Journal of Agroecology and Natural Resource Management
p-ISSN: 2394-0786, e-ISSN: 2394-0794, Volume 5, Issue 3; July-September 2018, pp. 132-134

http://www.krishisanskriti.org

Floristic Diversity of Forest of Balaram Ambaji Wildlife Sanctuary, Banaskantha District, Gujarat

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Abstract—*Gujarat is situated on central western part of India, with an area 1,96, 020 sq. km. Balaram Ambaji wildlife sanctuary is situated in Banaskantha District of Gujarat. Balaram Ambaji sanctuary take place at arvalli ranges of mountain rang. It contains forest type of dry deciduous forest. Balaram Ambaji Sanctuary contains very rich Floristic diversity. The floral diversity of 483 species 293genera belonging to 97 families. The predominant plant in the sanctuary is Accacia catechu, A.nilotica, Anogessious latifolia, Commiphera indica and Butea monosperma.*

1. INTRODUCTION

Banaskantha, Mahesana, patan, and sabarkantha are the 4 district of north Gujarat among them in Banaskantha District. The Balaram Ambaji sanctuary is lying between $24^0$10'to $24^0$10' latitude and $72^0$20' to $73^0$00 longitudes at the part of Aravalli mountain ranges of Banaskantha district. The total area occupy by sanctuary is 542,08 km^2. Sanctuary tributaries are contributing two main rivers which are Banas and Sabarmati to enrichment of floral diversity. The average annual rainfall of study is about 725mm. Floral diversity of sanctuary is representing 483species of plant including 40 species of grass, 209 herbs, 58 shrubs and 10 lower plant like saledi, Indrajav, Modad, Tesu, palash, Baheda, Bili, Dhavdo, Timru, Arjun sadad, Khakhro, Kanji, Musali, Gugal etc. Floristic diversity has acquired increasing importance in developing countries to improve their plant wealth. Secure for their rare, Endangered and threatened plant the knowledge of floristic diversity is very much important. In this research is prepared with a view incorporate data on synoptic analysis and comparison of flora.

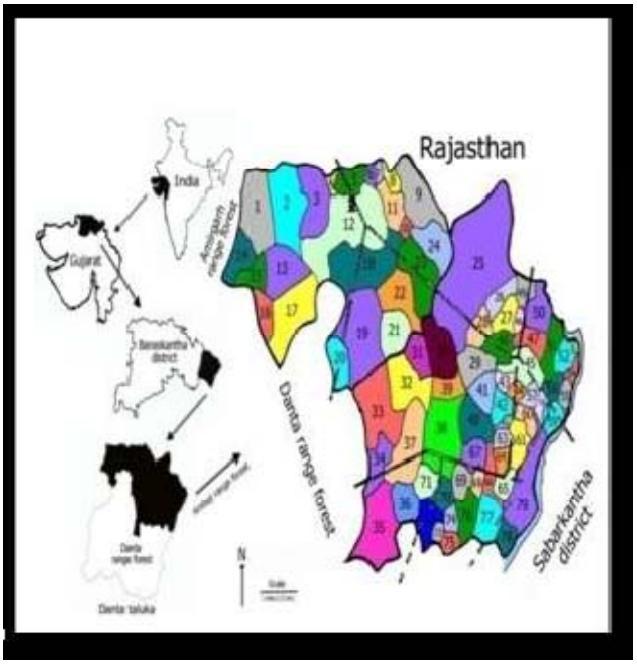

Fig. 1: Map showing study area:

2. METHODOLOGY:

Balaram Ambaji wildlife Sanctuary is survey regularly to record the floristic wealth of plant. Number of field trips was arranged and specimens were collected and identified with the help of Gujarat Flora and The flora of Bombay presidency. The study area falls under Banaskantha district of north Gujarat, Which is a semi-arid zone and mostly dry deciduous type of forest vegetation. In the present study the following method will be used. Floristic study was identify by transect method. The areas were survey on belt in their routes on a monthly. The plants were collected with or without fruit stages. We identified the plant on the spot and unknown plants brought to the Sir P. t. Sarvajanik college of science, Surat, for detail study and identify with the help of Gujarat flora Vol.-1 & 2.

