

Flora of Devarayanadurga, Tumkur, Karnataka: A Pilot Survey

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Abstract: This paper deals with a brief account of floristic diversity based on short term survey made in selected areas with ethnobotanical information obtained from the available literature. In the present study, altogether 81 species of flowering plants belonging to 42 families have been identified and presented. The habit-wise analysis of the plants indicates the presence of 49 (60%) herbs, followed by 13 (16%) shrubs, 09 (13%) climbers, and 10 (11%) trees. Of the 81 species of recorded plants, 21 are used for various tribal and nontribal communities in the study area.

Keywords: Flora, Devarayanadurga, Pilot Survey.

I. INTRODUCTION

Flora of India is one of the richest in the world due to the wide range of climate topology and habitats. There are estimated to be over 18,000 species of flowering plants in India which constitute 6-7 percent of total plant species in the world. During the British period, extensive documentation on the floristic wealth of India has been done [1]. Most significant explorations in Peninsular India were made in the form of the flora of Bombay presidency[2] and flora of madras presidency [3] respectively. To date, these floras are used as the baseline data on the plant resources of Peninsular India.

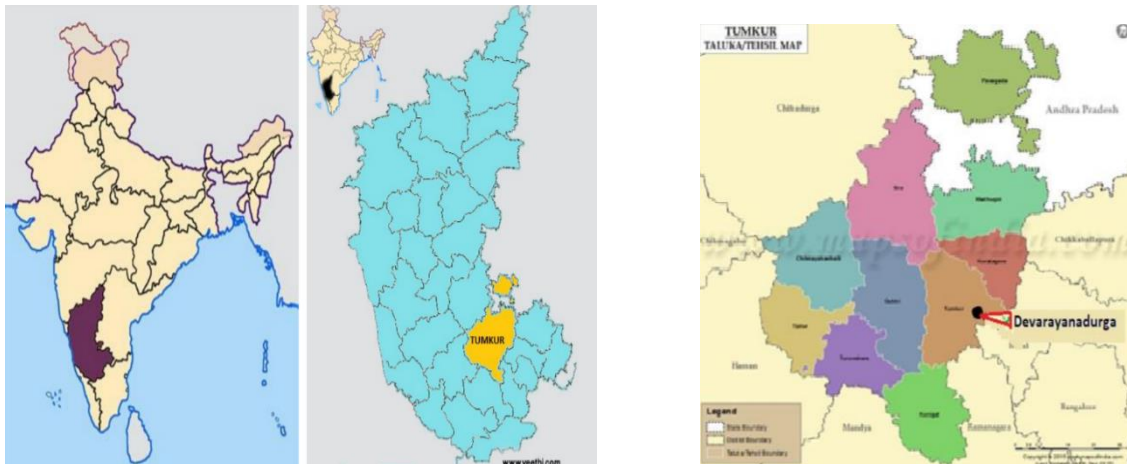


Fig. 1 Location of Devarayanadurga on map.

Study Area:

Devarayanadurga is one of the biodiversity hot spots of Karnataka and it is suited at the Tumkur district. Where the area is covered with intensive thick forest with hills. To the east to Tumkur and north of Devarayanadurga region presents beautiful scenery of hills ranges intersected by cultivated valleys. The region is represented by thorn scrub forest which falls under the southern thorn forest type. The present study has been carried out to make a short-term survey and document the flowering plants of the region. Species occurring in this region were compiled based on the literature survey, field observation, and discussion with local people.



Fig. 2 Historical places: Bhoganarasimha temple and Namada chilume.

II. MATERIALS AND METHODS

The study has been carried out from January 2018 to March 2018 as a part of Postgraduate dissertation work. The selected area is visited randomly on weekly basis. All field information related to plant and locality has been recorded in a data sheet indicating habit, habitat, botanical name, local name, types of root, stem, bark, leaves, inflorescence, flower color, fragrance, floral, fruit, and the seed of the plants along with ecological aspects. Collected specimens are preserved in the form of herbarium sheets and deposited in department herbaria. The ecological variations and distribution patterns were studied by collecting some species in different areas. The herbarium is made by using common plant press using newspapers and stored at Botany Department museum of Govt. Science College N T Road Bangalore. The identification of plants was made by using flora [3] [4] [10]. Extensive web sources have been searched [11] [12]. A catalog of the plants is prepared and arranged alphabetically.

