

Ceropegia odorata Nimmo [= *Ceropegia blatteri* McCann]

Climber; *Fl. and Fr.*: July – August

Panchmahal Dt.: Pavagadh (Sabnis and Bedi, 1971); Sabarkantha Dt.: Vijaynagar

Sarcostemma intermedium Decne.

Shrub; *Fl. and Fr.*: July – September

Bhavnagar Dt.: Piram island at the mouth of the Narmada river

***Hemidesmus indicus** var. **pubescens** (Wight and Arn.) Hook.f. [= *Hemidesmus pubescens* Wight and Arn.]

Climber; *Fl. and Fr.*: September – October

Junagadh Dt.: Girnar, Chobari (Patel, 2013); Kachchh Dt.: Muru village along Hajipir road (Singhadiya *et al.*, 2011); Narmada Dt.: Ninai waterfall; Panchmahal Dt.

***Heterostemma dalzellii** Hook.f.

Shrub; *Fl. and Fr.*: August – October

Narmada Dt.: Gichad (Meena and HariKrishna, 2015)

Tylophora dalzellii Hook.f.

Climber; *Fl. and Fr.*: April – December

Saurashtra (Bole and Pathak, 1988); Dahod Dt.: Dhanpur; Dang Dt. (Tadvi, 2013): Malegaon (Suryanarayana, 1968), Ahwa (*MCJ500*, Joshi, 1970); Devbhumi dwarka Dt.: Abhapar, Kileshwar, Venu, Ghumli (Nagar, 2005); Junagadh Dt.: Sasan; Kachchh Dt. (Thaker, 1910); Patan Dt.: Satun; Porbandar Dt.: Barda (Thaker, 1910; Nagar, 2005); Valsad Dt.: Pangarbari, Sutharpada (Patel, 2013), Dharampur

Wrightia dolichocarpa Bahadur and Bennet

Tree; *Fl. and Fr.*: December – April

Banaskantha Dt.: Jessore (Rao, 2002); Dang Dt. (Tadvi, 2013); Dadra and Nagar Haveli (Reddy, 1987): Bonta, Saili (Bahadur and Bennet, 1978); Devbhumi dwarka Dt.: Ghumli; Junagadh Dt.: Girnar; Narmada Dt.: Sagai; Sabarkantha Dt.: Vijaynagar; Valsad Dt.: Moti Korval, Kapurnya (Reddy, 1987), Wilson hill

Gentianaceae Juss:-

***Canscora concanensis** C.B. Clarke

Herb; *Fl. and Fr.*: October – November

Dang Dt. (Tadvi, 2013): Ahwa (Suryanarayana, 1968); Devbhumi dwarka Dt.: Abhapar, Venu (Nagar, 2005); Mahisagar Dt.: Lunawada; Navsari Dt.: Ambabari (Desai, 1976); Panchmahal Dt. (Bhatt, 1975): Machi, Bhadrakali (Bedi *et al.*, 1968); Porbandar Dt.: Godhana, Satvirda (Nagar, 2005); Surat Dt.: Siddh Kutir (Joshi, 1980)

***Exacum pumilum** Griseb.

Herb; *Fl. and Fr.*: August – November

Dang Dt. (Tadvi, 2013): Ahwa (Suryanarayana, 1968); Jamnagar Dt.: Khatiya, Ranjit Sagar; Junagadh Dt.: Gir (Sisodia, 2007); Navsari Dt.: Bansda (Desai, 1976); Valsad Dt. (Patel RM, 1971): Kaprada, Nana Pondha (Vora, 1980), Pardi (More, 1972)

***Swertia minor** (Griseb.) T.Cooke

Herb; *Fl. and Fr.*: August

Dang Dt. (Tadvi, 2013): Malegaon (Suryanarayana, 1968); Valsad Dt.: Pangarbari, Pindval

Rubiaceae Juss:-

***Ixora brachiata** Roxb.

Tree; *Fl. and Fr.*: February – June

Banaskantha Dt.: Balaram-Ambaji wildlife sanctuary (Meena, 2012); Bhavnagar Dt. (Oza, 1991); Chhota udepur Dt.: Ganiyar Bari, Jetpur Pavi, Koraj, Naswadi, Satun, Vasangadh (Desai, 2002); Dang Dt. (Tadvi, 2013); Gir somnath Dt. (Sisodia, 2007); Junagadh Dt.: Girnar, Mithyala, Sapnes (Menon, 1979), Sasan, Willingdon dam (Santapau, 1962); Mahisagar Dt.: Dezar, Shingnali (Bhatt, 1975); Mehsana Dt. (Shah and Yogi, 1974); Porbandar Dt.: Kileshwar (Santapau, 1962); Rajkot Dt.: Hadala (Menon, 1979), Gondal lake (Santapau, 1962); Valsad Dt.: Kaprada (Gopal, 1983), Dhamni, Pendha (Yadav, 1979), Bilpudi, Mandva, Nana Pondha (Vora, 1980)

Kohautia nagporensis (Brace ex Haines) Santapau and Merchant [= *Oldenlandia nagporensis* Brace ex Haines]

Herb; *Fl. and Fr.*: August – September

Panchmahal Dt.

***Neanotis rheedei** (Wight and Arn.) W.H.Lewis [= *Hedyotis rheedei* Wight and Arn.]

Herb; *Fl. and Fr.*: July – October

Chhota udepur Dt.; Dang Dt. (Chavan and Oza, 1966; Tadvi, 2013); Valsad Dt.: Dharampur, Kaprada, Nana Pondha (Vora, 1980)

***Pavetta crassicaulis** Bremek.

Shrub; *Fl. and Fr.*: July – October

Dang Dt. (Tadvi, 2013): Waghai (Yadav, 1979), Malegaon, Saputara (Suryanarayana, 1968); Valsad Dt.: Kaprada (Yadav, 1979), River Par, River Kolak (Vora, 1980), Dharampur, Dixal, Huda

Acanthaceae Juss.-

***Asystasia dalzelliana** Santapau

Herb; *Fl. and Fr.*: August – December

Dang Dt. (Tadvi, 2013): Ahwa, Malegaon, Saputara, Subir (Suryanarayana, 1968)

***Barleria cuspidata** F.Heyne ex Nees

Shrub; *Fl. and Fr.*: December – March

Dang Dt.; Gandhinagar Dt.: Norda nala; Gir somnath Dt. (Sisodia, 2007); Kachchh Dt.; Mehsana Dt. (Shah and Yogi, 1974)

***Barleria gibsonii** Dalzell

Undershrub; *Fl. and Fr.*: September – November

Dang Dt.: Saputara (Suryanarayana, 1968), Gira; Gir somnath Dt. (Sisodia, 2007); Junagadh Dt.: Girnar (Menon, 1979); Valsad Dt.: Dharampur, Kaprada, Nana Pondha (Vora, 1980), Rabda (More, 1972), Fansa, Pangarbari, Sarigam

