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DOMINANT FLORA OF TODGARH-RAOLI WILD LIFE SANCTUARY RAJASTHAN, INDIA

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Todgarh-Raoli Wildlife Sanctuary is located in central position of Aravalli range. It has its own importance and specific characteristic endowed with unique biodiversity. The plants resources of this sanctuary were studied and analyzed in this paper. A total of 301 angiospermic species belonging to 231 genera under 84 families were investigated. Herbs were dominated flora followed by tree, climbers and shrub. Dominance of phanerophytes indicates the tropical moist and humid climate. This range lies between both xerophytic and mesic segments and thus it is an ecotone zone. Due to this ecotone nature great biodiversity is represented in the floral element. Proper conservation and management of plants are needed to save the natural resources, especially plants of this sanctuary. In the present paper an attempt has been made to ascertain the current status of the flora in all the possible area. Local conservational strategies have also been discussed in this paper.

Keywords:-Flora, Todgarh-Raoli Wildlife Sanctuary, local flora, Local Conservational-Practices.

The Aravalli ranges which is one the oldest mountain range of the world, run across the Rajasthan state from northeast to southwest and it is main topographic feature of Rajasthan. Todgarh-Raoli Wildlife Sanctuary located in central position of Aravalli. This area is characterized by tropical deciduous type of vegetation consisting of *Vachellia nilotica* (L.) Hurter & Mabb., *Vachellia leucophloea* (Roxb.) Maslin Seigler & Ebinger., *Anogeissus pendula* Edgew., *Balanites aegyptiaca* (Linn.) Delile, *Boswellia serrata* Roxb., *Lannea coromandelica* (Houtt.) Merill, *Butea monosperma* (Lam.) Taub., *Capparis decidua* (Forssk.) Edgew., *Ziziphus nummularia* Wight. & Arn. etc are the important plant species.

Flora of Rajasthan has been attended by several workers since 19th century. Systematic work on phytodiversity of Indian desert was started with the publication of "famine food of Marwar" 1869, "Notes on vegetable product used as food during famine in Rajasthan"1870 and "sketch of the flora of Rajputana" by King (1879) and other research work about the vegetation of the Indian desert has attracted the attention of researchers and numbers of papers were published between 1950 and 1975 dealing with taxonomic account of desert flora. Taxonomy research got acceleration after publication of flora of Western Rajasthan by Bhandari (1979), Flora of North Eastern part of Rajasthan by Sharma and Tiagi 1979, Comprehensive flora of Rajasthan in three volumes Shetty and Singh (1987, 91, 93). Sharma (2002) published flora of Rajasthan which covers mainly the Eastern part of the state. Tiagi and Aery (2007) published the flora of Rajasthan (South and South-East region). Survey of some ethno-botanical plants of South Rajasthan was carried out by Meena and Yadav 2010. Flora on South–Central Rajasthan was published by Yadav and Meena (2011). Pandey *et al.* (2012) have also published depleting 65 taxa with their present status and conservation in Rajasthan.

Although district level flora in Rajasthan have also been investigated by several workers like Flora of Ajmer District by Sharma (1958), Flora of Jaipur District by Sharma (1978), Flora of Banswara by Singh (1983), Flora of Bhilwara by Parmar and Singh (1982), Flora of Pali by Pandey and Singh 1989, flora of Ganganagar by Singh and Dhillon (1989), Phytodiversity of Nagaur by Sharma and Aggarwal (2008) and Flora of Tonk District by Shetty and Pandey (1983), yet floristic analysis of Todgarh-Raoli Wildlife Sanctuary has not adequately been studied by earlier workers in details. Although unrecorded ethno-medicinal

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uses of biodiversity from Todgarh-Raoli wild life sanctuary of Rajasthan was reported by Jain *et al*. 2007, and ethno-medico-botanical study of Todgarh-Raoli Wildlife Sanctuary was done by Kanther and Gena (2012, 2013, 2014), Kanther *et al.*(2012). Floristic analysis of the Sanctuary is pre-requisite for developing strategies for their conservation. In the present paper an attempt has been made to account on taxonomical diversity along with local conservational practices of Todgarh-Raoli Wildlife Sanctuary.

