



**Sacred Grove as a Community-Oriented Biodiversity Preservation: A
Research in the Shekhawati Terrain of Thar Desert**

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Abstract

Sacred Groves, commonly known as Orans or Devbanis in local vernacular, exemplify community-driven biodiversity preservation within the Shekhawati region of the Thar Desert. The community firmly prohibits hunting, logging, and farming in these village commons, which are governed by the residents and dedicated to local deities. Environmental and Biological Importance Sacred forests act as "mini biosphere reserves" and provide refuge for fauna in this arid region. In Shekhawati, the preservation of heritage is more deeply embedded in socioreligious traditions than in formal legislation. Community-Centric Conservation Strategies Conservation in Shekhawati should be fundamentally anchored in socio-religious principles rather than in formal legislation. It is highlighted that, alongside protection, the suitable utilization and administration of this biodiversity is essential to meet agricultural and human requirements. The strategy must be designed to garner public endorsement.

Keywords: Sacred Grove, Shekhawati region, Desert Biodiversity, Biological Importance.

1. INTRODUCTION

Rajasthan is a distinctive state that demonstrates considerable geographical variation in vegetation, climate, and elevation. Rajasthan is divided into four major regions, namely, the Western Thar Desert, the Aravalli Range with Vindhyan Mountains, the Eastern Plains and the south-eastern Hadoti Plateau [1].

The western Thar desert, the Aravali mountain range, and the southeastern plateau constitute the three primary physiographic regions of Rajasthan. The Thar Desert, sometimes referred to as the Great Indian Desert, encompasses an extensive region exceeding 2,78,330 square kilometres, with around 1,96,150 square kilometres, or over 70%, situated in Rajasthan, constituting a significant portion of western India. In the Thar Desert, the connections between humans and animals, as well as their role in desertification, are significant [2]. The regions of Sikar, Jhunjhunu, and Churu constitute the Shekhawati landscape inside the Thar desert. The Thar Desert in Punjab, Pakistan, sustains a unique collection of indigenous plant species that bolsters ecological equilibrium and traditional medicinal practices of the surrounding populations [3].

Singh et al. (2019) documented Sacred Groves in the Western Himalaya, India, highlighting their role as community-managed nature reserves for the preservation of biodiversity and cultural



heritage, noting that Sacred Groves (SGs) serve as vital reservoirs of ethno-medicinal plant species and facilitate animal migration in human-altered environments [4]. The Aravali hills delineate the eastern portion of the Shekhawati region, whilst the western section is characterized by barren plains and sand dunes. The hills prevent sand from the western region from accessing this area. Community woods and rangelands, referred to as Orans and Gauchars in the western arid regions of India, represent a substantial chunk of the area's entire geographical expanse [5]. The introduction of irrigation to the Thar Desert via the construction of the Indira Gandhi Canal has resulted in substantial man-induced changes in the microclimate, flora and fauna of the area, due to the conversion of grasslands into irrigated cultivated lands [6].

Fauna and flora are esteemed and regarded as the abode of the Divine. The hallowed grove houses precious medicinal flora essential for modern medicine and the fundamental healthcare of rural communities. Oran is a conventional biodiversity conservation system endemic to Rajasthan, referred to locally as Devbani, comprising areas of forest safeguarded by villages in honour of deities [7].

The Bishnoi community is a classic example of holy-grove conservation that conserves blackbuck and Khejari (*Prosopis cineraria*), two multipurpose "keystone species" that are vital for the life of the region and have been interwoven into the social and cultural life. The Thar Desert of western India is well recognized for its extensive and old culture system and heritage [8]. Researchers hypothesized physiological and ecological aspects of the location. As stakeholders they tell us how the qualities of plants and animals affect the lives of people. Global reviews of the material available suggest that the intrinsic poor productivity of drylands, when combined with other negative variables, might create poverty [9].

Deserts are biologically diverse environments with a great variety of animals and plants that have adapted to the harsh conditions. A large part of Rajasthan is dry and contains the largest Indian desert, the Thar Desert [10]. Some of the best remaining grasslands in India are located in the Jaisalmer, Jodhpur and Bikaner districts of the Thar Desert in Rajasthan [11]. The reported study has been used as a weather indicator and coincindicator by people through perception and lengthy experience in Thar desert. We observed overlaps in symbionts recovered from native and alien species, demonstrating that these hosts are open and inclusive to a wide range of symbionts, regardless of their origin [12]. Sacred groves are patches of jungle maintained by the local people in honour of saints, religion, culture, and also local deities like Bharuji, Mataji and Mahadevji. The sacred groves in the forest belts of south India which have been traditionally maintained by the village people are slowly disappearing [13].