***Barleria lawii** T.Anderson [= *Barleria sepalosa* C.B.Clarke]

Shrub; *Fl. and Fr.*: October – December

Bhavnagar Dt. (Menon, 1979); Dang Dt.: Saputara (Suryanarayana, 1968); Junagadh Dt.: Cremation ground (Bole and Pathak, 1988), Girnar; Valsad Dt.: Dharampur, Kaprada, Nana Pondha (Vora, 1980)

***Barleria prattensis** Santapau

Undershrub; *Fl. and Fr.*: September – December

Banaskantha Dt.: Koteswar near Ambaji (Meena, 2012); Bhavnagar Dt.: Kadambagiri (Meena, 2014b); Chhota udepur Dt.: Vagasthal, Rajmahal, Kadipani, Ambadungar, Satun, Jamlidam, Naswadi, Turkheda (Desai, 2002), Kavant (Thaker, 1974); Dahod Dt.: Alindra, Pipargota (Bedi, 1968); Dang Dt. (Tadvi, 2013): Borkhal, Mahal, Waghai (Yadav, 1979), Ahwa, Malegaon, Subir (Suryanarayana, 1968), Don; Gir somnath Dt. (Santapau and Raizada, 1954); Jamnagar Dt.: Kileshwar (Bole and Pathak, 1988); Junagadh Dt.: Sasan (Menon, 1979), Girnar, Junvaniya (Bole and Pathak, 1988); Mehsana Dt. (Shah and Yogi, 1974); Narmada Dt.: Mohbi, Namgir, Waghumar (Pradeepkumar, 1993); Panchmahal Dt.: Pavagadh (Oza, 1961), Tuwa (Deshpande, 1968); Sabarkantha Dt. (Parmar, 2012): Khedbrahma (Bhatt, 1971); Vadodara Dt.: Savli (Padate, 1969; Padate, 1973); Valsad Dt.: Avdha, Dhamni, Pendha, Sidhumbar, Sanjan, Palgam (Yadav, 1979), Amba, Bilpudi, Mandva (Vora, 1980), Parnera (More, 1972), Dungi hill (Patel RM, 1971), Khadakval (Rao, 2012)

***Cynarospermum asperrimum** (Nees) Vollesen [= *Blepharis asperrima* Nees]

Herb; *Fl. and Fr.*: September – December

Dang Dt.: Malegaon; Sabarkantha Dt. (Parmar, 2012): Khedbrahma (Bhatt, 1971); Valsad Dt.: Pendha (Yadav, 1979), Pangarbari

***Dyschoriste vagans** (Wight) Kuntze [= *Calophanes dalzellii* Benth. ex T.Anderson; *Calophanes vagans* Wight]

Herb; *Fl. and Fr.*: November – February

Dang Dt.: Bheskatri, Mahal, Malegaon, Saputara; Narmada Dt.; Valsad Dt. (Patel RM, 1971): Veri Bhavada (Rao, 2012), Dharampur, Kaprada, Nana Pondha (Vora, 1980), Nanakwada (Patel RM, 1971), Moti Korval, Tutarkhed

***Eranthemum roseum** (Vahl) R.Br. [= *Justicia rosea* Vahl; *Daedalacanthus roseus* (Vahl) T.Anderson]

Undershrub; *Fl. and Fr.*: October – January

Ahmedabad Dt.; Anand Dt. (Anjaria, 2002); Chhota udepur Dt.: Mogra, Kadipani, Hampeshwar road, Koraj, Satun, Raipur-kundal, Naswadi, Lagami (Desai, 2002), Kavant (Thaker, 1974); Dahod Dt.: Ratanmahal (Bedi, 1968); Dang Dt. (Tadvi, 2013): Ahwa, Mahal, Malegaon, Pipaldahad, Saputara, Subir (Suryanarayana, 1968), Bheskatri; Devbhumi dwarka Dt.: Abhapara, Ghumli (Bole and Pathak, 1988); Jamnagar Dt.; Junagadh Dt.: Girnar (Bole and Pathak, 1988), Sasan (Menon, 1979); Mehsana Dt. (Shah and Yogi, 1974); Narmada Dt.: Ninaighat, Sagai, Vav,

Waghumar (Pradeepkumar, 1993), Rajpipla (Shah, 1967), Chandrapada; Navsari Dt.: Abrama; Panchmahal Dt.: Pavagadh (Oza, 1961); Sabarkantha Dt.: Khedbrahma (Bhatt, 1971; Bhatt and Sabnis, 1972); Vadodara Dt.: Savli (Padate, 1969), Kamalpura; Valsad Dt. (Inamdar and Patel, 1971): Vavar (Rao, 2012), Dharampur, Kaprada, Nana Pondha (Vora, 1980), Abrama, Atgam, Palan (Patel RM, 1971), Hedri, Parnera, Pendha

***Gantelbua urens** (B. Heyne ex Roxb.) Bremek.

Herb; *Fl. and Fr.*: January – March

Chhota udepur Dt.: Kavant (Thaker, 1974); Dang Dt.: Ahwa; Narmada Dt.: Gichad, Khaman, Namgir (Pradeepkumar, 1993); Navsari Dt.: Bilimora, Unai; Sabarkantha Dt. (Parmar, 2012): Khedbrahma (Bhatt, 1971); Surat Dt. (Joshi, 1980); Vadodara Dt.: Sundarpura (Sabnis, 1967), Dabhoi; Valsad Dt. (Patel RM, 1971): Kaprada (Rao, 2012), Pardi (More, 1972), Dharampur, Nana Pondha

***Haplanthodes nilgherrensis** (Wight) R.B. Majumdar [= *Haplanthus nilgherrensis* Wight.]

Herb; *Fl. and Fr.*: September – December

Banaskantha Dt.: Balaram-Ambaji wildlife sanctuary (Meena, 2012); Dahod Dt.: Banvaro, Panam (Bedi, 1968); Narmada Dt.: Namgir, Shisha, Waghumar (Pradeepkumar, 1993), Rajpipla (Shah, 1967); Panchmahal Dt.: Pavagadh (Oza, 1961); Surat Dt. (Joshi, 1980); Vadodara Dt.; Valsad Dt. (Inamdar and Patel, 1971): Dharampur, Kaprada, Nanapondha (Vora, 1980)