Study Area Profile

Rajasthan state is situated in the northwestern part of India between 23^{0}3' and 30^{0}12' N latitude and 69^{0}3' and 78^{0}12' E longitude. The Aravalli ranges which is one the oldest mountain range of the world, run across the state from northeast to southwest for nearly 692kms and Main topographic feature of Rajasthan is Aravalli range. Todgarh-Raoli Wildlife Sanctuary is located in central position of Aravalli range and northern side of Kumbhal-Garh hills of Rajasthan between 25^{0}38' and 26^{0}58' north latitudes and 73^{0}54' and 75^{0}22' east longitudes. Aravalli range divides the state into two vegetational segments western xerophytic segment and southern mesic segment. This range lies between both segments and thus it is an ecotone zone. This sanctuary is the transition zone of both vegetational segments. Xerophytic and mesic vegetation occurs as mixed formation. Due to this ecotone great biodiversity nature is represented in this floral element. Naturally diversity in angiospermic taxa is also

Figure 1: Location of Todgarh-Raoli Wildlife Sanctuary

represented in this region. Personal observations were taken in the field by visiting the study area. May month was hottest month of the year when temperature raise between 26^0 C minimum to 42^0 C maximum. Coldest month of the year was January with temperature between 8^0C minimum to 30^0C maximum. Most of the rainfall occurs in the monsoon period from July to September and winter rains are rare. The average annual rainfall was 527.3 mm. The relative humidity was minimum in hot months and maximum in monsoon month. It is bounded on the north by Ajmer district, on the south by Udaipur district, on the east by Rajshamand district and on the west by Pali district (Fig. 1). Local unique endemic myths and folk and folk-lore based conservational strategies and its importance on conservation of local flora have also been discussed in this paper.

MATERIAL AND METHODS

In the present study emphasis was laid on the investigation of floral diversity in Todgarh-Raoli Wildlife Sanctuary. The sanctuary has been visited frequently for last five years with the aim to investigate the occurrence of angiospermic species growing in their natural habitats. Field surveys were made in different seasons in the Sanctuary. Rainy season was the best time to visit many places. Botanical excursions were made in difference season so as to collect more and more plant species in flowering stage for better understanding of floral composition of the sanctuary. However it was lowest in May and highest in August and December when plants of angiosperm were in their full bloom. The special attention was paid on the collection of ephemerals, which complete their life-cycle within a few days and disappear with the onset of drier conditions. It was a great help that the field staff of forest department was associated always in the field. Efforts were made to identify the plant materials. The species were identified with the help of the Flora of the Indian Desert (Bhandari 1990), Flora of South Central Rajasthan (Yadav and Meena 2011) and the flora of Rajasthan Vol.-I, II, III by Shetty & Singh (1993).

OBSERVATIONS

Genera and species of this Sanctuary are listed in Table-1

Table 1: Genera and Species in Todgarh-Raoli Wildlife Sanctuary

S. No	Family	Name of the Plants	Local name	Genera	Species
1.	Annonaceae	*Annona squamosa* L.	Sitaphal	02	02
		Artabotrys hexapetalus (L.f.) Bhandari	Nag Champa		
2.	Menispermaceae	*Cissampelos pareira* L.	Patha	03	04
		Cocculus hirsutus (L.) Diels	Jal Jamni ki bel		
		Cocculus pendulus (JR & G Forst.) Diels	Pilwan		
		Tinospora cordifolia (Willd.) Miers.	Neemgiloy		
3.	Nymphaeaceae	*Nymphaea nouchali* Burm.f.	Kumud	01	01
4.	Papaveraceae	*Argemone mexicana* L.	Peeli Kateli	01	02
		Argemone ochraleuca Sweet.	Dholi satyanasi		
5.	Fumariaceae	*Fumaria indica* (Haussk.)	Pitpapra	01	01
6.	Brassicaceae	*Brassica compestris* Linn.	Sarshon	04	05
		Brassica juncea (L.) Czern & Coss.	Rai		
		Farsetia hamiltonii Royle	Khati booti		
		Lepidium sativum L.	Chandrasur		
		Raphanus sativum L.	Mooli		
7.	Cleomaceae	*Cleome gynandra* L.	Arkakanta	01	02
		Cleome viscosa L.	Tilaparni		