The greatest threat facing humanity worldwide is climate change, which is gravely affecting glaciers and deserts, two of the most fragile ecosystems [14]. The Thar Desert or Great Indian Desert lies between 20°25' and 30°30'N and 67° and 75°25'E in four states of India viz., Rajasthan, Haryana, Punjab and Gujarat [15]. Parihar & Kumar (2016) reported on significant role of common property resources utilization of Biodiversity conservation in the Thar Desert Rajasthan



and bio-resources are used as food, fodder, firewood, fibre, herbal remedies, and industrial raw materials in daily life as well as during droughts and famines [16].

Parihar (2015) published on Faunal diversity richness of ecological institute in the village landscape of the thar eco-region Rajasthan, India and studied that survival of different animals 'species in the Thar Desert depends on distinct specific plant species [17]. Any change in the flora will lead to survival concerns for all those creatures which are closely related and rely on particular plant species Parihar G.R. (2015) reported on Biodiversity. All living beings which were worshipped in ancient Indian tradition of nature worship as indicated by Parihar (1997) [18]. Studies on biodiversity of chosen places in Thar Desert Rajasthan. Native Americans who utilise plants and animals to their fullest potential for survival are well aware of this.

Kumaret et al. (2016) reported on Occurrence of Albino Gazella bennetti in Viratra mata Oran (Sacred land) in Chohtan, Barmer (Thar Desert of Rajasthan) and suggested a variety of common property resources which are important sources of biodiversity in the Thar desert and as They reported that the indigenous inhabitants of Thar Desert had a unique approach of conservation through their traditional resource management [19]. It could be in the form of ponds, Aagore, Pachhore, Gaucharland and waste land. Conservation of biodiversity is a key to sustainable use of these common property resources.

2 Materials and Methods

A questionnaire was used to collect data from a variety of sources from the local population in various communities nearby to the study site. which are simple, random questions regarding how they used and preserved the resources. Direct wildlife sampling techniques such as visual and auditory methods were used to observe the presence of foot prints, dropping faeces, burrows, impressions of finger claws, feet and tails to determine the existence range of species in specific study regions of sacred groove. The data sheet logged date, time, location and habitat type. The transect approach and incidental sightings were helpful in identifying species presence and population status.

Table 1: Showing the number of grass species in winter season in different landscape

S.No.	Season	Type of landscape	Number of grass species
1.	Winter	Oran	5
2.		Gaucher	4
3.		Fallow/ Agricultural	3
4.		Magra	2
5.		Sand dune	2

The study of habitat seeking was done within a radius of 250 meters from the sampling place which is perfect for counting the variety of reptiles. To survey the diversity of flora and their therapeutic advantages through literature and local names used by the local community or indigenous people living in the study region. The Biodiversity Conservation Network convened conservation and



development organisation and local communities to rigorously explore this concept across 39 conservation project locations in Asia and the Pacific [20].

3 Result and discussion

3.1 Geographical status of Thar Desert: Thar Desert also called as Great Indian Desert. About 85% of the 200,000 square kilometers. Thar Desert is in India (mainly Rajasthan) and the remaining 15% is in Pakistan. It is the seventh to seventeenth largest desert in the planet and is characterized by shifting sand dunes, high summer and winter temperatures and irregular, low rainfall (between 100 and 500 mm).

3.2 Key Geographic Features of the Thar Desert: Location: Bounded by the Rann of Kutch (south), the Punjab Plains (north), the Aravalli Range (southeast), and the Indus River plain (west). The geography is largely sand dunes (Marus thali in the west), stony plains, salt lakes (e.g., Sambhar). Climate: Desert subtropical, loam/sandy soil with significant wind erosion. Water Sources: The Luni River is the only main source of water apart from the man-made Indira Gandhi Canal. Although it is an arid desert, recent “greening” from irrigation, groundwater pumping and climate change has made it one of the world’s most densely populated deserts. The concept of community-based conservation (CBC) was that conservation and development could be achieved simultaneously if it was possible to fulfil the interests of both [21].

3.3 Geographical Status of Shekhawati Landscape: The Shekhawati region, located in northeastern Rajasthan, comprises the districts of Churu, Sikar, and Jhunjhunu and is part of the semi-arid, sandy, and dune-dominated Thar Desert. It lies at an altitude of 26°26' to 29°20' N and 74°44' to 76°34' E, with low, irregular rainfall, high temperatures and little vegetation. The efficiency of community-based mangrove management for biodiversity conservation was reported by Damastuti, et al (2022) [22].