***Haplanthodes tentaculatus** (L.) R.B. Majumdar [= *Ruellia tentaculata* L.]

Herb; *Fl. and Fr.*: October – January

Ahmedabad Dt.; Chhota udepur Dt.: Kavant (Thaker, 1974); Dang Dt. (Tadvi, 2013): Bheskatri, Pipaldahad (Yadav, 1979), Ahwa, Mahal, Malegaon, Subir (Suryanarayana, 1968); Gir somnath Dt. (Santapau and Raizada, 1954); Junagadh Dt.: Shirvaniya (Bole and Pathak, 1988); Mahisagar Dt.; Narmada Dt.: Sagai; Navsari Dt.: Bansda (Desai, 1976); Panchmahal Dt.: Vishwamitri riverbank (Chavan and Sabnis, 1960); Surat Dt.: Zankhvav (Yadav, 1979); Valsad Dt. (Patel RM, 1971): Kaprada (Rao, 2012), Dharampur, Nanapondha (Vora, 1980), Parnera (More, 1972), Hedri, Pendha (Yadav, 1979)

***Haplanthodes verticillatus** (Roxb.) R.B. Majumdar

Herb; *Fl. and Fr.*: October – January

Banaskantha Dt.: Balaram-Ambaji road, Jessore wildlife sanctuary (Meena, 2012); Chhota udepur Dt.: Kavant (Thaker, 1974); Dahod Dt.: Ratanmahal (Bedi, 1968); Dang Dt. (Tadvi, 2013): Ahwa, Nilsakiya (Yadav, 1979), Malegaon, Pipaldahad, Saputara, Subir (Suryanarayana, 1968); Gir somnath Dt. (Santapau and Raizada, 1954); Junagadh Dt.: Girnar, Junvaniya, Kankai, Sasan, Shirvaniya (Bole and Pathak, 1988); Kheda Dt.: Kapadvanj; Narmada Dt.: Chopadi, Namgir, Vav (Pradeepkumar, 1993), Rajpipla (Shah, 1967); Navsari Dt.: Anklachh, Vati (Desai, 1976); Panchmahal Dt.: Machi (Oza, 1961), Kavant; Sabarkantha Dt.: Khedbrahma (Bhatt, 1971; Bhatt and Sabnis, 1972), Dholwani, Vanaj (Parmar, 2012); Surat Dt.: Vankal; Vadodara Dt.: Savli (Padate, 1969; Padate, 1973); Valsad Dt.: Kaprada (Rao, 2012), Dharampur, Nana Pondha (Vora, 1980)

***Hygrophila serpyllum** T. Anderson [= *Physichilus serpyllum* Nees]

Herb; *Fl. and Fr.*: September – December

Anand Dt.: Khambhat (Bhagwanani, 1980); Arvalli Dt.: Modasa, Vatrak (Saxton and Sedgwick, 1918); Banaskantha Dt.: Hathidhara forest (Meena, 2012); Dahod Dt.: Devgadhi Baria; Dang Dt. (Tadvi, 2013): Bheskatri, Galkund, Sunda (Yadav, 1979), Ahwa, Malegaon, Pipaldahad, Subir (Suryanarayana, 1968); Gir somnath Dt.: Junagadh Dt.: Kachchh Dt. (Patel *et al.*, 2011); Narmada Dt.: Kelda, Namgir, Sankali, Waghumar (Pradeepkumar, 1993), Rajpipla (Shah, 1967); Navsari Dt.: Bansda (Desai, 1976); Panchmahal Dt.: Sankali; Porbandar Dt.: Barda (Bole and Pathak, 1988); Sabarkantha Dt.: Khedbrahma (Yogi, 1970; Bhatt, 1971; Bhatt and Sabnis, 1972; Parmar, 2012), Himmatnagar, Moti Posina, Vireshwar; Surat Dt.: Umarpada; Vadodara Dt.: Savli (Padate, 1973); Valsad Dt. (Inamdar and Patel, 1971): Pendha (Yadav, 1979), Parnera (More, 1972), Umbergaon (Bhagwanani, 1980)

***Justicia neesii** Ramamoorthy [= *Rostellularia neesii* (Ramamoorthy) A.K. Mukh.]

Herb; *Fl. and Fr.*: September – December

Anand Dt.: Dhuvaran; Bharuch Dt.: Kavi; Dahod Dt.: Kanjeta; Junagadh Dt.: Girnar (Bole and Pathak, 1988); Navsari Dt.: Chari; Surat Dt.; Tapi Dt.: Gaumukh; Valsad Dt.: Pangarbari

***Justicia orbiculata** T. Anderson

Herb; *Fl. and Fr.*: August – November

Ahmedabad Dt. (Saxton and Sedgwick, 1918; Yogi, 1970); Sabarkantha Dt.: Prantij (Saxton and Sedgwick, 1918; Parmar, 2012)

Neuracanthus sphaerostachys Dalzell

Shrub; *Fl. and Fr.*: August – October

Arvalli Dt.: Modasa (Yogi, 1970); Banaskantha Dt.: Danta on way to Hadad, Kangura-Umbrapani village near Ambaji (Meena, 2012), Vav; Bhavnagar Dt.: Mithivirdi (Meena, 2014b); Chhota udepur Dt.: Ambadungar, Pavi-

jetpur, Satun (Desai, 2002), Kavant (Thaker, 1974); Dahod Dt.: Ratanmahal (Bedi, 1968), Devgadhi Baria; Dang Dt. (Tadvi, 2013): Ghoghli, Subir (Yadav, 1979), Ahwa, Pipaldahad (Suryanarayana, 1968), Waghai; Devbhumi dwarka Dt.: Abhapar, Kileswar, Venu, Ghumli (Nagar, 2005); Gir somnath Dt. (Santapau and Raizada, 1954; Sisodia, 2007); Junagadh Dt.: Girnar (Bole and Pathak, 1988), Ramnath, Sapnes, Sasan (Menon, 1979), Jasadhar, Junvaniya, Tulsishyam (Bole and Pathak, 1988); Narmada Dt.: Kalvat, Shisha, Vav (Pradeepkumar, 1993), Rajpipla (Shah, 1967); Navsari Dt.: Bansda (Desai, 1976); Panchmahal Dt.: Pavagadh (Oza, 1961), Tuwa (Deshpande, 1968); Porbandar Dt.: Godhana, Satvirda, Adityana, Ranavav (Nagar, 2005); Sabarkantha Dt.: Khedbrahma (Bhatt, 1971), Mahudi, Pahada (Yogi, 1970), Dharod, Vadali (Parmar, 2012); Surat Dt.: Umarpada, Zankhvav (Yadav, 1979); Tapi Dt.: Vyara (Yadav, 1979); Vadodara Dt.: Savli (Padate, 1969; Padate, 1973); Valsad Dt. (Inamdar and Patel, 1971): Dighi (Rao, 2012), Dhamni, Sidhumbar (Yadav, 1979), Dharampur, Kaprada, Nana Pondha (Vora, 1980), Chival, Dhari, Parnera, Rabda, Udwarda (More, 1972)

