

A Floristic Study of the Jorbeer Conservation Reserve, Bikaner District: Rajasthan

Smita Jain¹, Priyanka Devra²

¹Professor, Department of Botany, Govt. Dungar College, Bikaner

²PhD Scholar, Department of Botany, Govt. Dungar College, Bikaner

Abstract

The Jorbeer Conservation Reserve is located in Bikaner District of Rajasthan. The aim of present study to explore, survey and to identify plant species present in Jorbeer conservation reserve. In the study area a total of 35 plant species were identified belonging to 30 genera from 18 families. Out of 35 different plant species 6 were trees, 9 species were shrubs, 12 species were herbaceous and 6 species were grasses and 2 climbers. In the study area Invasive species *Prosopis juliflora* (Vilayati babool) are also observed. The results clearly show that Poaceae and Fabaceae are the most dominant families among monocotyledons and dicotyledons respectively. This study enumerates all the plant species with their correct names, citations, vernacular names and habits. This paper provides an overview of the Jorbeer conservation reserve including its geographical location, climate, vegetation types and ecological framework.

Keywords: Flora, Jorbeer Conservation Reserve, Rajasthan.

Introduction

A conservation reserve is a protected area designated for the purpose of preserving wildlife and their habitats. These reserves are established to conserve biodiversity, protect endangered species and maintain ecological balance. Activities such as hunting, poaching and deforestation are typically prohibited within these areas to ensure the protection of the Flora and Fauna. These categories of protected areas were first introduced in the Wildlife (Protection) Amendment Act of 2002, which amendment of the Wildlife Protection Act 1972.

Jorbeer Conservation Reserve is located near Bikaner District of Rajasthan. It is situated 10 km southeast of Bikaner, which serve as both the district and sub-district headquarters. The geographical coordinates of Jorbeer are 28.4° N latitude and 73.31° E longitude. Jorbeer experiences an arid climate with intense heat and minimal precipitation. The flora in Jorbeer conservation reserve is well adapted to desert conditions, withstanding water scarcity and extreme temperatures. Jorbeer is known for being an animal carcass dumping area on the outskirts of Bikaner, where thousands of vultures and eagles can be observed feeding on dead cattle or resting. The best time to visit Jorbeer is from November to February, when the climate is mild and provide optimal conditions for wild life sighting and exploration.

Bikaner district is situated in the north-western part of Rajasthan, between latitudes 27°11' to 29°03' N and longitudes 71°54' to 74°12' E. it covers a total geographical area of 30, 247 square kilometers, accounting for approximately 8.8% of the states total area making it the second largest district in the Rajasthan by area. Bikaner is bordered by Churu district to the east, Jodhpur district to the south, Ganganagar district to the north and an international boundary with Pakistan to the west. The district has a hot desert climate,

characterized by extreme temperature and low rainfall. The soil in Bikaner is predominantly light textured, weak structured ranging from sand to sandy loam with clay content. The vegetation of district falls under the broad category of tropical forest.

Plant diversity in Rajasthan has three primary characteristics: one being regional imbalance, ranging from extremely xerophytic, sparse vegetation in the desert region (6B/C1, 6B/1S1) to lush green subtropical evergreen forest in the Abu hills (8A/C3) (Champion & Seth, 1968). The vegetation of Rajasthan classified based on habitat such as: (1) vegetation of sandy habitats, (2) vegetation of saline habitats, (3) vegetation of gravel habitats, (4) vegetation of rocky habitats, (5) vegetation of aquatic habitats (Gena and Sharma, 1988). Many researchers have been done a remarkable work on the floral diversity of Rajasthan such as Flora of Bhilwara (Parmar and Singh 1982), Flora of Banswara (Singh 1983), Flora of Tonk district (Shetty and Pandey 1983), Flora of Pali district (Pandey and Shetty 1984), Flora of Ganganagar (Singh and Dhillon 1989), Phytodiversity of Nagaur (Sharma and Aggarwal 2008). Pandey and Padhye (2007) investigated the phytodiversity of Arid Machia safari park- Kailana in Jodhpur. B Sultana *et al.* (2014) explored the diversity of tree vegetation of Rajasthan. Charan and Sharma (2016) explore the floral diversity of Thar Desert of western Rajasthan. Floristic study of Tal Chhapar Wildlife Sanctuary of Rajasthan enumerated by Bagoria *et al.* (2020).