Scientifically, the community-based biodiversity conservation in shekhawati region is not good as reported in our study area (Geographical status of the Shekhawati Landscape, where research worked was carried out (Table 1,2 and Fig 1,2, 3).



Fig 1 Observed biodiversity status of the Shekhawati Landscape

Table 2: Showing number of observed faunal diversity in different landscape

Season	Landscape	Arthropods	Amphibians	Reptiles	Aves	Mammals
Rainy Season	Oran	245	14	12	130	15
	Gaucher	211	10	10	110	12
	Fallow/Agricultural Land	208	10	09	100	11
	Magra	125	04	16	60	06
	Sand dunes	70	02	10	40	06



3.3.1 Important Geographical Features of the Shekhawati Landscape: This area is spread over Churu, Sikar and Jhunjhunu. It often spans the Bagaar tract along the boundary with Haryana. Major Towns Sikar, Jhunjhunu, Churu, Mandawa and Nawalgarh are important towns in this region. The region is often known as “Open Air Art Gallery” because of the great density of painted havelis of yesteryears. Physiography: Sand dunes occupy around 71.7% of the region, mainly in the west, and sandy alluvial plains cover about 19.3% in the east. Soil and Climate: Soil types such as red loamy in the east (Sikar/Jhunjhunu) and sandy in the west (Churu). The environment is harsh and dry to semi-dry with extreme temperatures and frequent droughts. Hydrology: The area is predominantly arid, with water sources being the Local waterbodies, small salt-affected lakes (ranns) in the Churu region and the seasonal/ephemeral river Kantli. Vegetation: The area is covered with xerophytic (drought tolerant) flora such as shrubs and trees like *Acacia nilotica*. Ecology and Land Use: The region is undergoing rapid change due to increased irrigation, which is affecting local biodiversity (especially in the arid northwestern parts). The key landforms, soil types and land usage of the Shekhawati region are researched and analysed in this paper. In this paper, the distribution of CBC in the area is described. CBC as a Sacred Grove in Shekhawati Region: this article is about. Now there is a great promotion of the participation of local populations in the management of protected areas [23].

3.4 Present / Current Situation:

3.4.1 Environmental problems: These include high temperatures, frequent droughts and extensive grazing which leads to soil erosion.

3.4.2 Development Groundwater withdrawal is supporting the rapid urbanization and increasing agricultural intensification of the region.