Neuracanthus tetragonostachyus subsp. **trinervius** (Wight) Bidgood [= *Neuracanthus trinervius* Wight]

Herb; *Fl. and Fr.*: November – March

Dang Dt. (Tadvi, 2013): Nilsakiya, Saputara (Yadav, 1979), Malegaon (Suryanarayana, 1968); Gir somnath Dt. (Sisodia, 2007); Valsad Dt.: Dharampur, Kaprada, Nanapondha (Vora, 1980), Huda, Tutarkhed

***Rungia elegans** Dalzell and A.Gibson

Herb; *Fl. and Fr.*: September – January

Arvali Dt.: Modasa; Bhavnagar Dt.: Palitana, Shatrunjaya (Meena, 2014b); Dang Dt. (Tadvi, 2013); Devbhumi dwarka Dt.: Beyt (Bole and Pathak, 1988); Jamnagar Dt.: Dhunvav, Ranjit Sagar, Rozi (Bole and Pathak, 1988); Rajkot Dt.: Pradhyuman park (Bole and Pathak, 1988)

Strobilanthes callosa Nees [= *Carvia callosa* (Nees) Bremek.]

Shrub; *Fl. and Fr.*: October – November

Saurashtra (Santapau, 1953; Bole and Pathak, 1988); Chhota udepur Dt.: Mogra, Kadipani, Turkheda, Kevdi, Jamlidam, Rangpur (Desai, 2002), Ambadungar (Thaker, 1974), Handev dungar, Kavant; Dahod Dt.: Kanjeta, Ratanmahal (Bedi, 1968); Dang Dt. (Tadvi, 2013): Malegaon, Saputara, Subir (Suryanarayana, 1968), Don, Galkund, Waghai; Narmada Dt.: Dabka, Fulsar, Namgir, Vaghumar (Pradeepkumar, 1993), Rajpipla (Shah, 1967), Gora; Navsari Dt.: Ambabari, Anklach, Mankunia, Vati (Desai, 1976); Panchmahal Dt.: Pavagadh (Oza, 1961); Sabarkantha Dt.: Himmatnagar; Valsad Dt.: Chavshala (Rao, 2012), Dharampur, Nana Pondha (Vora, 1980), Dhamni, Pendha

***Thelepaepale ixiocephala** (Benth.) Bremek. [= *Strobilanthes ixiocephala* Benth.]

Shrub; *Fl. and Fr.*: November – January

Banaskantha Dt.: Ambaji (Meena, 2012); Dang Dt.; Junagadh Dt.: Girnar (Menon, 1979)

Bignoniaceae Juss:-

***Dolichandrone atrovirens** (Roth) K.Schum. [= *Bignonia atrovirens* Roth; *Dolichandrone crispa* (Buch.-Ham. ex Roxb.) Seem.]

Tree; *Fl. and Fr.*: May – June

Dahod Dt.: Dumka, Garabdi (Bedi, 1968); Dang Dt.: Borkhal, Subir (Yadav, 1979); Valsad Dt.: Dharampur, Kaprada, Nana Pondha (Vora, 1980)

***Dolichandrone falcata** (Wall. ex DC.) Seem. [= *Dolichandrone lawii* Seem.; *Spathodea falcata* Wall. ex DC.]

Tree; *Fl. and Fr.*: April – June

Ahmedabad Dt.; Chhota udepur Dt.: Bhadrapur, Boriyad, Ghantoli-songir, Koraj, Pani-mines, Sadhli, Vagasthal (Desai, 2002), Kavant (Thaker, 1974); Dang Dt. (Tadvi, 2013): Ahwa (Suryanarayana, 1968), Ambapada, Surkai; Jamnagar Dt. (Nagar, 2005); Kheda Dt.: Majham river (Yogi, 1970); Narmada Dt.: Gora, Gumandev, Netrang, (Patel, 1971), Fulsar, Junaraj, Pankhala (Pradeepkumar, 1993), Vankal (Yadav, 1979), Rajpipla (Shah, 1967); Navsari Dt.: Bansda; Panchmahal Dt.: Tuwa (Deshpande, 1968), Shivarajpur; Porbandar Dt. (Nagar, 2005); Sabarkantha Dt.: Khedbrahma (Bhatt, 1971; Bhatt and Sabnis, 1972), Dhansura (Saxton and Sedgwick, 1918), Meghraj (Parmar, 2012); Vadodara Dt.: Savli (Padate, 1969); Boriyad, Khakharia, Samlaya, Vejpur; Valsad Dt. (Inamdar and Patel, 1971): Dharampur, Kaprada, Nana Pondha (Vora, 1980), Parnera (More, 1972), Dungri (Patel RM, 1971), Kaprada (Rao, 2012)

***Heterophragma quadriloculare** (Roxb.) K.Schum. [= *Bignonia quadrilocularis* Roxb.; *Heterophragma roxburghii* (Spreng.) DC.; *Spathodea roxburghii* Spreng.]

Tree; *Fl. and Fr.*: February – June

Ahmedabad Dt.; Dang Dt. (Tadvi, 2013): Bheskatri, Borkhal, Galkund, Mahal, Sagbara, Subir (Yadav, 1979), Ahwa, Malegaon, Pipaldahad (Suryanarayana, 1968), Kalibel; Devbhumi dwarka Dt.: Abhapara (Bole and Pathak, 1988); Narmada Dt.: Kalvat, Ninaighat, Thavadia (Pradeepkumar, 1993), Ghantoli (Yadav, 1979), Laldarwaja,

Rajpardi (Patel, 1971), Fulsar, Kokam, Namgir, Sagai (Sharma, 2010); Navsari Dt.: Bansda; Surat Dt.: Umarpada (Yadav, 1979); Tapi Dt.: Kelvan, Rani Amba; Vadodara Dt.: MSU campus (Sabnis, 1967), Tarsali; Valsad Dt.: Lavkar (Rao, 2012), Chavshala, Avdha, Pendha (Yadav, 1979), Nana Pondha, Kaprada (Vora, 1980), Bhilad, Huda, Pangarbari

***Radermachera xylocarpa** (Roxb.) K.Schum. [= *Bignonia xylocarpa* Roxb.]

Tree; *Fl. and Fr.*: April – September

Bharuch Dt.: Netrang; Chhota udepur Dt.: Kawant, Jamlidam (Desai, 2002), Ambadungar (Thaker, 1974), Hampheshwar, Kadipani, Turkheda; Dang Dt. (Tadvi, 2013): Waghai (Yadav, 1979); Narmada Dt.: Kokati, Shisha (Pradeepkumar, 1993), Mal, Samot (Joshi, 1983), Piplod (Sharma, 2010), Sagbara; Panchmahal Dt.: Jambughoda; Valsad Dt.: Dharampur, Kaprada, Nanapondha (Vora, 1980), Pangarbari