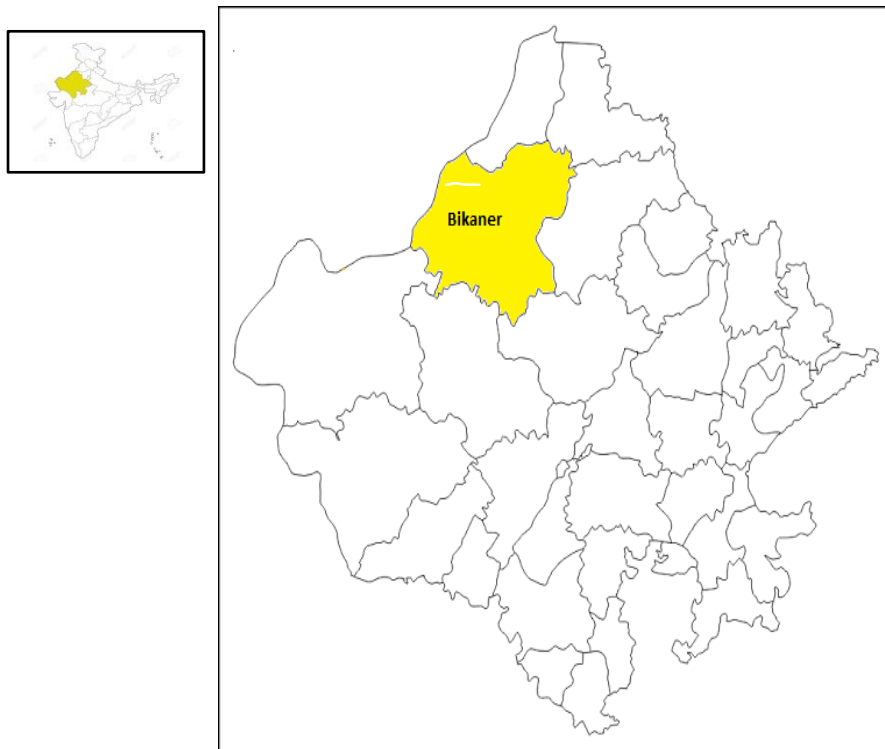


Figure 1: Location of Bikaner District in Rajasthan



Figure 2: Location of Jorbeer Conservation Reserve
(Photo Source Google)

Materials and Methods:

Extensive field survey was conducted from October 2021 to October 2023 across different seasons (winter, summer and rainy) to assess the plant diversity of study area. The majority of field observation was carried out from July- November, during two visits in every month to collect a higher number of plant species in their flowering stage to enhance the understanding of floral composition. However, it was at its lowest in May-June and peaked in September-October when angiosperm plants were in full bloom. The identification of plant specimens was carried out by consulting from the relevant literature Flora of India by Botanical Survey of India; Flora of Rajasthan (Singh & Shetty, 1987; 1991 & 1993); Flora of Indian desert (Bhandari, 1978) and many regional floras. After identification the plants were arranged according to Bentham and Hooker system of classification. Taxonomic categories such as genera and species were arranged alphabetically in families. The description of species given with usual citation. The information for each species such as vernacular name, habitat, occurrence and life form collected.

Result and Discussion:

In the study area a total of 35 species belonging to 30 genera and 18 families were recorded (Table 1). Out of these, dicotyledons were represented by 29 species belonging to 25 genera and 16 families and monocotyledons by 6 species, 5 genera, 2 family. The present study shows that dicotyledons are represented by a greater number of families, genera and species compared to monocotyledons. In dicotyledons, Fabaceae was the dominant family while monocotyledons represented by family Poaceae. Dominant family of study area represented by Fabaceae with 6 species from 3 genera followed by Poaceae with 5 species and 4 genera, Asteraceae with 3 species and 3 genera. There are 5 families having two species which are Zygophyllaceae, Cucurbitaceae, Asclepiadaceae, Solanaceae and Nyctaginaceae.