8.	Capparidaceae	*Capparis decidua* (Forssk.) Edgew.	Karil,Kair	03	05
		Capparis grandis L.	Vyagranakhi		
		Capparis sepiaria L.	Bel kair		
		Crataeva adansonii DC.	Varun		
		Gynandropsis gynandria L.	Tilaparni,		
9.	Violaceae	*Viola odorata* L.	Vanapsa	01	01
10.	Flacourtiaceae	*Flacourtia indica* (Burm. F.) Merr.	Vinkakataka,	01	01
11.	Portulacaceae	*Portulaca oleracea* L.	Lunaki	01	01
12.	Malvaceae	*Abutilon indicum* (L.) Sweet	Atibala	06	07
		Sida cordifolia L	Bal		
		Hibiscus cannabinus L.	Ambari		
		Hibiscus abelmoschus L.	Latakasturi		
		Gossipium herbaceum L.	Kapas		
		Malva sylvestris L.	Gul-Kheri		
		Thespesia populnea L.	Paraspeepal		
13.	Bombacaceae	*Adensonia digitata* L.	Kalpvriksha	01	01
14.	Sterculiaceae	*Helicteres isora* L.	Marorphali	04	04
		Malhania futteyporensis Munro exMast	Sata		
		Pterospermum acerifolium (L.)Willd.	Muchkanda		
		Sterculia urens Roxb.	Kada		
15.	Tiliaceae	*Corchorus capsularis* L.	Jute	02	05
		Grewia tenax (forssk.) fiori.	Gangeran,		
		Grewia hirsuta Vahl	Gursakhar		
		Grewia asiatica L.	Parusaka, Phalsa		
		Grewia tiliaefolia Vahl.	Dhaman		
16.	Malpighiaceae	*Hiptage benghalensis* (L.) Kurz.	Madhvi Lata	01	01
17.	Zygophyllaceae	*Fagonia indica* (Hadidi) Burm.f.	Dhamaso	02	02
		Tribulus terrestris L.	Chhota Gokhru		
18.	Oxalidaceae	*Oxalis corniculata* L.	Khati-Buti	02	02
19.	Rutaceae	*Aegle marmelos* (L.) Correa.	Bilva-patra	05	05
		Citrus medica L.	Nimbu		
		Limonia acidissima L.	Kakji		
		Feronia limonia Roxb.	Kapita		
		Peganum harmala L.	Harmal		
20.	Simaroubaceae	*Ailanthus excelsa* Roxb.	Aardu	01	01
21.	Balanitaceae	*Balanites aegyptiaca* (L.) Delile	Hingota	01	01
22.	Burseraceae	*Boswellia serrata* Roxb. ex Colebr.	Salar	02	02
		Commiphora wightii (Arn.) Bhandari	Guggal		
23.	Meliaceae	*Azadirachta indica* A. Juss	Neem	02	02
		Melia azadarach L.	Bakayan		
24.	Celastraceae	*Celastrus paniculatus* Willd.	Malkangani	02	02
		Maytenus emargineta Willd.	Kankera		
25.	Rhamnaceae	*Ziziphus mauritiana* Lam.	Bair,Badar	01	03
		Ziziphus nummularia (Burm.f.)Wight & Arn.	Chota Ber		
26.	Vitaceae	*Ampelocissus latifolia* (Roxb.) Planch.	Kutzu	02	02
		Cissus quadrangularis L.	Hadjod		
27.	Sapindaceae	*Cardiospermum halicocobum* L.	Aank Phootniki bel	01	01
28.	Anacardiaceae	*Lannea coromandelica* (Houtt.) Merr.	Ash tree	03	03
		Mangifera indica L.	Kali-moosali		
		Rhus mysorensis G. Don.	Dansara		
29.	Moringaceae	*Moringa concanesis* Nimmo.	Sainjnaz	01	02
		Moringa oleifera Lam.	Sahanjna		
30.	Fabaceae	*Abrus precatorius* L.	Chirmi	16	18
		Alhagi maurorum Medik	Janasa		
		Butea monosperma (Lam.)Taub.	Palash,Dhak		
		Clitoria ternatea L.	Aparajita		
		Crotolaria hirsutus Willd.	Kara ko		
		Crotolaria burhia Buch.-Hum.	Ghanterva		
		Crotolaria juncea L.	Sann, Hann		
		Dalbergia sissoo Roxb.	Sisham		
		Desmodium gangeticum (L.) DC.	Salaparni		
		Dolichos biflorus L.	Kulath		
		Glycyrrhiza glabra DC.	Yastimadhu		