Lamiaceae Martinov:-

***Anisomeles heyneana** Benth.

Herb; *Fl. and Fr.*: October – December

Chhota udepur Dt.: Kadipani-Hampheshwar road (Desai, 2002), Kavant (Thaker, 1974); Dahod Dt.: Alindra, Banvaro, Pipargota (Bedi, 1968); Dang Dt. (Tadvi, 2013): Ahwa, Malegaon, Pipaldahad, Subir (Suryanarayana, 1968), Mahal; Narmada Dt.: Sagbara, Ghatoli, Rajpipla; Panchmahal Dt.: Pavagadh (Oza, 1961); Tapi Dt.: Vyara; Valsad Dt.: Tukwada (Rao, 2012), Hedri (Yadav, 1979), Nana Pondha, Pangarbari (Vora, 1980), Tamachhadi

***Lavandula bipinnata** (Roth) Kuntze [= *Bystropogon bipinnatus* Roth]

Undershrub; *Fl. and Fr.*: October – January

Bhavnagar Dt.: Palitana (Menon, 1979), Hastagiri (Meena, 2014b); Chhota udepur Dt.: Kavant (Thaker, 1974); Dang Dt. (Tadvi, 2013): Saputara (Yadav, 1979), Ahwa, Malegaon, Subir (Suryanarayana, 1968), Don; Devbhumi dwarka Dt.: Abhapara, Ghumli (Bole and Pathak, 1988), Kileswar, Venu (Nagar, 2005); Gir somnath Dt. (Santapau and Raizada, 1954); Jamnagar Dt. (Nagar, 2005); Junagadh Dt.: Girnar (Menon, 1979); Kachchh Dt. (Patel *et al.*, 2011): Bhuj (Bhatt, 1993); Narmada Dt.: Chopdi (Pradeepkumar, 1993); Porbandar Dt.: Godhana, Satvirda (Thaker, 1910; Nagar, 2005)

***Nepeta bombaiensis** Dalzell

Herb; *Fl. and Fr.*: July – August

Chhota udepur Dt.: Kavant; Junagadh Dt.: Girnar (Bole and Pathak, 1988); Panchmahal Dt.: Pavagadh (Oza, 1961)

***Pogostemon purpurascens** Dalzell

Herb; *Fl. and Fr.*: October – January

Dang Dt. (Tadvi, 2013): Malegaon (Yadav, 1979), Mahal, Saputara, Subir (Suryanarayana, 1968); Narmada Dt.: Chopadi, Waghumar (Pradeepkumar, 1993), Dediapada; Sabarkantha Dt.: Khedbrahma (Bhatt and Sabnis, 1972); Valsad Dt.: Hedri (Yadav, 1979)

Lentibulariaceae Rich:-

***Utricularia graminifolia** Vahl [= *Utricularia purpurascens* Graham]

Herb; *Fl. and Fr.*: September – October

Valsad Dt.: Dharampur, Mandva (Vora, 1980)

Oleaceae Hoffmanns. and Link:-

***Jasminum malabaricum** Wight

Climbing shrub; *Fl. and Fr.*: March – May

Dahod Dt.: Kanjeta, Pipargota (Bedi, 1968); Dang Dt. (Tadvi, 2013); Navsari Dt.: Bansda (Desai, 1976), Vedchha; Valsad Dt.: Malegam, Rohina, Sanjan (Patel, 2013), Dharampur, Jogvel, Mandva, Nana Pondha (Vora, 1980), Abrama, Ghadoi, Marla (Patel RM, 1971), Sarigam, Tukwada (Rao, 2012), Rabda (More, 1972)

Convolvulaceae Juss:-

***Argyreia boseana** Santapau and V.Patel

Climber; *Fl. and Fr.*: July – December

Narmada Dt.: Dediapada (Patel, 2013)

***Argyreia sericea** Dalzell

Climber; *Fl. and Fr.*: August – October

Bhavnagar Dt.: Memon boarding (Meena, 2014b); Chhota udepur Dt.: Kavant (Thaker, 1974; Patel, 2013), Ambadungar (DNTI067, Thakar, 1970); Dahod Dt.: Devgadh Baria (Patel, 2013), Banvaro, Pipargota (Bedi, 1968); Dang Dt. (Tadvi, 2013): Ahwa (Yadav, 1979), Malegaon, Pipaldahad, Saputara, Subir (Suryanarayana, 1968); Gir

somnath Dt. (Sisodia, 2007); Junagadh Dt.: Girnar, Junvaniya, Sasan (Bole and Pathak, 1988); Narmada Dt.: Dabka, Mathavali, Sagai (Pradeepkumar, 1993), Chanderpada (Yadav, 1979), Gora (Patel, 1971); Navsari Dt.: Bansda (Patel, 2013), Ambabari, Mahuvas, Manpur, Sara, Vati (Desai, 1976); Rajkot Dt.: Gondal (Bole and Pathak, 1988); Vadodara Dt.: Ajwa; Valsad Dt.: Malegam, Pindval (Patel, 2013), Avdha (Yadav, 1979), Dharampur, Kaprada, Nana Pondha (Vora, 1980), Paria (More, 1972), Saron (Patel RM, 1971), Tokarpada (Rao, 2012)

***Merremia rajasthanensis** Bhandari

Climber; *Fl. and Fr.*: September – December

Kachchh Dt. (Joshi, 1994; Patel *et al.*, 2011); Narayan sarovar (Patel, 2013), Mindhiyari (Parmar and Singh, 2003; Pandey *et al.*, 2009)

***Merremia rhynchorrhiza** Hallier f.

Climber; *Fl. and Fr.*: July – August

Bhavnagar Dt. (Menon, 1979; Meena, 2014b); Gir somnath Dt. (Bole and Pathak, 1988; Sisodia, 2007); Narmada Dt.; Panchmahal Dt.; Valsad Dt.: Pendha (Yadav, 1979); Khatradevi, Umarpada (Patel, 2013)

Solanaceae Juss:-

Solanum hovei Dunal

Shrub; *Fl. and Fr.*: December – January

Ahmedabad Dt.: Dholka, near Sabarmati river

***Solanum purpureilineatum** Sabnis and Bhatt

Herb; *Fl. and Fr.*: October – March

Anand Dt.: Khambhat (Bhagwanani, 1980); Banaskantha Dt.: Tharad; Chhota udepur Dt.: Hampheswar (Thaker, 1974), Kadipani, Kavant; Kachchh Dt.: Bhuj (KSR44, Rao, 1977; Bhatt, 1993); Sabarkantha Dt.: Khedbrahma (Bhatt and Sabnis, 1972), Dan Mahudi, Padhara (Bhatt, 1971; Parmar, 2012); Vadodara Dt. (Sabnis, 1967); Savli (Padate, 1973)