III. RESULTS AND DISCUSSIONS

In the present study, altogether 81 species of flowering plants belonging to 42 families have been identified and presented [TABLE I]. The habit-wise analysis of the plants indicates the presence of 49 (60%) herbs, followed by 13 (16%) shrubs, 09 (13%) climbers, and 10 (11%) trees [Fig. 2]. Asteraceae is the most dominant family with 6 species. Families Amaranthaceae and Malvaceae with 5 species each. Seven families are represented by 3 species each, 8 families with 23 species, and 21 families with one each [TABLE II]. Of the 81 species of recorded plants, 21 are used for various tribal and nontribal communities in the study area. The members of Fabaceae such as *Lablab purpurea* and *Cajanus cajan* are commonly cultivated plants in the area. Harish Bhat has documented 167 species of medicinal plants belonging to 60 families in the Devarayanadurga region. Literature survey indicates about 27% of recorded species are found to have medicinal value.

A comprehensive study by Bhaskar and Kushalappa has documented 918 species of 139 families [4]. About 33% of families 11% of recorded species are represented in the study area during the study period. Devarayanadurga is the tallest hill range, with a fortified hillock 14 km east of Tumkur in Karnataka. The place has great historical importance. The floristic study of the Tumkur district is well documented. Description of 918 taxa falling under 504 genera and 139 families have been done. Out of these 464 species of plants of known medicinal importance [5]. A document on the medicinal plants of Devarayanadurga shows 307 plants out of which 167 are of medicinal value. The medico botanical study of 143 species with details of locality, local name, and chemical constituents has been well documented [7]. Plants of Thimmalapura and Siddharabetta forests adjacent to Devarayanadurga were also explored and documented. In this survey 162 species belonging to 146 genera and 50 families from Thimmalapura and 614 species belonging to 385 genera and 110 families from Siddharabetta have been recorded. Impact of Cultivation and gathering of Medicinal Plants on Biodiversity concerning have been studied regarding Devarayanadurga [9].

TABLE I. SPECIES DIVERSITY IN THE DEVARAYANADURGA

Sl. No.	Botanical name	Family	Habit	Nativity
1	<i>Abutilon indicum</i> L.	Malvaceae	Herb	India, Sri Lanka
2	<i>Achyranthus aspera</i> L.	Amaranthaceae	Herb	South America, India, and Iran
3	<i>Ageratum conyzoides</i> L.	Asteraceae	Herb	Brazil
	<i>Albizia lebbek</i> (L.)Benth	Fabaceae	Tree	Tropical Asia

4	<i>Alternanthera pungens</i> L.	Amaranthaceae	Herb	South America
5	<i>Alternanthera sessilis</i> (L.) R.Br.ex DC.	Amaranthaceae	Herb	Specific ocean Islands
6	<i>Amaranthus viridis</i> L.	Amaranthaceae	Herb	Southern America & Mexico
7	<i>Ammania bekkifera</i> L.	Lythraceae	Herb	Australia, China, and Egypt
8	<i>Ampelocissus tomentosa</i> (B.Heyne ex Roth) Planch.	Vitaceae	Climber	Bangladesh, India, Nepal, and Pakistan
9	<i>Anisomelis indica</i> L.	Lamiaceae	Herb	Eastern Asia
10	<i>Annona squamosa</i> L.	Annonaceae	Tree	West Indies
11	<i>Argemone mexicana</i> L.	Papaveraceae	Herb	Trop. Central & America
12	<i>Azadirachta indica</i> A.Juss.	Meliaceae	Tree	India, Bangladesh, Myanmar, Malaysia, and Pakistan
13	<i>Azuma tetraacantha</i> L.	Salvadoraceae	Shrub	Sri Lanka, Philippines, Central, and South Africa
14	<i>Barleria cristata</i> (Roxb.) Prain.	Acanthaceae	Shrub	Asia
15	<i>Bidens biternata</i> (Lour.) Merr. & Sherrif.	Asteraceae	Herb	Asia and North America
16	<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Herb	World wide
17	<i>Borreria ocymoides</i> (Burm.f.) DC.	Rubiaceae	Herb	India, Sri Lanka, Malaysia
18	<i>Calotropis gigantea</i> (L.) W. T. Aiton	Asclepiadaceae	Shrub	Tropical America
19	<i>Capparis zylanica</i> L.	Capparidaceae	Climber	Indo-Malaysia
20	<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Herb	Tropical Africa and Asia
21	<i>Cassia occidentalis</i> L.	Caesalpinaceae	Herb	South America
22	<i>Cassia tora</i> L.	Caesalpinaceae	Herb	India, Nigeria, and Nepal
23	<i>Catharanthus roseus</i> L.	Apocynaceae	Herb	World wide
24	<i>Chloris virgate</i> SW.	Graminae	Grass	North and Central America
25	<i>Chromolaena odorata</i> (L) King & H. Robinson	Asteraceae	Herb	Tropical America
26	<i>Cleome monophylla</i> DC.	Capparidaceae	Herb	Tropical Africa
27	<i>Clerodendron inerme</i> L.	Verbenaceae	Shrub	India, Malaysia
28	<i>Crassocephalum crepidioides</i> (Benth.) S.Moore	Asteraceae	Herb	Tropical Africa
29	<i>Crotalaria juncea</i> L.	Papilionaceae	Herb	Tropical Africa
30	<i>Cymbopogan caesius</i> A.Rich.	Graminae		Asia and Africa
31	<i>Datura metal</i> L.	Solanaceae	Herb	Tropical America
32	<i>Datura metal</i> L.	Solanaceae	Herb	Tropical America
33	<i>Datura stromonium</i> L.	Solanaceae	Herb	Mexico
34	<i>Dodonaea viscosa</i> Jacq.	Sapindaceae	Shrub	Southern Asia and Australia
35	<i>Ehretia laevis</i> Roxb	Boraginaceae	Tree	China. Bhutan, India
36	<i>Ephorbia hirta</i> L.	Euphorbiaceae	Herb	India
37	<i>Eragrastic spicata</i> Vasey	Poaceae	Grass	Northeast and Mexico
38	<i>Eucalyptus globules</i> Labill.	Myrtaceae	Tree	Australia
39	<i>Girardinia diversifolia</i> (Link) Friis.	Urticaceae	Shrub	Nepal, Himalaya and J&K