		Indigofera tinctoria L.	Neel		
		Mucuna pruriens (L.) DC.	Kaunch phali		
		Milletia pinnata (L.)Panigrahi	Papro		
		*Pueraria tuberosa (*Willd.) DC	Vidarikand		
		Tephrosia purpurea(L) Pers.	Mava		
		Tephrosia villosa (L) Pers.	Pila Mava		
		Trigonella foenum-graceum L.	Methica,Methi		
		Vigna radiata R.wilczek	Mung		
31.	Caesalpinaceae	*Bauhinia racemosa* Lam.	Kanchnar	07	16
		Bauhinia variegata Benth.	Kachnar		
		Guilandina bonduc L.	Lata Karanj		
		Cassia fistula L.	Amaltas		
		Cassia roxburghii DC.	Dudhi		
		Cassia alba L.	Chakshusuya		
		Cassia angustifolia L.	Markandika		
		Cassia auriculata Lam.	Avaratki		
		Cassia occidantalis L.	Kasamarda		
		Seena siamea Lam.	Kesarsama		
		Seena italica Mill	Kasark		
		Seena alexandrina Mill.	Sonamukhi		
		Cassia tora L.	Chakramard		
		Delonix regia Hook.	Gulmohar		
		Tamarindus indica L.	Imli		
		Saraca asoca (Roxb.) Willd.	Sita Ashoka		
32.	Mimosaceae	*Acacia catechu* (L.f.) Willd.	Khair,Khadir	05	12
		Acacia farnesiana (L.) Willd.	Irimeda		
		Vachellia leucophloea (Roxb.)Maslin Seigler & Ebinger	Aronj		
		Vachellia nilotica (L.) Hurter & Mabb. Subsp-indica	Desi Babul		
		Vachellia nilotica (L.) Hurter & Mabb. **Subsp-cupressiformis**	Desi Babul		
		Senegalia Senegal (L.)Britton	Kumatiya		
		Albizia lebbck (L.) Benth.	Shirish		
		Dichrostachys cinerea Wight et Arn	Goyakhair		
		Mimosa pudica L.	Lajvanti		
		Mimosa hemata Willd.	Arati		
		Prosopis cineraria (L.) Druce	Khejari		
		Prosopis juliflora (Sw.) DC.	Vilayati babool		
33.	Rosaceae	*Rosa involucreta* L.	Jangali Gulab	01	01
34.	Combretaceae	*Anogeissus pendula* Edgew.	Dhokra	03	03
		Anogeissus sericea (Brandis)King Ex Duthie	Indrok		
		Terminalia arjuna Wight & Arn	Arjun		
35.	Myrtaceae	*Melaleuca citrina* (Curtis)Dum.Cours	Bottlebrush	02	02
		Eucalyptus camaldulensis Dehnh.	Safeda		
36.	Lythraceae	*Lawsonia inermis* L.	Mehandi	02	02
		Woodfordia fruticosa L.	Ghatki		
37.	Trapaceae	*Trapa natans* L.	Singhara	01	01
38.	Cucurbitaceae	*Citrullus colocynthis* (L.) Schrad	Indrayan,	07	10
		Coccinia grandis (L.) Voigt.	Tindori		
		Cucumis melo L. *Var. agrestis*	Kachri		
		Cucumis melo L. *Var. momordica*	Kachro		
		Lagenaria siceraria Standl.	Bittergaurd		
		Luffa cylindrical (L.) Roem.	Ghia torai		
		Melothria maderaspatena L.	Kachri		
		Momordica balsamina L.	Kikoro		
		Momordica charantia L.	Karela		
		Momordia dioca Roxb.	Kinakora		
39.	Cactaceae	*Opuntia elatior* Mill.	Naghphani	01	01
40.	Aizoaceae	*Trianthema portulacastrum* L.	Santi	01	01

41.	Molluginaceae	*Glinus lotoides* L.	Sata	03	03
		Mollugo cerviana (L.) DC	Chirya ki bajri		
		Gisekia pharanceoides L	Patali ghas		
42.	Rubiaceae	*Mitragyna parviflora* (Roxb.) Korth.	Kadamba	01	01
43.	Asteraceae	*Acanthospermum hispidium* DC.	Dokanta	13	14
		Blumea lacera DC.	Kukundra		
		Dicoma tomentosa Cass.	Vajaradanti		
		Echinops echinatus Roxb.	Kantalo		
		Eclipta prostrata (L.) Ment.	Bhringraj		
		Eclipta alba (L.) Hassk.	Bhangra		
		Spharanthus indicus L.	Gorakh mundi		
		Pluchea lanceolata (L.)Gaert.	Rasna		
		Vernonia cinerea (L.) Less.	Sahadevi		
		Launaea procumbens Willd.	Papra		
		Parthenium hysterophorus L.	Gajar gass		
		Tridex procumbens L.	Shatia		
		Peristrophe bicalyculata (Retz.) Nees.	Julhan		
		Xanthium indicum Koen.	Adhasisi		
44.	Plumbaginaceae	*Plumbago zeylanica* L.	Chitrak	01	01
45.	Sapotaceae	*Madhuca indica* J. F. GmelG.	Madhuca,Mahua	03	03
		Manilkara hexandra (Roxb.)Dub.	Khirni		
		Mimusops elengi L.	Maulakshi		
46.	Salvadoraceae	*Salvadora oleoides* Decne.	Kharo Jal	01	02
		Salvadora persica L.	Mithe Jal ,Pilu		
47.	Apocynaceae	*Carissa carandas Wight.*	Karonda	06	06
		Catharanthus roseus (L.) G. Don	Sadabahar		
		Nerium indicum Mill	Kaner		
		Plumeria rubra L.	Champa		
		Cascabela thevetia (L.) *Lippold*	Pili Kaner		
		Wrightia tinctoria (Roxb.)R. Br.	Dudhi		
48.	Asclepiadaceae	*Calotropis gigantea* (L.) R. Br.	Safed Aak	07	09
		Calotropis procera (Aiton.) W.T.Aiton	Aark,Aak		
		Ceropegia bulbosa Roxb.Var. bulbosa	Jangli Kanda		
		Leptadenia pyrotechnica (Forssk.)Decne.	Jivanti,Kheep		
		Leptadenia reticulata (Retz.)Wight.	Belwala Kheep		
		Pergularia daemia (Forssk.) Chiov.	Bhainsa singha		
		Sarcostemma acidum (Roxb.) voigt.	Somlata		
		Tylophora hirsuta (Wall.)Wight. and Arn.	Antamul		
		Dregea volubilis (L.f.) Benth.	Pilovan Bel		
49.	Periplocaceae	*Cryptostegia grandiflora* R. Br.	Chabuk chari	01	01
50.	Boraginaceae	*Heliotropium supinum* Linn.	Kulpa	01	01
51.	Ehretiaceae	*Cordia crineta* Delile.	Kwaja Gundi	01	03
		Cordia dichotoma Forster.	Lasora		
		Cordia gharaf Lam.	Gundi		
52.	Convolvulaceae	*Convolvulus microphyllus* L.	Shank Pushpi	05	07
		Cressa cretica L.	Rudenti		
		Evolvulus alsinoides (L.) L.	Sankhpushpi		
		Ipomoea aquatic Forssk.	Besharmi		
		Ipomoea nil (L.) Roth.	Krishnabeej		
		Ipomoea pes-tigridis L.	Aakra		
		Cuscuta reflexa Roxb.	Amarbel		
53.	Solanaceae	*Datura innoxia* Mill.	Datura	05	09
		Datura stramonium L.	Bada Datura		
		Datura metal Mill.	Kala Datura		
		Solanum nigrum L.	Makoy		
		Solanum melongena Prain.	Bhurigni		
		Solanum surattense Burm.f.	Bhurant		
		Withania somnifera (L.) Dunal	Ashwagandha		
		Lycopersicon lycopersicum L.	Tamatar		
		Capsicum annuam L.	Mirch		
54.	Scrophulariaceae	*Bacopa monnieri* (L.) Pennnel.	Brahmi	02	02
		Lindenbergia indica (L.) Vatke			