Apiaceae Lindl:-

***Heracleum grande** (Dalzell and A.Gibson) Mukhop. [= *Pastinaca grandis* Dalzell and A. Gibson]

Herb; *Fl. and Fr.*: July – August

Dang Dt.: Malegaon, Saputara (Suryanarayana, 1968)

***Pimpinella adscendens** Dalzell

Herb; *Fl. and Fr.*: December – April

Dang Dt.: Saputara; Kachchh Dt.: Dhinodhar, Nakhatrana (Bhatt, 1993); Narmada Dt.: Chopadi, Ninaighat (Pradeepkumar, 1993); Valsad Dt. (Inamdar and Patel, 1971): Vavar (Rao, 2012), Dharampur, Kolak, Tan, Man, Vanki (Vora, 1980), River Par (More, 1972), Atak, Ghadoi, Pardi (Patel RM, 1971)

***Pimpinella tomentosa** Dalzell ex C.B.Clarke [= *Heracleum tomentosum* Dalzell and A.Gibson]

Herb; *Fl. and Fr.*: November – December

Dang Dt. (Tadvi, 2013): Gira-Giri Hills, Saputara (Suryanarayana, 1968); Valsad Dt.: Dharampur, Kaprada, Nanapondha (Vora, 1980)

***Pimpinella wallichiana** (Miq.) Gandhi

Herb; *Fl. and Fr.*: September – December

Dang Dt. (Tadvi, 2013); Valsad Dt.: Rabda, River Auranga at Atak Pardi, Suliya (Rao, 2012)

Asteraceae Bercht. and J. Presl:-

***Artemisia nilagirica** (C.B.Clarke) Pamp.

Herb; *Fl. and Fr.*: September – March

Banaskantha Dt.: Ambaji (Meena, 2012); Valsad Dt.: Dharampur, Kaprada, Nanapondha (Vora, 1980), Parnera (More, 1972)

***Phyllocephalum scabridum** (DC.) K.Kirkman [= *Decaneurum scabridum* DC.; *Baccharoides scabrida* (DC.) M.R.Almeida; *Centratherum molle* (Wall. ex DC.) Benth. and Hook.f.; *Decaneurum molle* (Wall.) DC.]

Herb; *Fl. and Fr.*: September – October

Chhota udepur Dt.: Ambadungar, Kavant; Dahod Dt.: Alindra, Banvaro (Bedi, 1968); Dang Dt. (Tadvi, 2013): Ahwa; Panchmahal Dt.: Pavagadh (Oza, 1961); Valsad Dt.: Dhamni, Kaprada

***Blumea belangeriana** DC.

Herb; *Fl. and Fr.*: December – March

Dang Dt.: Ahwa, Nilsakiya (Yadav, 1979), Malegaon, Saputara (Suryanarayana, 1968); Junagadh Dt.: Girnar (Menon, 1979); Narmada Dt.: Sagbara; Navsari: Bansda (Desai, 1976); Surat Dt.: Zankhvav (Yadav, 1979); Valsad Dt. (Patel RM, 1971): Kaprada (Rao, 2012), Dhamni, Hedri, Parnera, Penda (Yadav, 1979), Pangarbari

***Blumea eriantha** DC.

Herb; *Fl. and Fr.*: October – December

Ahmedabad Dt.: Raypur (Saxton and Sedgwick, 1918), Viramgam (Meena, 2014a), Kharicut canal; Arvalli Dt.: Vatrak (Saxton and Sedgwick, 1918); Banaskantha Dt.: Mahudi (Yogi, 1970), Dantiwada, Palanpur (Patel, 2009); Bharuch Dt.; Bhavnagar Dt.: Shatrunjaya dam (Meena, 2014b); Chhota udepur Dt.: Kawant (Thaker, 1974), Gabadia, Kadipani, Hampeshwar, Satun, Ucheda, Udhwania, Zoz (Desai, 2002); Dahod Dt.: Alindra, Banvaro, Ratanmahal (Bedi, 1968); Dang Dt. (Tadvi, 2013): Bheskatri, Mahal (Yadav, 1979), Ahwa, Malegaon, Pipaldahad, Saputara, Subir (Suryanarayana, 1968); Gandhinagar Dt.: Mansa (Yogi, 1970); Junagadh Dt.: Girnar, Sasan (Menon, 1979); Narmada Dt.: Dumkhal, Sagai, Vav (Pradeepkumar, 1993), Umarkui, Umarpada (Yadav, 1979); Navsari Dt.: Bansda (Desai, 1976); Panchmahal Dt.: Pavagadh (Oza, 1961), Tuwa (Deshpande, 1968); Sabarkantha Dt.: Kotda, Khedbrahma, Isari, Fatehpur, Idar (Parmar, 2012); Vadodara Dt. (Sabnis, 1967): Savli (Padate, 1973), Chokari (Bhagwanani, 1980); Valsad Dt. (Inamdar and Patel, 1971; Patel RM, 1971; Vora, 1980): Chavshala, Nana Pondha, Pendha (Yadav, 1979), Pardi, Parnera (More, 1972), Kaprada (Rao, 2012)

Blumea malcolmi (C.B.Clarke) Hook.f. [= *Pluchea malcolmi* C.B.Clarke]

Herb; *Fl. and Fr.*: November – January

Chhota udepur Dt.: Rangpur (Thaker, 1974); Dang Dt.: Ahwa, Malegaon (Yadav, 1979), Saputara (Suryanarayana, 1968); Junagadh Dt. (Bole and Pathak, 1988); Navsari Dt.: Bansda (Desai, 1976); Panchmahal Dt.: Pavagadh (Oza, 1961); Porbandar Dt.: Satvirda, Adityana, Ranavav (Nagar, 2005); Surat Dt.; Surendranagar Dt.: Rangpur; Vadodara Dt.: Savli (Padate, 1973); Valsad Dt.: Rabda, Tutarkhed

***Goniocaulon indicum** (Klein ex Willd.) C.B.Clarke [= *Amberboa indica* (Klein ex Willd.) DC.; *Serratula indica* Klein ex Willd.; *Goniocaulon glabrum* Cass.]