Eleven families having single genus which are Capparaceae, Cleomaceae Malvaceae, Rhamnaceae, Molluginaceae, Salvadoraceae, Boraginaceae, Amaranthaceae, Chenopodiaceae, Euphorbiaceae and Cyperaceae. There are five genera such as *Acasia*, *Boerhavia*, *Cassia*, *Cenchrus* and *Prosopis* having 2 species while remaining all genera were belonging to solitary species. Invasive species *Prosopis cineraria* distributed all over the area. In study area, out of 35 plants 6 were trees, 9 were Shrubs, 12 were herbs, 6 were grasses and 2 were climbers. The habit analysis of study area shows comparatively higher percentage of herbs (34.38%) and shrubs (25.71%) as compared to trees (17.14%), grasses (17.14%) and climbers (5.72%).

Conclusion:

The present study provides a comprehensive overview of the flora in Jorbeer Conservation Reserve. It highlights a significant phytodiversity in the region, encompassing plant essential for food, fodder and medicinal uses. The area experiences a dry climate with extreme temperature variations and an average annual precipitation. The floristic diversity of this conservation reserve is essential to the local ecosystem. Preserving this diversity will ensure the survival of unique plant species and maintain overall biodiversity for future generations. However, human activities pose a significant threat to this diversity. Deforestation, mining, agriculture, overgrazing and urbanization have been detrimental to biodiversity. This research provides valuable insights into the existing plant communities in the Conservation Reserve and their taxonomic classification, which will support future efforts in conservation and maintaining ecological balance within the Conservation Reserve. The valuable information on current status of different species and their distribution may be helpful for the conservation of natural resources including flora and fauna of the region.

Table 1: Plant species recorded in Jorbeer Conservation Reserve of Bikaner District.

S. No.	Botanical Name	Family	Local Name	Habit
1.	<i>Capparis decidua</i> (Forssk.) Edgew.	Capparaceae	Ker	Tree
2.	<i>Cleome viscosa</i> L.	Cleomaceae	Bagro	Shrub
3.	<i>Abutilon indicum</i> L.	Malvaceae	Kanghi	Shrub
4.	<i>Fagonia indica</i> Burm. f.	Zygophyllaceae	Dhamaso	Shrub
5.	<i>Tribulus terrestris</i> L.	Zygophyllaceae	Kanti	Herb
6.	<i>Ziziphus nummularia</i> (Burm. f.) Wt. & Arn.	Rhamnaceae	Borti	Shrub
7.	<i>Cassia italica</i> (Mill.) Spreng.	Fabaceae	Sonamukhi	Herb
8.	<i>Cassia angustifolia</i> M. Vahl.	Fabaceae	Swarnpatri	Shrub
9.	<i>Acacia Senegal</i> (Linn.) Willd.	Fabaceae	Kumbat	Tree
10.	<i>Acacia tortilis</i> (Forssk.) Hayne.	Fabaceae	Israeli babool	Tree
11.	<i>Prosopis cineraria</i> (L.) Druce.	Fabaceae	Khejari	Tree
12.	<i>Prosopis juliflora</i> (Swartz.) DC. Prod.	Fabaceae	Angreji bavanilo	Tree
13.	<i>Citrullus colocynthis</i> (Linn.) Schard.	Cucurbitaceae	Tumba	Climber