55.	Bignoniaceae	*Tecomella undulate* (Sm) Seem.	Rohira	01	01
56.	Pedaliaceae	*Pedalium murex* L.	Gokhru	02	02
		Sesamum indicum L.	Til		
57.	Acanthaceae	*Justicia adhatoda* L.	Vasa,Adusa	05	06
		Barleria prionitis L.	Bajardanti		
		Blepharis sindica (Vahl.) Roth.	Utangana		
		Justicia simplex D. Don	Santha		
		Justicia procumbens L.	Simari		
		Ruellia tuberosa L.	Chhota kanda		
58.	Verbenaceae	*Clerodendrum multiflorum* (Brum) Kuntze	Bhandira	04	04
		Gmelina arborea Roxb.	Gambhari		
		Lantana camara L. var. aculeate(L) Mold	Lalten		
		Vitex negundo L.	Nirgundi		
59.	Lamiaceae	*Leucas cephalotes* (Roth)Sprengo,	Dronpushpi	03	07
		Leucas urticaefolia R. Br.	Panihari		
		Leucas officinalis L.	Gotta		
		Ocimum basilicum L.	Van Tulsi		
		Ocimum canum Sims.	Kali Tulsi		
		Ocimum tenuliflorum Linn.	Jangali tulsi		
		Majorana hortensis L.	Maruaa		
60.	Plantaginaceae	*Plantago ovata* forssk.	Ishabgole	01	01
61.	Nyctageneceae	*Boerhavia diffusa* L.	Punarnava	03	03
		Bougainvillea spectabillis Willd.	Boganvillia		
		Nyctanthes arbor-tristis L.	Harsringar		
62.	Amaranthaceae	*Achyranthes aspera* L.var-*aspera*	Andhijara	04	06
		Achyranthes aspera L.var-*pubescens*	Latzeera		
		Achyranthes aspera L.var-porphyristachya	Undo kanto		
		Amaranthus viridis L.	Chouli		
		Celosia argentea L.	Pilovan		
		Digera muricata (L.) Mart.	kadapa		
63.	Chenopodiaceae	*Chenopodium album L*	Chil	01	02
		Chenopodium muracle L.	Chandloi		
64.	Basellaceae	*Basella indica* L.	Rati Bel	01	01
65.	Polygonaceae	*Polygonum barbetum* L.	Charo	02	03
		Polygonum glabrum (Willd.) M.Gomez	Rato charo		
		Rumex dentatus L.	Cukra		
66.	Proteaceae	*Grevillea robusta* Cunn.ex.R. Br.	Silk oak	01	01
67.	Aristolochiaceae	*Aristolochia bracteata* Lamark.	Kaner	01	01
68.	Loranthaceae	*Dendrophthoe falcata* L. f.	Bandak,Banda	01	01
69.	Euphorbiaceae	*Bridelia retusa* (L.)Spreng.	Khasai	08	11
		Baliospermum montanum (Willd.)Muell	Jamal gota		
		Crozaphora rottleri Geiss.	Papri		
		Euphorbia caducifolia Haines.	Danda Thor		
		Euphorbia hirta L.	Dudhi		
		Euphorbia nivulia Buch-Ham.	Pencil tree		
		Euphorbia prostrata Aiton.	Choto Kanto		
		Euphorbia pulcherrima Willd.	Lalpata		
		Emblica officinalis L,	Aanwala		
		Jatropa curcas L.	Ratan jot		
		Phyllanthus niruri L.	Bhuamlaki		
		Ricinus communis L.	Drandio		
70.	Ulmaceae	*Holoptelea integrifolia* (Roxb.) Planch.	Chirabilva	01	01
71.	Moraceae	*Ficus benghalensis* L.	Vat,Bargad	04	06
		Ficus racemosa L.	Udumber,Gular		
		Ficus religiosa L.	Peepal		
		Ficus benghalensis var krishnaii (C.Dc)Corner	Krishan Katori		
		Morus alba L.	Shahtoot		
72.	Casaurinaceae	*Casuarina equisetifolia* L.	Faras	01	01
73.	Hydrocharitaceae	*Hydrilla verticillata* (L. f.)	Hydrila	01	01
74.	Amaryllidaceae	*Crinum asiatica* L.	Bhuie	02	02
75.	Agavaceae	*Agave americana* L.	Narwas	01	01
76.	Dioscoreaceae	*Dioscorea bulbifera* L.	Yam	01	01
77.	Asphodelaceae	*Aloe vera* (L.)Burm.f.	Guwar Patta	01	02
		Aloe barbinense Mill	Ghee Gwar		