Herb; *Fl. and Fr.*: December – February

Banaskantha Dt.: Balaram-Ambaji wildlife sanctuary (Meena, 2012); Chhota udepur Dt.: Kavant (Thaker, 1974); Dang Dt. (Tadvi, 2013); Gir somnath Dt. (Sisodia, 2007): Veraval (Bole and Pathak, 1988); Junagadh Dt.: Sasan, Visavadar (Bole and Pathak, 1988); Narmada Dt.: Mokhadi, Surpan, Thavadia (Pradeepkumar, 1993); Navsari Dt.: Bansda, Lakawadi, Mahuvas, Sara, Pratapnagar (Desai, 1976); Sabarkantha Dt. (Parmar, 2012): Khedbrahma (Bhatt, 1971); Vadodara Dt.: Kamalpura, Pratapnagar

Helichrysum cutchicum (C.B.Clarke) R.S.Rao and Deshp.

Herb; *Fl. and Fr.*: August – September

Devbhumi dwarka Dt.: Abhapar, Beyt (Bole and Pathak, 1988), Okhamandal (Bole and Pathak, 1988); Jamnagar Dt.: Laloi, Kota (Bole and Pathak, 1988); Junagadh Dt.: Girnar; Kachchh Dt. (Rao and Deshpande 1968; Raole, 1993; Patel *et al.*, 2011): Bhuj, Dahisara (Rao, 1981), Dhinodhar (Shah, 1978), Kotda, Lakhpat, Mosuna, Nakhatrana, Nani Khakhar (Rao, 2002), Hamankhudi, Narayan Sarovar (Pandey *et al.*, 2009), Nadibaugh Rakhali, Naliya (Raole, 1993), Banni, Bharasar, Kala dungar, Mandvi, Mundra, Sheh (Joshi *et al.*, 2013), Tapkeshwari (Joshi *et al.*, 2012); Morbi Dt.: Ravapar (Rao, 2002); Porbandar Dt.: Barda (Shah, 1987)

***Pulicaria wightiana** (DC.) C.B.Clarke [= *Poloa wightiana* DC.]

Herb; *Fl. and Fr.*: October – January

Banaskantha Dt.: Mahudi (Yogi, 1970), Dantiwada, Palanpur (Patel, 2009); Bhavnagar Dt.: Mahuva (Meena, 2014b); Dang Dt. (Tadvi, 2013): Subir (Suryanarayana, 1968); Devbhumi dwarka Dt.: Bhanvad, Kota (Bole and Pathak, 1988); Gandhinagar Dt.: Mansa (Yogi, 1970); Gir somnath Dt. (Santapau and Raizada, 1954): Somnath reclamation (Bole and Pathak, 1988); Jamnagar Dt.: Rozibet (Bole and Pathak, 1988); Junagadh Dt. (Gopal, 1983): Girnar, Khamba, Ramnath, Sapnes (Menon, 1979); Kachchh Dt. (Patel *et al.*, 2011): Mindhiyari (Pandey *et al.*, 2009); Kheda Dt.: Kapadvanj; Panchmahal Dt.: Pavagadh (Oza, 1961); Rajkot Dt. (Thakrar, 1987); Sabarkantha Dt.: Danmahudi (Bhatt, 1971), Himmatnagar, Idar (Yogi, 1970), Raigarh (Parmar, 2012), Prantij

Senecio bombayensis N.P.Balacr.

Herb; *Fl. and Fr.*: September – November

Dang Dt.: Malegaon, Saputara; Junagadh Dt.: Girnar; Panchmahal Dt.: Pavagadh (Oza, 1961)

***Senecio dalzellii** C.B.Clarke [= *Senecio lawii* C.B.Clarke]

Herb; *Fl. and Fr.*: December – January

Panchmahal Dt.: Pavagadh (Oza, 1961)

***Tricholepis amplexicaulis** C.B.Clarke

Herb; *Fl. and Fr.*: October – January

Dang Dt. (Tadvi, 2013): Gira-Giri hills, Saputara (Suryanarayana, 1968); Devbhumi dwarka Dt.: Abhapara (Bole and Pathak, 1988), Kileswar, Venu (Nagar, 2005); Gir somnath Dt. (Sisodia, 2007); Junagadh Dt.: Gir

Tricholepis glaberrima DC.

Herb; *Fl. and Fr.*: December – January

Ahmedabad Dt. (Meena, 2014a); Anand Dt.: Khambhat (Bhagwanani, 1980); Banaskantha Dt.: Balaram-Ambaji wildlife sanctuary (Meena, 2012); Bharuch Dt. (Gopal, 1983); Chhota udepur Dt.: Ambadungar, Bhadurpur, Hampeshwar, Turkheda (Desai, 2002), Kavant (Thaker, 1974); Dahod Dt.: Ratanmahal (Bedi, 1968), Devgadhi Baria; Dang Dt. (Tadvi, 2013): Ahwa, Malegaon, Saputara (Suryanarayana, 1968); Devbhumi dwarka Dt.: Bhanvad (Bole and Pathak, 1988), Abhapar, Kileswar, Venu, Ghumli (Nagar, 2005); Gir somnath Dt. (Santapau and Raizada, 1954); Jamnagar Dt.: Rozibet (Bole and Pathak, 1988); Junagadh Dt.: Girnar (Menon, 1979; Bole and Pathak, 1988), Sasan (Bole and Pathak, 1988); Mehsana Dt.: Visnagar (Bharati, 1959); Panchmahal Dt.: Pavagadh (Oza, 1961), Vishwamitri riverbank (Chavan and Sabnis, 1960); Porbandar Dt.: Godhana (Thaker, 1910; Nagar, 2005); Sabarkantha Dt.: Khedbrahma (Bhatt, 1971; Bhatt and Sabnis, 1972), Vireshwar; Vadodara Dt. (Sabnis, 1967): Savli (Padate, 1969; Padate, 1973), MSU campus (Phatak and Joshi, 1955); Valsad Dt.: Chavsari, Dhabhdi, Kaprada, Mandva (Vora, 1980), Umbergaon (Bhagwanani, 1980), Nana Pondha (Gopal, 1983)

Discussion:-

Among the total 192 Indian endemics found in Gujarat, dicotyledons dominate the endemic flora with 137 taxa (71%) belonging to 97 genera under 33 families, whereas monocots are represented by 55 taxa (29%) belonging to 37 genera under 9 families. The top five families of angiosperms, rich in endemic species contribute 57% of the total endemic species reported from Gujarat. Family Fabaceae has the largest number of Indian endemics (31 taxa), which is followed by Poaceae (27 taxa), Acanthaceae (20 taxa), Asteraceae (12 taxa) and Orchidaceae (10 taxa).

An analysis of the life-form types indicates that the endemic herbs (66%) dominate the study area, followed by shrubs (12%), trees (11%), climbers (6%), undershrubs (3%) and climbing shrubs (2%).