14.	<i>Cucumis callosus</i> (Rottl.) Cong.	Cucurbitaceae	Kachri	Climber
15.	<i>Mollugo cerviana</i> (Linn.) Ser.	Molluginaceae	Chiriya-ro-khet	Herb
16.	<i>Echinops echinatus</i> Roxb.	Asteraceae	Unt-kantalo	Herb
17.	<i>Pulicaria crispa</i> (Cass.) Benth. & Hook. F.	Asteraceae	Dhola-lizru	Herb
18.	<i>Verbesina encelioides</i> (Cav.) Benth. & Hook. f. A. Gray.	Asteraceae	Jungle surajmukhi	Herb
19.	<i>Salvadora oleoides</i> Decne.	Salvadoraceae	Kharo jhal	Tree
20.	<i>Calotropis procera</i> (Ait.) R. Br.	Asclepiadaceae	Akaro	Shrub
21.	<i>Leptadenia pyrotechnica</i> (Forssk.) Decne.	Asclepiadaceae	Khimp	Shrub
22.	<i>Heliotropium sp.</i>	Boraginaceae	-	Herb
23.	<i>Lycium barbarum</i> Linn.	Solanaceae	Morali	Shrub
24.	<i>Solanum surattense</i> Burm. f.	Solanaceae	Ringani	Herb
25.	<i>Boerhavia diffusa</i> Linn.	Nyctaginaceae	chinawari	Herb
26.	<i>Boerhavia erecta</i> L.	Nyctaginaceae	Shweta	Herb
27.	<i>Aerva persica</i> (Burm. f.) Merrill.	Amaranthaceae	Bui	Shrub
28.	<i>Chenopodium album</i> Linn.	Chenopodiaceae	Chilaro	Herb
29.	<i>Euphorbia sp.</i>	Euphorbiaceae	-	Herb
30.	<i>Cyperus rotundus</i> Linn.	Cyperaceae	Motha	Grass
31.	<i>Brachiaria ramose</i> (Linn.) Stapf.	Poaceae	Murat	Grass
32.	<i>Cenchrus biflorus</i> Roxb.	Poaceae	Bhurat	Grass
33.	<i>Cenchrus ciliaris</i> Linn.	Poaceae	Dhaman	Grass
34.	<i>Dactyloctenium aegyptium</i>	Poaceae	Makaro	Grass
35.	<i>Eragrostis ciliaris</i> (Linn.) R. Br.	Poaceae	Lutia lamp	Grass