40	<i>Ipomoea frutescens</i> (L.) W.T. Aiton	Apocynaceae	Shrub	China, India, northern-Australia
41	<i>Ilex girdneriana</i> L.	Aquifoliaceae	Shrub	North America
42	<i>Ipomea digitata</i> L.	Convolvulaceae	Climber	America
43	<i>Ipomea eriocarp</i> R. Br.	Convolvulaceae	Climber	America
44	<i>Ipomea obscura</i> (L.) Ker Gawl.	Convolvulaceae	Climber	Africa and Asia
45	<i>Justicia betonica</i> L.	Acanthaceae	Shrub	Mexico
46	<i>Justicia gendarussa</i> Burm.F.	Acanthaceae	Shrub	Sri Lanka, India, and Malaysia
47	<i>Laggera alata</i> (D. Don) Sch.Bip.	Asteraceae	Herb	India, Sri Lanka, and Bangladesh
48	<i>Legustrum roxburghii</i> Roxb.	Olacaceae	Tree	South and Southeast Asia
49	<i>Leucas aspera</i> (Willd.) Link	Lamiaceae	Herb	
50	<i>Malvastrum coramandelinum</i> Garcke.	Malvaceae	Herb	Tropical Africa
51	<i>Mimosa pudica</i> L.	Mimosaceae	Herb	Brazil
52	<i>Momordica charantia</i> L.	Cucurbitaceae	Climber	India and East Asia
53	<i>Murraya koenigii</i> L.	Rutaceae	Tree	India and Sri Lanka
54	<i>Ocimum canum</i> Sims.	Lamiaceae	Herb	Africa
55	<i>Opuntia dillenii</i> (Ker-Gawl.) Haw.	Cactaceae	Shrub	Mexico
56	<i>Pithecellobium dulce</i> (Roxb.) Benth.	Mimosaceae	Tree	Mexico, America
57	<i>Plumbago zylanica</i> L.	Plumbaginaceae	Herb	Australia and India
58	<i>Pongamia pinnata</i> (L.) Pierre.	Papilionaceae	Tree	India, North Australia, Malaysia.
59	<i>Portulaca oleraceae</i> L.	Portulacaceae	Herb	India
60	<i>Prosopis juliflora</i> (Sw.) DC.	Mimosaceae	Shrub	Central and South America
61	<i>Pueraria tuberosa</i> (Willd.) DC.	Papilionaceae	Climber	India, Pakistan, and Nepal
62	<i>Pupalia lappaca</i> (L.) Juss.	Amaranthaceae	Herb	South America
63	<i>Rhynchosia hirta</i> (Andr.) Meikle & Verdc.	Papilionaceae	Climber	South Africa East and Central Africa
64	<i>Rumex nepalensis</i> Rech.f.	Polygonaceae	Herb	America
65	<i>Saraca asoca</i> (Roxb.) Willd.	Caesalpinaceae	Herb	Western Ghats
66	<i>Sida acuta</i> Burm. f.	Malvaceae	Herb	Tropical America
67	<i>Sida cardifolia</i> L.	Malvaceae	Herb	India
68	<i>Sida rhombifolia</i> L.	Malvaceae	Herb	America
69	<i>Solanum nigrum</i> L.	Solanaceae	Herb	Eurasia
70	<i>Sonchus oleraceus</i> L.	Asteraceae	Herb	Europe
71	<i>Stachytarpetta indica</i> (L.) Vahl.	Verbinaceae	Herb	Tropical America
72	<i>Stellaria media</i> (L.) Vill.	Caryophyllaceae	Herb	Europe
73	<i>Todalia asiatica</i> (L.) Lam. Var.	Rutaceae	Shrub	Africa and Asia
74	<i>Tribulus Terrestris</i> L.	Zygophyllaceae	Herb	Tropical America
75	<i>Trichodesma indicum</i> (L.) Lehm.	Boraginaceae	Herb	Africa Asia Australia
76	<i>Trimfetta rhomboidea</i> Jacq.	Tiliaceae	Herb	Australia
77	<i>Vitex nigundo</i> L.	Verbenaceae	Shrub	Eastern and Southern Africa
78	<i>Waltharia indica</i> L.	Sterculiaceae	Herb	Tropical and sub-tropical America
79	<i>Withania somnifera</i> (L.) Dunal.	Solanaceae	Herb	Australia, Asia, and Africa
80	<i>Zizipus jujube</i> Mill.	Rhamnaceae	Tree	Southern Asia, Northern India
81	<i>Zizupus oenoplia</i> (L.) Mill.	Rhamnaceae	Climber	Southern Asia

