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No. F ()Dev./CCFJ/2025/

Dated: As Per E-Sign

Office Order

In pursuance of the powers conferred under section 36A of Wildlife (Protection) Act, 1972, and in accordance with the Management Plan Guidelines issued by Government Of India and letter no. F3(17)Van/2023 dated 14.07.2023, the Government Of Rajasthan, Forest Department, undersigned hereby approves the Management Plan of Buchara-Main Conservation Reserve for the period year 2025-26 to year 2034-35.

The approved Management plan shall be subject to midterm review in the year 2030, in order to incorporate necessary modifications based on prevailing conditions, emerging needs, and expert recommendations.

An e-signed copy of the approved Management Plan is available on the official website of Rajasthan Forest Department.

(Rajiv Chaturvedi)

Chief Conservator of Forests

Jaipur

No. F ()Dev./CCFJ/2025/

Dated: As Per E-Sign

Copy Forwarded to:

1. Additional Director General (Wildlife), Ministry of Environment, Forests & Climate Change, Government of India, Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi- 11003.
2. Director, Wildlife Institute of India, Post Box No. 18, Chandrabhahi, Dehradun-248001.
3. PS to Add. Chief Secretary, Forest Department, Govt. of Rajasthan, Secretariat, Jaipur.
4. PS to Principal Chief Conservator of Forest (HoFF) Rajasthan, Aranya Bhawan, Jaipur.
5. PS to Principal Chief Conservator of Forest & CWLW Rajasthan, Aranya Bhawan, Jaipur.
6. Dy. Conservator of Forests, Jaipur (North)

Chief Conservator of Forests

Jaipur

Signature valid

Digitally signed by Rajiv Chaturvedi
Designation: Chief Conservator Of
Forest
Date: 2025.11.08 11:02:05 IST
Reason: Approved

RajKaj Ref No.:
18722659
eSign 1.0



Management Plan
of
Buchara Main Conservation Reserve (BMCR)



Deputy Conservator of Forests, Jaipur (North Division)

MANAGEMENT PLAN

For

Buchara Main Conservation Reserve

PLAN PERIOD - 2025-26 to 2034-35



Prepared by

Devendra Pratap Jagawat I.F.S., DCF, Jaipur (North)

Under the guidance of

Rajeev Chaturvedi, I.F.S., Chief Conservator of Forests, Jaipur,

Ms. Shikha Mehra, I.F.S., CWLW, Rajasthan

EXECUTIVE SUMMARY

The Forest Department, Government of Rajasthan, vide Notification No. P.A3 (9) Van/2025 dated 04.08.2025, has declared the Buchara Main Conservation Reserve, located in Kotputli–Behror District and Sikar District, under the provisions of Section 36A of the Wildlife (Protection) Act, 1972. The reserve encompasses the Buchara Main Protected Forest, covering a total area of 4,437.921 hectares, comprising 4,374.10 hectares in Kotputli–Behror District and 63.82 hectares in Sikar District. Seven villages—Tuscola, Bhonawas, Fatepura, Rooppura, Jugalpura, Torda, and Buchara—are situated adjacent to the forest boundary, forming an important buffer and interface between human settlements and the forest ecosystem.

The Buchara Main Conservation Reserve is located approximately 7.5 km west of Kotputli town and about 117 km north of Jaipur District Headquarters. The area lies within the northern Aravalli hill ranges and exhibits undulating topography, with altitudinal variation between 415 m and 720 m above mean sea level. The terrain consists of rocky outcrops, shallow valleys, and dry seasonal streams that support diverse vegetation. The legal status of the area remains as Protected Forest, now managed under the Conservation Reserve framework to ensure scientific protection, ecological stability, and long-term sustainability.

Due to sustained plantation and protection measures, the Buchara Main Forest now supports dense and well-developed vegetation, representing the typical dry deciduous and thorn-scrub forest ecosystem of the Aravalli region. The dominant floral species include *Anogeissus pendula* (Dhonk), *Acacia catechu* (Khair), *Balanites aegyptiaca* (Hingot), *Boswellia serrata* (Salar), *Capparis decidua* (Ker), and *Maytenus emarginata* (Kankera). The area harbors a rich faunal diversity, including about 200–230 species of birds, and several mammals such as Leopard (*Panthera pardus fusca*), Sambar (*Rusa unicolor*), Indian Fox (*Vulpes bengalensis*), Porcupine (*Hystrix indica*), Jungle Cat (*Felis chaus*), and Striped Hyena (*Hyaena hyaena*). Reptiles, amphibians, and invertebrates are also found in abundance, reflecting a balanced and healthy ecological condition. The reserve serves as an important wildlife refuge and ecological corridor within the fragmented Aravalli landscape, facilitating animal movement, dispersal, and genetic exchange among populations.