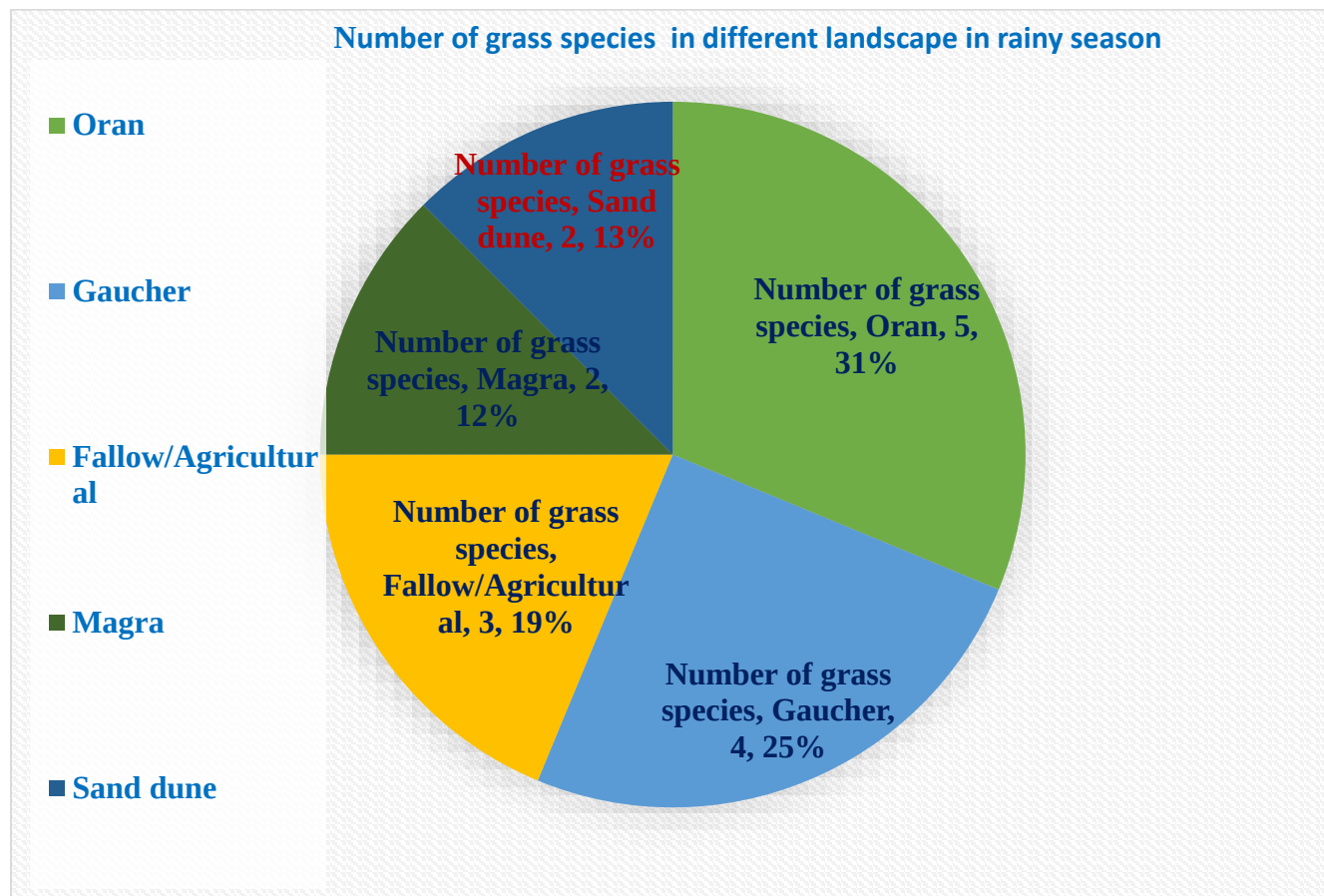


Fig 2: Showing number of grass species in different landscape in rainy season

3.5 Recommended research objectives:

In the light of the above information, the present study is proposed to evaluate the: - Biodiversity conservation \$ Agricultural improvement of the wild gene pool and faunal richness of the sacred grove. Contribution of Common Property Resources to Economy and Wealth. Impact of environmental conditions and anthropogenic activities on the sacred grove in the studied region. The natural water bodies and water catchment sources like ponds and Bawadi in the research region are significant for the improvement of biodiversity conservation. Mathur, and Sundaramoorthy reported on woody perennial diversity at various land forms of the five agro-climatic zones of Rajasthan [24]. The findings could enrich our understandings of why many participatory approaches to conservation fail to attain meaningful engagement in practice [25].