78.	Liliaceae	*Asparagus racemosus* Willd.	Shatavari	03	03
		Gloriosa superba L.	Langali, Raja raar		
		Urginea indica (Roxb.)Kunt.	Jangali pyas		
79.	Commelinaceae	*Commelina benghalensis* L.	Kosapushpi	01	02
		Commelina cristata (L.) D. Don.	Kalifuly		
80.	Arecaceae	*Phoenix dactylifera* L.	Keetamari	01	01
81.	Typhaceae	*Typha angustifolia* L.	Kanro	01	01
82.	Potomogetonacea e	*Potamogeton pectinatus* L.	Nada khat	01	01
83.	Cyperaceae	*Cyperus rotundus* L.	Motha,Mustak	03	07
		Cyperus alulatus Kern.	Alhagi		
		Cyperus compressus L.	Moth		
		Cyperus flavescens L.	Kaghi		
		Cyperus natans Vahl.	June		
		Eleocharis atropurpurea (Retz.) J.	Tara gass		
		Schoenoplectus articulatus (L.)(Rchb.) Palla	Chandani Gass		
84.	Poaceae	*Aristida adscensionis* L.	Lappa	17	21
		Bambusa arundinacea (Retz.) Roxb.	Bans		
		Cenchrus ciliaris L.	Chota Dhaman		
		Cenchrus setigerus Vahl.	Bhrunt		
		Cenchrus biflorus Roxb.	Kanta		
		Cynodon dactylon (L) Pers.	Durva		
		Dendrocalamus stricum (Roxb.)Nees	Bans		
		Dendrocalamus sindicum Boiss.	Vatavali		
		Desmostachya bipinnata (L.)Stapf.	Kush		
		Dichantium annulatum (Forsk.) Stapf.	Fingur grass		
		Digitaria ciliaris (Retz.) Koeler	Pullu		
		Digitaria abludens Veldk.	Carbgrass		
		Pennisetum orientale L.C. Rich	Bajari		
		Perotis indica (L.)Kuntze.	Comet Grass		
		Phragmites karka Retz.	Narkul		
		Setaria erticilliata L.	Bristle grass		
		Sorghum vulgare (L.) Pers.	Jwar		
		Tetrapogon tenellus Chiov.	Lampada		
		Saccharum banghalensis Retz.	Munj		
		Unochloea penicoides P.	Japhar		
		Vetiveria zizanioides (L.)Nash	Khaskhas		
	TOTAL	**Families =84**	**Genera =231**	**Species =301**	

Table-2:- Proportional relationship of Dicotyledonous and Monocotyledonous Taxa in Todgarh-Raoli Wildlife Sanctuary.

Group	Families		Genera		Species	
	No.	%	No.	%	No.	%
Dicots	73	86%	201	87%	260	86%
Monocots	11	14%	30	13%	41	14%
Total	84	100%	231	100%	301	100

CONSERVATION PRACTICES

The devastating propensities of goat and camel have been beautifully summarized in a Rajasthani Proverb:

"Oont Chhode Akaro, Bakri Chhode Kankro"

Meaning thereby that the Camel will eat everything except *Calotropis* spp. but the goat will devour even that, leaving only the pebbles. Therefore continuous grazing has almost completely prevented natural regeneration. They create major loss of natural biodiversity

of the Todgarh-Raoli Wildlife Sanctuary.