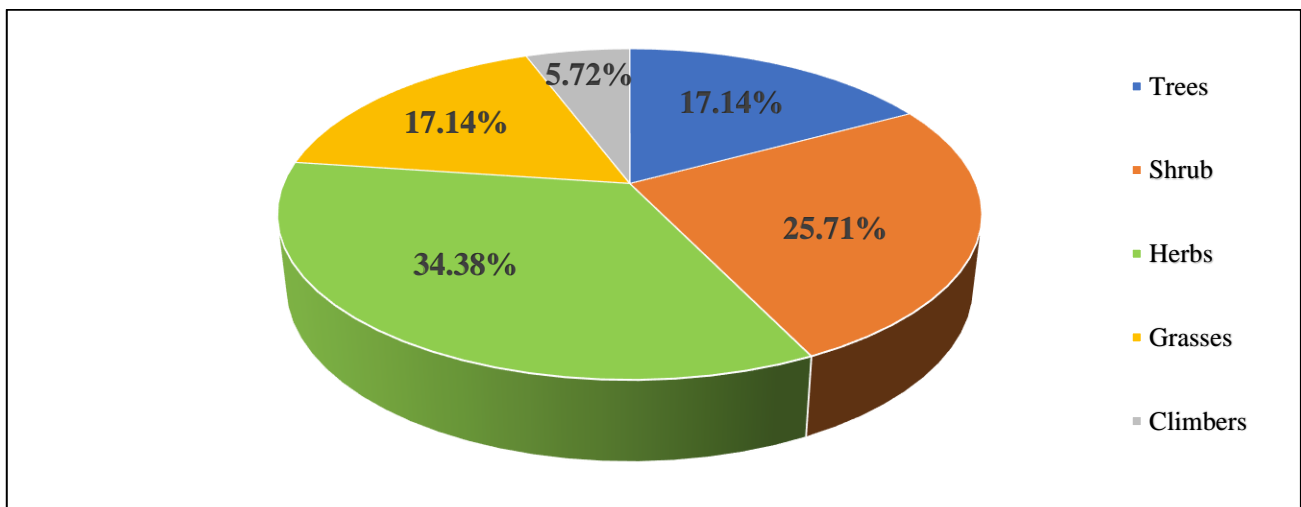


Figure 3: Proportional relationship of Different Life forms

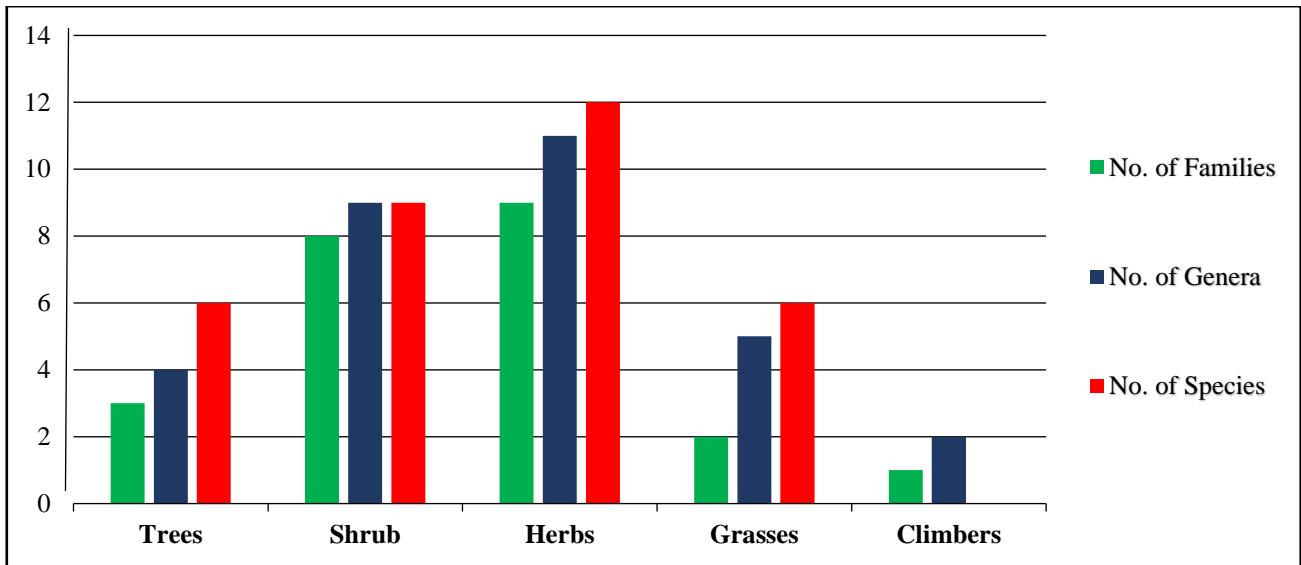


Figure 4: Different Life Forms with their Family, Genera and Species in Jorbeer Conservation Reserve



Figure 5: Floristic analysis of plants of Jorbeer Conservation Reserve

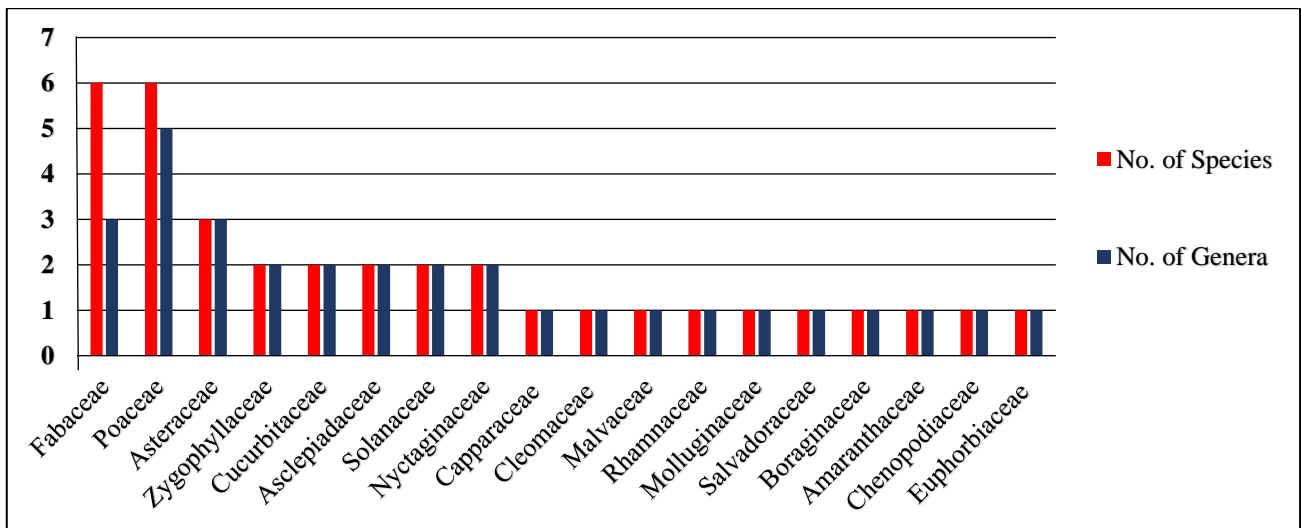


Figure 6: Largest families with their Genera and Species.

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