Calculation of abundance, density and frequnency of herbs, shrubs, tree and climber's systematic quadrate random sampling were applied. Rare, endangered and threatened species were recored on the basis of abundance and frequency. Conservation of study area several recommendation and suggestion to tribal people, government and prepared action plan.

3. RESULT AND CONCLUSION:

Dicotyledons are very rich in study area. In the present study. Subclass Polypetalae among the Dicotyledons, it is dominent and represented 208 species, 137 Genera, and 42 families with cultivated and wild plants. Gamopetalae is represented 26 families, 121 Genera and 179 species including 2 varieties. The largest family of this sub class is Asteraceae. Apatalae is represented 53 species, 21 Genera and 18 Families. The dominent species of family Euphorbiaceae containing 27 species of 14 genera. Monocotyledon are very poorly represented as compared to Dicotyledons in the study area. Area contains 43 species, 18 Genera, and 11 species are found. Area contains 15 species belonging cyperaceae and 28 species of poaceae.

3.1: Detail survey of plant species which includes family wise life forms documentation of flowering plants.

We are found 483 plant species which is studied for taxonomical purpose. For study of Botanical description, habitat, habit, vegetative characters - stem, root, leaves, inflorescence, floral characters and floral parts- calyx, corolla, stamens, gynoecium, fruit and seed of each plant species are taking into consideration. These plant species are identifying with the help of standard floras. The unique ecosystem harbours 483 species of plant including 104 of trees, 52 of shrubs, 158 of herbs, 47 climbers, 12 of grass of Dicotyledons. Monocotyledon physiognomic categories are 3 trees, 6 shrubs,61 herbs, 2climbers, 28 species of grass and 10 species of lower plants.

3.2 Abundance, density and frequency of the plant species.

For phytosociological studies sample plots laid down in study area. In the Balaram sanctuary of dominent tree species, *Acacia nilotica* (L) is representing no.of 2956 trees. At the study area another dominent trees species is reported *Ficus bengalensis* with the 80% Frequency.

Total 219 Herb species are reporting in study are with the frequency, density and abundance as per species a under noted in the table 1. Most of the land of study area occupy number of herbs such as *Cyperus rotandus* L., jungle with open mixed jungle and open scrub at some of the places. The forests belong to the tropical dry mixed deciduous forests. Total 332 species of angiosperm belonging to 267 genera of 90 families. *Indigophera cordifolia* Heyne ex Roth., *Cassia tora* L., *Indigophera linifera* Retz. *Achyranthes aspera*.

Table 1: Quantitative data showing such as Frequency, Density and Abundance.

Plant name	Frequency	Density	Abundance
Acacia nilotica (L)	80	11.7	14.66
Ficus bengalensis	70	8.5	12.1
Cyperus rotandus L	30	64	62.3
Indigophera cordifolia Heyne ex Roth	10	7.8	78
Cassia tora L.,	20	10.2	51
Indigophera linifera Retz.	40	6.5	16.25
Achyranthes aspera.	50	8.9	17.8
Alternanthera sessilis (L)Dc.	60	7.8	13
Ocimum gratissimum L	80	9.4	11.75
Phyllanthus fraternus	20	1.3	6.5
Agave Americana L.	30	5.3	17.66
Argemone maxicana L.	70	13.4	19.14
Asphodelus tenuifolius Cav.,	60	3.2	5.33
Barlaria prionitis L.	20	2.1	10.5
Typha angustata Bory & Chaub	30	4.5	15
Abulilon indicum Guill.	40	2.3	5.75
sida ovate forsk.	10	1.2	12
Capparis desidua (Forsk.) Edgew	30	6.2	20.66
Capperis sepiaria L.	40	9.7	24.25
Kirgannelia reticulate (poir)	20	1.1	5.5
Ipomea pes-tigridis L.	50	6.7	13.4
Rhynchosia minima (L)DC	30	3.4	11.33
Cocclus hirsutus (L) Diels	60	8.9	14.83
Tinospora cordifolia (Willd) Miers.	70	9.8	14
Pergularia daemia (Forsk.)Chiov.	40	8.4	2

L, Alternanthera sessilis (L)Dc. Ocimum gratissimum L., Phyllanthus fraternus Webst are only growing in monsoon.