Besides these, some exotic plants such as *Lantana camara*, *Parthenium hysterophorus*, and *Prosopis juliflora* also affect the local biodiversity. Some of these have allelopathic effects while others are fast growing and compete with the native angiospermic taxa. These three plants species have changed the scenario of vegetation of Todgarh-Raoli Wildlife Sanctuary. Vast areas of the sanctuary are used for firewood.

As consequence of environmental degradation, certain plants such as *Commiphora wightii* which were once abundant in the Sanctuary is now under threat of extinction.

The erosion of plant biodiversity is a matter of global concern. One by one the building blocks of entire ecosystem are disappearing. The 2008 IUCN Red Data list shows that in India hundreds of taxa are under the list of threatened and at the risk of extinction.

The life of tribal people and rural communities are closely interwoven with their environment and local flora. It becomes the integrated parts of their culture and custom and folklore. A large number of plants are being used by tribal to cure human and veterinary ailments; Tribals co-relate it with god or spiritual power or religious ethics. The plants growing around them form an integral part of their culture and customs. They develop sacred groves around their localities and mythologically they develop faith and customs with them.

It is our duty to recognize and support the conservational strategies adopted by tribal and rural people by the term of faith, myths, taboos, tradition, religious aspect, sacred grove etc. Conservation of threatened species is the responsibility of each and everyone in the society.

DISCUSSION

After thorough investigation in different habitat and localities of Todgarh-Raoli Wildlife Sanctuary the present study reveals that the Dicotyledonous have been represented in more higher number of families, genera and species in comparison to Monocotyledonous.

The comparison of ten dominant families occurring in Todgarh-Raoli Wildlife Sanctuary with that of W. Rajasthan, Rajasthan (South and South East), and South Central Rajasthan in order of the frequency of species reveals that all these floras have genera resemblance.

After thorough investigation in different habitat and localities of Todgarh-Raoli Wildlife Sanctuary it was evident that the floristic composition of Sanctuary is quite rich as compare to flora of Indian desert by Bhandari (1978) who could record 67 families from the entire desert belt of Rajasthan. Higher number of angiospermic taxa (1378 species, 721 genera and 126 family) in South and south-east Rajasthan as reported by Tiagi and Aery (2007) is due to the humid climatic conditions of this part of the state. Yadav and Meena (2011) have reported 686 species belonging 416 genera and 117 families from South Central Rajasthan. Flora of Todgarh-Raoli Wildlife Sanctuary shares the elements of Western Rajasthan desert flora and South-Eastern humid zone due to its locations in the central region of Aravalli. This range lies between both xerophytic and mesic segments and thus it is an ecotone zone. Xerophytic and mesic vegetation occurs as mixed formation. Due to this ecotone nature great biodiversity is represented in the floral element. So far numbers of angiospermic taxa in Rajasthan are concerned, a total of 1910 species belonging to 779 genera and 153 families have been reported by Shetty and Singh (1987-93). The number of families represented by single families (31families) is quite high as compared to Indian desert (23 families) reported by Bhandari (1978) and South and South Central Rajasthan (26 Families) reported by Tiagi and Aery, 2007. It is interested that Shetty and Singh (1987-93) has enumerated 46 families represented by single species from this state.

The ratio of the total number of genera and species is 1 : 1.31 which is rather low in comparison to corresponding ratio for entire India (1 : 7) and Whole Rajasthan is 1 :2.4 Shetty and Singh (1987-93) and higher than the

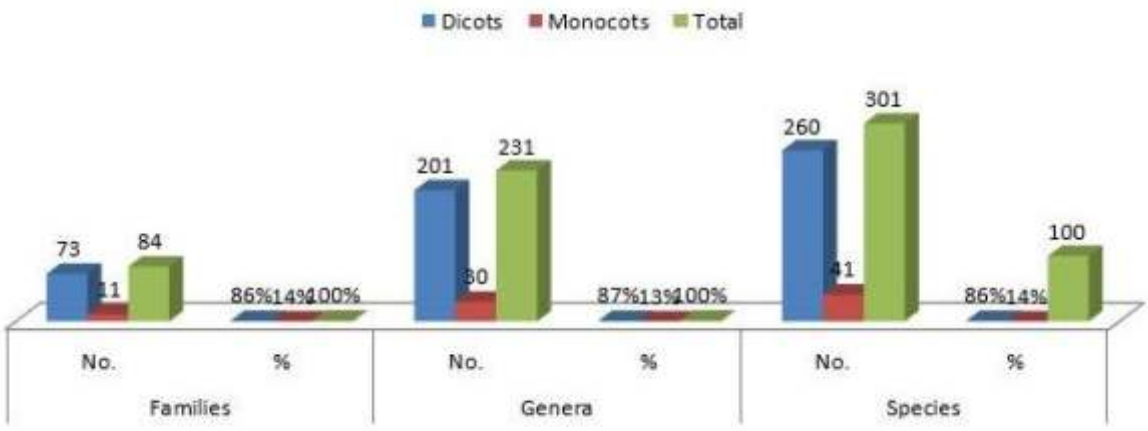

Figure 2: Proportional relationship of Dicotyledonous and Monocotyledonous Taxa in Todgarh-Raoli Wild life Sanctuary.