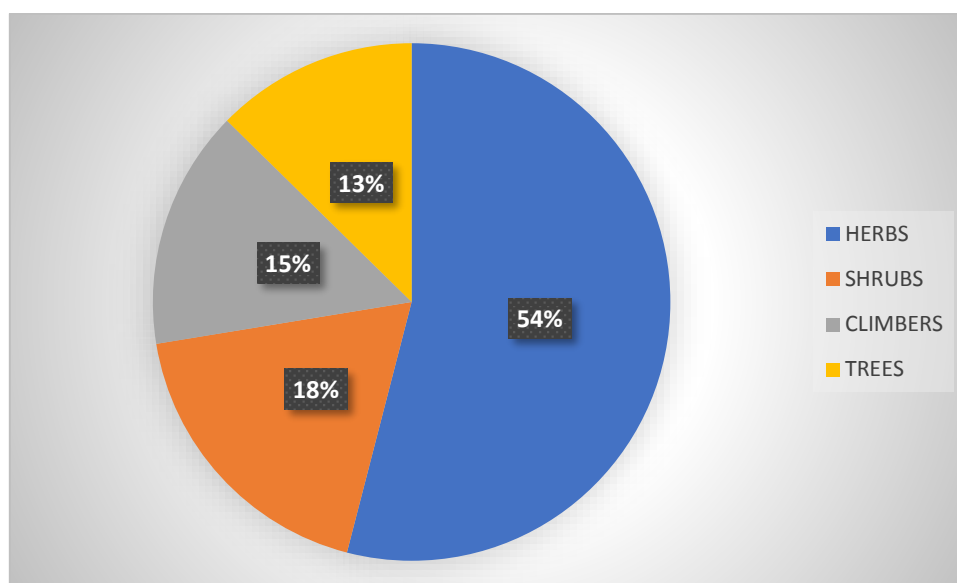


Fig. 3 Habit wise floristic composition

TABLE II. LIST OF MEDICINAL PLANTS FOR VARIOUS AILMENTS

Sl.No.	Species	Medicinal uses
1	<i>Abutilon indicum</i> L.	Inflammation, urinary diseases, leaf in piles.
2	<i>Sida cardifolia</i> L.	Roots in diarrhea, bleeding, piles, nervous disorders; leaf in cardiac disorders; bark in urinary troubles.
3	<i>Achyranthus aspera</i> L.	Roots in piles, eye diseases, wounds & jaundice. Seeds on ear diseases, renal problems & stomach pains.
4	<i>Alternanthera sessilis</i> (L.) R.Br.ex DC.	Whole plant in an intellectual-promoting, night blindness, leprosy & fever.
5	<i>Adhatoda zeylanica</i>	Leaf in diarrhea, dysentery, glandular tumors, fever, vomiting.
6	<i>Albizia lebeck</i> (L.)Benth	Bark in boils; flower as an antidote for snakebite, food poisoning & dental disorders.
7	<i>Mimosa pudica</i> L.	Roots in accidental wounds, snake poison and urinary disorders; leaf in piles and sinus.
8	<i>Azadirachta indica</i> A.Juss.	Whole plant in piles, wounds, skin diseases, eye diseases, toothache & antiseptic.
9	<i>Boerhavia diffusa</i> L.	Whole plant in asthma, urinary disorders, piles, anaemia, cardiac disorders, stomach disorders.
10	<i>Calotropis gigantea</i> (L.) W. T. Aiton	Roots in piles; leaf in spleen diseases; latex in cough.
11	<i>Cassia occidentalis</i> L.	Roots in cough and scorpion sting; leaf in asthma; seeds in skin diseases`
12	<i>Cassia tora</i> L.	Leaf in the ring and other skin diseases
13	<i>Saraca asoca</i> (Roxb.)Willd	Bark in bleeding piles, dyspepsia, thirst, burning sensation, tumors, piles, and ulcers; fruit in dysentery and diabetic; seeds in urinary discharge and snakebite.
14	<i>Crotalaria juncea</i> L.	Leaf in obesity and blood disorders; seeds in skin disorders.
15	<i>Datura metal</i> L.	Leaf in boils, skin diseases & antispasmodic, flowers in cracks in feet; seeds in rabies.
16	<i>Withania somnifera</i> (L.) Dunal.	Roots in bronchial asthma, cardiac disorders, suppression of urine, cough, dropsy, ulcers, blood disorders, scabies, and tonic
17	<i>Leucas aspera</i> (Willd.) Link	Whole plant in jaundice, intermittent fever, skin diseases, coughs, cold, fever`
18	<i>Plumbago zeylanica</i> L.	Roots in piles, filaria, diarrhea, stomach diseases, cough, anaemia, and obesity.

19	<i>Portulaca oleracea</i> L.	Whole plant in piles, wounds, abdominal disorders, bronchial asthma, poisoning, and eye diseases.