These herb species are reported to be growing only in summer: Agave Americana L., Argemone maxicana L., Asphodelus tenuifolius Cav., Barlaria prionitis L., Cassia tora L., Typha angustata Bory & Chaub etc.

Table 2: showing the number of Dicotyledon and monocotyledon Families, Genera and species.

	No. of species	No. of genera	No. of families
Dicotyledonous			
Polypetalae	208	137	42
Gamopatalae	179	121	26
Apatalae	53	21	18
Total	440	279	86
Percentage	91.09	95.22	88.65
Monocotyledonous	43	14	11
Percentage	8.9	4.77	11.34
Total	483	293	97

In the study area the shrub species is highest frequency. The plants which are found *Abulilon indicum* Guill., *sida ovate* forsk., *Capparis desidua* (Forsk.) Edgew. *Capperis sepiaria* L., *Kirgannelia reticulate* (poir). Climbers are very beautiful of this area, there are *Ipomea pes-tigridis* L., *Rhynchosia minima* (L)DC, *Cocclus hirsutus* (L) Diels, *Abrus precatorius* L., *Tinospora cordifolia* (Willd) Miers., *Pergularia daemia* (Forsk.)Chiov. Mostly climber species are growing in monsoon after first rain. Climber are much observed in dense area of forest.

3.3: Locally available rare and endangered plant in study area:

Less number of herb are found in few sample plot and not in entire forest. Herb specices like *Lepidagathis cristata* Willd, *Chlorophytum borivilianum* Sant., *Zornia gibbosa* Span., *Leptadenia pyrotechnica* (Forsk.), *Sesamum orientale* Klein., *Chlorophytum tuberosum* (Roxb.), *Orobanche aegyptica* Pers. *Curcuma inodora* Blatter, Shrubs species viz. *Commifora wigtii* (Am.) Bhandari, *Desmodium gangeticum* (L.) DC., *Euphorbia neriifolia* L., *Acacia jacquemontii* Bth., *Strychnos potatorum* L., *Breynia retusa* (Dennst.) Alst. and climber species viz. *Gloriosa superb* L.,*leptadenia raticulata* (Retz.) W. & A., and Tree species viz. *Anthocephalus kadamba* L.,*Hymenodictyon excelsum* (Roxb.) Wall, *Tecomella undulata* (Sw.) Seem., and *Boswellia serrate* Roxb. are rare and endangered in this area.

4. RESULT AND CONCLUSION:

The range forest is having a series of Aravalli hills with dry deciduous scrub forests. *Butea monosperma*, Holarrhena antidysenterica, Wrightia tinctoria, Lannea coromandelica, Boswellia serrata, Zizyphus mauritiana etc are found mostly in hilly regions. Species like Soymida febrifuga, Morinda tomentosa, Ougeinia oojeinensis, Hymenodictyon excelsum, Schrebera swietenioides, Oroxylum indicum, Tecomella undulata, Bridelia retusa are found with restricted distribution. Out of these tree species, Ougeinia oojeinensis one of the potential medicinal species used for women delivery was found very rare. 4 species of pteridophytes are recorded in shady areas in the forest. Local inhabitants of the present study area are greatly dependent on the forest resources. It was observed that the tribal villagers were collecting fire wood from forest and selling in nearby towns. Habitat destruction due to grazing, logging, agriculture conversion of forest into land and road constructions is causing rapid disappearance of many floral components. Interviews conducted with local inhabitants during the study period showed ethnobotanical use of about 42 plant species by various tribal communities.

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