It was observed that large number of endemic herbs, climbers and shrubs flower in the months of September-October; while the peak flowering for trees was observed in April (Fig. 2), which is the hottest season in Gujarat.

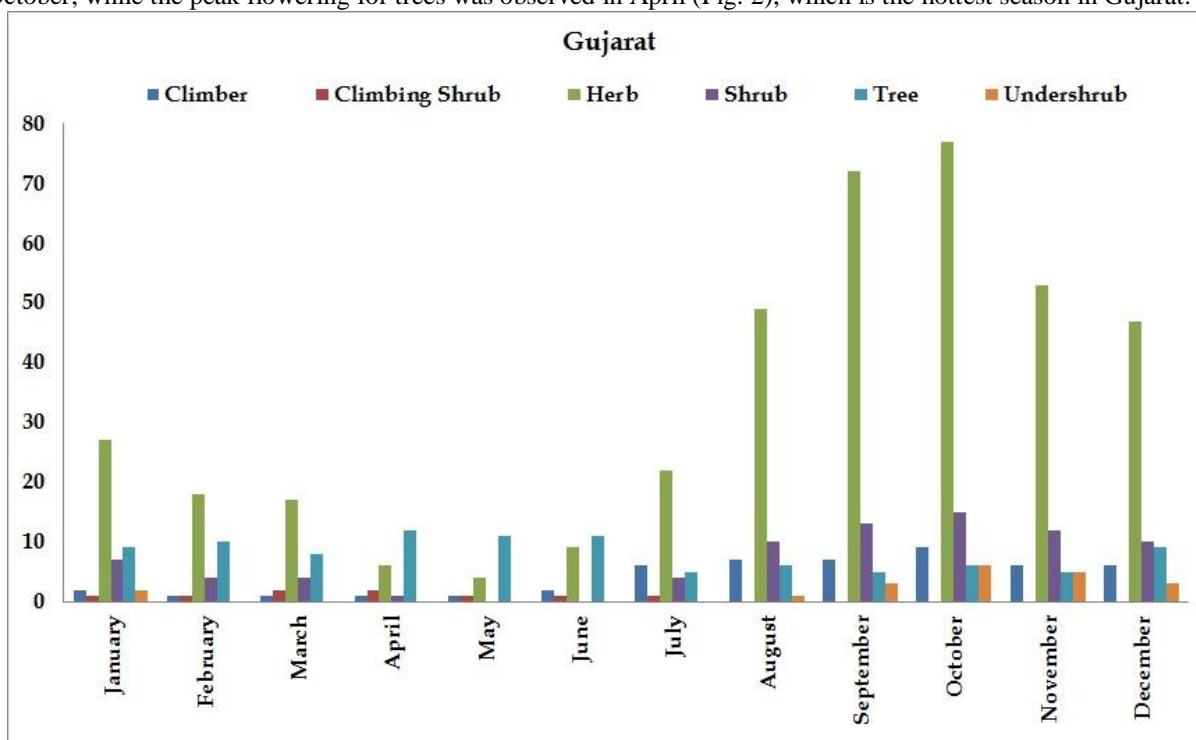


Figure 2:- Flowering phenology of endemic species in different life-forms

Analysis on the district wise distribution of endemic angiosperms shows that Dangs has maximum number of endemic angiosperms with 115 taxa, followed by Valsad (104), Narmada (71), Junagadh (63) and Panchmahal (57).

Kachchh:-

The survey resulted in the documentation of 24 endemic taxa. Of which all of them are dicots belonging to 23 genera under 15 families, and no endemic monocots. Top 4 families contribute 54% of the total endemic species reported from Kachchh. Family Fabaceae has the largest number of endemics (6 taxa), which is followed by Apocynaceae (3 taxa), and Acanthaceae and Asteraceae (2 taxa each), remaining families with single taxa.

An analysis of the life-form types indicates that the endemic herbs (10) dominate the study area, followed by shrubs (6), trees (2), climbers (4) and undershrubs (2).

Saurashtra:-

The survey resulted in the documentation of 87 endemic taxa. Of which Dicots dominate with 70 taxa (80%) belonging to 53 genera under 23 families, whereas monocots are represented by 17 taxa (20%) belonging to 16 genera under 7 families. Top 5 families contribute 60% of the total endemic species reported from Saurashtra. Fabaceae family has the largest number of endemics (15), which is followed by Acanthaceae (13), Poaceae (10), Asteraceae (9) and Euphorbiaceae (5).

An analysis of the life-form types indicates that the endemic herbs (51) dominate the study area, followed by trees (14), shrubs (12), climbers (6) and undershrubs (4).

Northern Gujarat:-

The survey resulted in the documentation of 57 endemic taxa. Of which Dicots dominate with 46 taxa (81%) belonging to 41 genera under 19 families, whereas monocots consists of 11 taxa (19%) belonging to 10 genera under 5 families. Top 5 families contribute 63% of the total endemic species reported from Gujarat. Family Acanthaceae has the largest number of endemics (13), followed by Fabaceae (9), Poaceae (6), Asteraceae (5) and Apocynaceae (3).

An analysis of the life-form types indicates that the endemic herbs (33) dominate the study area, followed by shrubs (9), trees (9), climbers (3) and undershrubs (3).

Central Gujarat:-

The survey resulted in the documentation of 100 endemic taxa. Of which Dicots dominate with 76 taxa (76%) belonging to 62 genera under 30 families, whereas monocots are represented by 24 taxa (24%) belonging to 17 genera under 6 families. Top 5 families contribute 49% of the total endemic species reported from Gujarat. Family Fabaceae has the largest number of endemics (15), Acanthaceae (12), Poaceae (9), Asteraceae (8) and Orchidaceae (5).

An analysis of the life-form types indicates that the endemic herbs (60) dominate the study area, followed by trees (16), shrubs (9), climbers (8), undershrubs (4) and climbing shrubs (3).

Southern Gujarat:-

The survey resulted in the documentation of 157 endemic taxa. Of which Dicots dominate with 108 taxa (69%) belonging to 74 genera under 28 families, whereas monocots represent 49 taxa (31%) belonging to 33 genera under 8 families. Top 5 families contribute 54% of the total endemic species reported from Gujarat. Family Poaceae has the largest number of endemics (24), followed by Fabaceae (22), Acanthaceae (19), Asteraceae and Orchidaceae (10 taxa each).

An analysis of the life-form types indicates that the endemic herbs (95) dominate the study area, followed by trees (19), shrubs (17), climbers (10), undershrubs (4) and climbing shrubs (1).

The present study demonstrates that endemics are mostly concerted in southern Gujarat region, they are primarily herbaceous, and size of the family is directly proportional to the number of endemics. Moreover, many of the endemics are habitat specific, while some of them are known either only by type collections of just a few additional collections.

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