The declaration of the Buchara Main Conservation Reserve aims to conserve and manage a representative Aravalli hill ecosystem with its characteristic flora and fauna, to provide secure and undisturbed habitats for Leopard and other associated wildlife, and to promote sustainable management practices through community participation. The objectives also include maintaining the ecological integrity of the area through soil and moisture conservation, habitat restoration, and implementation of eco-development activities to improve the livelihoods of nearby villages while minimizing their dependence on forest resources.

The Management Plan for the Buchara Main Conservation Reserve has been formulated following the standard framework of forest and wildlife management plans while integrating site-specific strategies suitable to this area. The plan emphasizes habitat protection and improvement through soil and moisture conservation measures, creation of enclosures, and control of invasive species. Nine high-protection closures have been established to safeguard the breeding and movement habitats of Leopard and other key fauna. Modern tools such as GIS and remote sensing are being used for habitat mapping, monitoring, and evaluating ecological changes, details of which are documented in the Closure History chapter. Standard Operating Procedures (SOPs) have been prepared to ensure uniformity and scientific precision in carrying out annual operations, including fire protection, wildlife monitoring, and waterhole management. Additionally, a Basic Development Plan has been formulated to support eco-development interventions focusing on renewable energy, clean water, education, and healthcare for local communities.

The Buchara Main Conservation Reserve represents an ecologically valuable segment of the northern Aravalli ecosystem, characterized by its dry deciduous and thorn forest vegetation, rich biodiversity, and vital ecological functions. This Management Plan seeks to ensure the long-term protection, restoration, and sustainable management of its natural resources through scientific planning, participatory management, and adaptive strategies. By conserving its biological diversity and maintaining its ecological balance, the Buchara Main Conservation Reserve will continue to play a crucial role in preserving the environmental stability and wildlife heritage of the Jaipur and Sikar regions.



Acknowledgement

We are privileged to have had the opportunity to work in the Buchara Main Conservation Reserve, located within the ecologically significant forest tracts of Kotputli–Behror District. The preparation of this Management Plan has been a profound learning experience, as the process involved extensive interactions with local Panchayats, village communities, and officials and field staff of the Forest Department.

The planning process provided valuable insights through consultations with diverse stakeholders, given the complexity of land use patterns and the shared responsibilities among various departments managing different components of this landscape.

With the growing emphasis on nature education, ecological restoration, and community-based conservation, the Buchara Main Conservation Reserve holds immense potential in promoting environmental awareness, fostering local stewardship, and safeguarding the unique dry deciduous forest ecosystem and associated biodiversity. Against this backdrop, the present management plan has been developed through collaborative efforts, ideas, and field-based contributions from multiple individuals and institutions.

Our understanding of the roles of major stakeholders has enriched the process of planning for the long-term ecological integrity and sustainable management of this reserve. This document is the outcome of dedicated efforts from numerous contributors, to whom we extend our sincere gratitude.

Forest Department:

We express our deep appreciation to Ms. Shikha Mehra, Principal Chief Conservator of Forests Chief Wildlife Warden, Rajasthan, for her valuable guidance, encouragement, and strategic suggestions that greatly strengthened this plan. We are thankful to the PCCF (Working Plan) for providing critical guidance and interpretative inputs regarding relevant policies and Hon'ble Supreme Court directives.

Special thanks are due to Shri Rajesh Gupta, Additional Principal Chief Conservator of Forests (Wildlife), for his continuous guidance and support throughout the preparation process, and to Shri Rajeev Chaturvedi, Chief Conservator of Forests (CCF), Jaipur, for his valuable suggestions, insightful comments, and overall supervision in finalizing this plan.

We gratefully acknowledge the contribution of the Assistant Conservator of Forests (ACF), Kotputli, and the Range Forest Officer (RFO), Kotputli, for facilitating surveys, providing relevant data, and extending logistical support. The sincere efforts of field staff and office personnel of Buchara Main Conservation Reserve are also acknowledged for their assistance in data collection, compilation, and verification of field information.