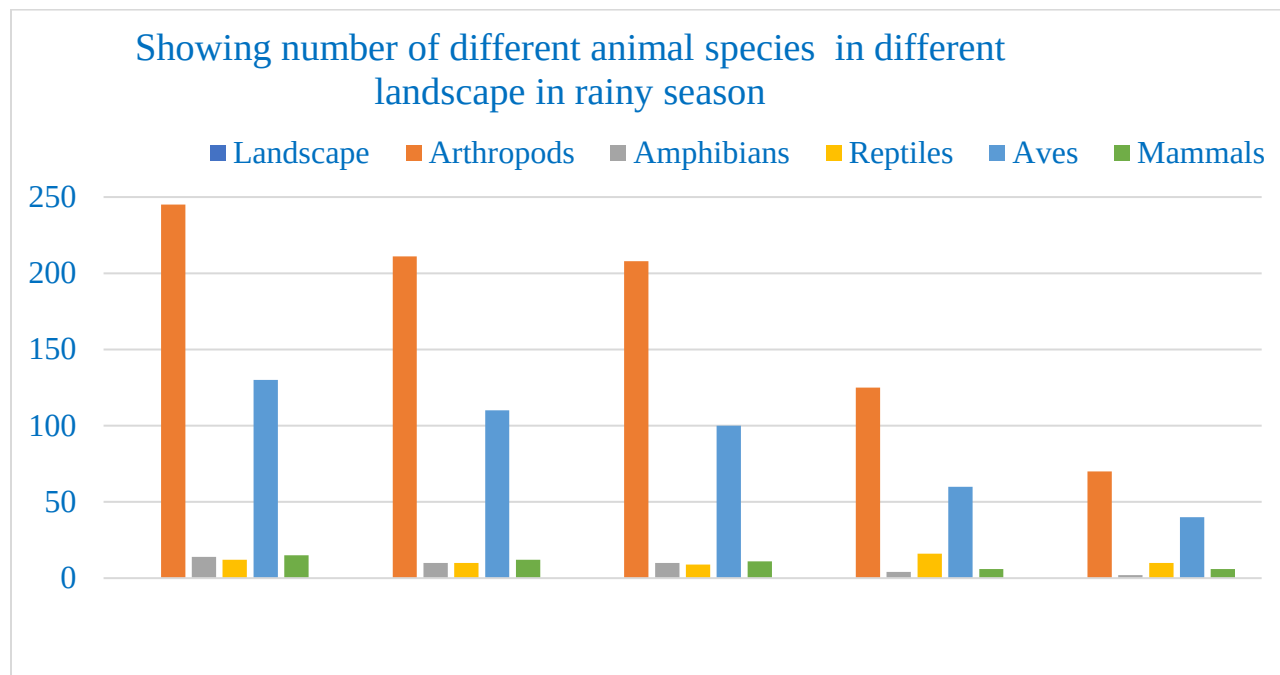


Fig 3: Number of different animal species in different landscape in rainy season

3.6 Significance and Scope of Proposed Research

The people of Thar Desert have a historic practice of managing natural resources in the form of sacred groves called Oran land or orans. These resources preserve commercially important, endemic and endangered animal and plant species which are crucial to the conservation of biodiversity. The inventory of Orans is an important initial step in the development of rules and regulations and should include the systematic collection of disaggregated land and economic data to include the benefits and engagement of specific groups through participatory assessment and evaluation. Use of indigenous gods, saints, heroes and high lights for conservation of biodiversity. Its tenets stress the preservation of nature in a clear and simple way.

It is now quite clear that the village institutions particularly the Oran and Gaucher lands are important reservoirs of biodiversity and primary land masses of common property resources (CPR). The Orans conserve the valuable water in the ponds, reservoirs, step wells (bawdi), streams and springs which are an intrinsic element of the Oran. Most oases have a protected supply of water. This replenishes the groundwater and keeps water levels at an appropriate level. The exclusionary area-based strategy to biodiversity conservation has been successful in a number of areas, but at a high social cost and conflict, notably in the developing country tropics [26] and its environmental significance [27].



3.7 Biological and Ecological Significance:

The sacred groves in this dry area are “mini biosphere reserves” and sanctuaries of wildlife. The major conservation strategy in the twentieth century was the development of protected areas that excluded people [28].

Flora: The vegetation here is xerophytic with the state trees Peelu/Jaal (*Salvadora oleoides*), Rohida (*Tecomella undulata*), Kair (*Capparis decidua*) and Khejri (*Prosopis cineraria*). Moreover, these places are important repositories of medicinal plants like Pimpa (*Caralluma edulis*) and Gugul (*Commiphora wightii*).

Fauna: Antelope cervicapra, Chinkara (Indian Gazelle) and many migratory birds are some of the desert-adapted animals that depend on these groves for their vital habitat.

Environmental Services: They are important in combating desertification by stabilizing sand dunes, desilting ponds, and conserving soil and water.

3.8 Community Based Conservation Mechanisms:

In Shekhawati conservation is more rooted in socio-religious norms than in official regulations. Community-based conservation is in an identity and purpose crisis, with a dismal record and unresolved shortcomings [29].

Traditional Taboos: Local belief holds that disturbing the grove or cutting green wood will provoke the fury of the presiding deity and bring catastrophe upon the individual or the community. **Local Custodianship:** Management is generally by committees at the village level or priests (Bhopas) who practise societal norms.

Sustainable Use: Though falling is allowed, communities are often permitted to collect dry wood, wild fruits and medicinal herbs without hurting the living ecology.

3.9 Policy changes and barriers:

Dangers: These places have suffered from modernization, changes in land use and “mismanagement” (e.g. Orans have been classified as “Culturable Waste Land” in tax records).

Legal Recognition: In a historic judgement, the Supreme Court of India directed the Rajasthan government in December 2024 to identify and declare all sacred groves as “Deemed Forest” to ensure their legal protection. In the past 50 years, the biodiversity is disappearing quickly in emerging countries [30] and wild plants are considered promising natural eco-friendly resources for fibers in a sandy desert habitat [31]. The restoration working with local volunteers, groups (such as the local organization) desilt ponds and plant native species, to revitalize these historic systems.

4 Conclusion:

Orans are renewable and biogenetically rich resource for animals. It is therefore urgent to revitalize Oran land to protect the desert germplasm and improve biomass for sustainability through native multispecies plantings. But, the most of them are destroyed due to modernization and mismanagement therefore, the upper-level authorities should help the poor people and the local community, which is directly related to the conservation of land. It will be a great study how local



communities protected their common resource base and provided food and water for animals and shade, firewood, fodder and food for people in arid and difficult situations. Studies have shown that some of the sacred grove's conserve well a number of the threatened species of plants and animals in the forest. It has been noticed that several therapeutic plants which are not present in the forest are numerous in the sacred grove. From the above evidence, we may conclude that holy grove tradition is an effective instrument for ensuring biodiversity conservation through community participation.

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