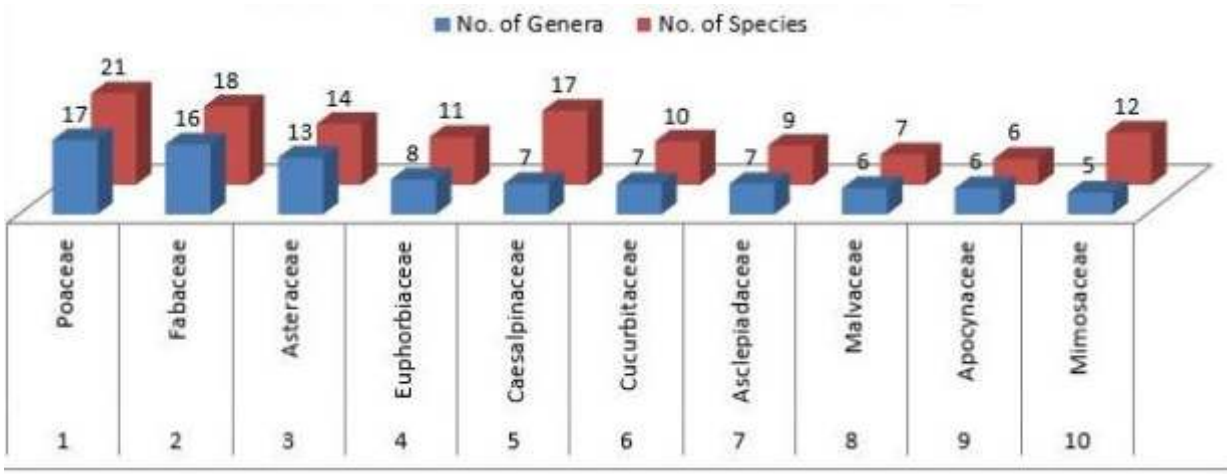

Figure 3- Ten Dominant families along with number of Genera and species in the Todgarh-Raoli Wild life Sanctuary

Table 3: Synopsis of indigenous flora-ten dominant families of Todgarh-Raoli Wildlife Sanctuary and adjoining regions (Family Poaceae, Fabaceae, Asteraceae, Euphorbiaceae, Caesalpinaceae, Cucurbitaceae, Asclepiadaceae, Malvaceae, Apocynaceae, and Mimosaceae taken together)

S. No	Flora of Todgarh-Raoli Wildlife Sanctuary (Present Work)	W. Rajasthan (M. M. Bhandari, 1978)	Rajasthan (South and South East). Tiagi and Aery 2007.	South Central Rajasthan. Yadav and Meena 2011.
1.	Poaceae	Poaceae	Leguminosae	Leguminosae
2.	Leguminosae	Leguminosae	Poaceae	Poaceae
3.	Asteraceae	Asteraceae	Asteraceae	Asteraceae
4.	Euphorbiaceae	Cyperaceae	Cyperaceae	Cyperaceae
5.	Caesalpinaceae	Convolvulaceae	Acanthaceae	Malvaceae
6.	Cucurbitaceae	Malvaceae	Euphorbiaceae	Euphorbiaceae
7.	Asclepiadaceae	Euphorbiaceae	Lamiaceae	Acanthaceae
8.	Malvaceae	Acanthaceae	Malvaceae	Convolvulaceae
9.	Apocynaceae	Cucurbitaceae	Rubiaceae	Amaranthaceae
10.	Mimosaceae	Amaranthaceae	Convolvulaceae	Lamiaceae

Rajasthan Desert 1: 1.19 Bhandari (1978) and South Central Rajasthan 1:1.62 (Yadav and Meena 2011).

Land-wise floral composition of Todgarh-Raoli Wildlife Sanctuary –This is tropical dry deciduous forest and main economically valuable species are dhokra (*Anogeissus pendula*), Salar (*Boswellia serrata*), khair (*Acacia catechu*), dhak (*Butea monosperma*), kair (*Capparis decidua*), ber (*Zizyphus mauritiana*) with having lot of ground flora comprised of shrubs, herbs, grasses etc. The forest being scattered over a large area and occurring on various geographical compositions and approximately 35% of the forest area is either occupied by bare rocks or covered specially with degrading species like dansara (*Rhus mysorensis*).

Anogeissus pendula is dominant tree species covering 80% area of the forest. *Boswellia serrata* and *Lannea coromandelica* grows on rocks and dry slopes. *Albizia lebbek,, Tamarindus indica, Ficus spp.* which are found in moist localities attain large size.

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