20	<i>Todalia asiatica</i> (L.) Lam.Var.	Root cough, fever, hill fever, stomachache, malaria, and diarrhea; leaves in cough, pain in bowels.
21	<i>Vitex nigundo</i> L.	Roots in sinus; leaf in cough, asthma, and fever.

CONCLUSIONS

Flora of India is one of the richest in the world due to the wide range of climate topology and habitats. There are estimated to be over 18,000 species of flowering plants in India which constitute 6-7 percent of total plant species in the world. Devarayanadurga is the tallest hill range, with a fortified hillock 14 km east of Tumkur in Karnataka. The place has great historical importance. The floristic study of the Tumkur district is well documented by Baskar and Kushalappa (2013). They described 918 taxa falling under 504 genera and 139 families. Out of these 464 species of plants of known medicinal importance. In the present study, altogether 81 species of flowering plants belonging to 42 families have been identified and presented. The habit-wise analysis of the plants indicates the presence of 49 (60%) herbs, followed by 13 (16%) shrubs, 09 (13%) climbers, and 10 (11%) trees. About 27% of s recorded species are found to have medicinal value.

REFERENCES

1. Hooker, J.D. Flora of British India, L.Reeva and Co, London, 1897.
2. Cook T. Flora of the presidency of Bombay. Vol. 1-3. BSI Pub. Calcutta, India. 1903.
3. Gamble et al. Flora of the presidency of Madras. Vol.1-3. BSI Publications, Calcutta, India.1915.
4. Bhaskar, V., Kushalappa, C.G. Flora of Tumkur District, Karnataka. Centre for Taxonomic Studies. Bangalore, 2013.
5. Harish R.B. A Field Guide to the medicinal Plants of Devarayanadurga State Forest. Karnataka Forest Department. Tumkur division, Tumkur, 1998.
6. Yoganarasimhan, S.N., Togunashi, V.S., Murthy, K.R.K., Govindaiah. Medico-Botany of Tumkur District, Karnataka. J. Econ. Taxon. Bot., (3)2, 1982.
7. Danapur, V., Seetharam, Y.N., Katrahalli, Kotresha, Mouna, Sellioui, Gowda, V.Ramalange. Plants of Thimmalapura and Siddharabetta forests, Tumakuru, Karnataka, 2018.
8. Ramakrishnappa, K. Impact Of Cultivation and Gathering of Medicinal Plants On Biodiversity: Case studies from India. FAO. 2002. Biodiversity and the Ecosystem Approach in Agriculture, Forestry, and Fisheries. Rome, 12-13 October 2002.
9. Saldanha J. Flora of Karnataka, Oxford Publishing Co. New Delhi, 1984.
10. Lakshmana, Sreenath K.P. Phyto-antidotes of Tumkur District, Karnataka, India G.J.B.A.H.S., Vol.3(4):122-130, 2014.
11. ENVIS- FRLHT website.
12. App- Picture this.
13. wgbis.ces.iisc.ernet.in/biodiversity