Stakeholders of Buchara Main Conservation Reserve:

Stakeholders contributing to the conservation and management of this reserve include:

Government Departments: Agencies involved in the management of forests, land, and water resources.

Local Communities: Representatives of Gram Panchayats, Panchayat Members, Self-Help Groups, Civil Society and NGOs and residents of nearby villages such as Buchara, Chonp, and nearby settlements, who depend on forest resources for livelihood and actively participate in conservation initiatives.

Private Sector: Institutions and industries utilizing forest-based products or services and supporting eco-restoration initiatives.

Academic and Research Institutions: Researchers and conservation practitioners contributing through ecological studies, biodiversity monitoring, and sustainable management recommendations.

We extend our special gratitude to Shri Dadu Pariyavaran Sansthan for their proactive involvement in problem analysis, objective setting, strategy formulation, and assistance in the design, formatting, and compilation of this document.

We acknowledge with deep appreciation the cooperation, technical support, and valuable insights from all individuals and organizations whose efforts have made the preparation of this Management Plan for Buchara Main Conservation Reserve possible.

Devendra Pratap Jagawat
Deputy Conservator of Forests
Jaipur(North)

Shakambari Conservation Reserve, Sikar

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PREAMBLE

This Management Plan has been prepared for the Buchara Main Conservation Reserve, Jaipur. The plan serves as a comprehensive framework and monitoring tool for effective management and conservation of the area. Its primary objective is to ensure the preservation of the ecological integrity, biodiversity, and natural habitats of the Conservation Reserve, while maintaining a rational balance between protection, ecological sustainability, and wise use of resources.

The plan consolidates the historical background, current management practices, and future strategies required for the improvement and long-term conservation of the reserve. It ensures continuity and consistency in management actions by defining clear objectives, strategies, and measurable outcomes to be achieved within the plan period.

This Management Plan covers the period 2025–26 to 2034–35 and outlines detailed strategies for the protection, maintenance, and enhancement of the unique ecological, faunal, and floral components of the Buchara Main Conservation Reserve for future generations. The prescriptions are based on scientific assessment of field data, logical interpretation of ecological findings, and consultations with stakeholders, field staff, and subject experts.

All existing guidelines issued by the Government of Rajasthan and Government of India for the preparation of Management Plans for Protected Areas and Conservation Reserves have been duly incorporated to the maximum possible extent. Considering that management priorities and conservation policies may evolve with time, a mid-term review and necessary revisions of this plan are proposed after five years to ensure adaptive and responsive management.

**Deputy Conservator of Forests
Jaipur(North)**

LIST OF ABBREVIATIONS

ACF	Assistant Conservator of Forests
APCCF	Additional Principal Chief Conservator of Forests
APO	Annual Plan of Operation
BMCR	Buchara Main Conservation Reserve
BNHS	Bombay Natural History Society
BSR	Basic Schedule of Rates
CAMPA	Compensatory Afforestation Fund Management and Planning Authority
CCF	Chief Conservator of Forests
CDH	Conservation Development and Harvest
CR	Conservation Reserve
CRPC	Code of Criminal Procedure
CSS	Centrally Sponsored Schemes
CUG	Common User Group
CWLW	Chief Wild Life Warden
DCF	Deputy Conservator of Forests
DFO	Divisional Forest Officer
DS	Deciduous
EDC	Eco-Development Committee
FCC	False Colour Composition
GPS	Global Positioning System
HA.	Hectare
HWC	Human Wildlife Conflict
IPC	Indian Penal Code
IUCN	International Union for Conservation of Nature and Natural Resources
IVRI	Indian Veterinary Research Institute
LULC	Land Use Land Cover
MDR	Major District Road
NCR	National Capital Region
NGI	Non-Governmental Individual
NGO	Non-Governmental Organization
NTFP	Non Timber Forest Produce
OBC	Other Backward Caste
PA	Protected Area
PIT	Passive Integrated Transponder
PRA	Participatory Rural Appraisal
PSC	Planning Sub Committee
RCC	Reinforced Cement Concrete
RFO	Range Forest Officer
RH	Relative Humidity
SC	Scheduled Caste
SHG	Self Help Group

SOP	Standard Operation Procedure
SWOT	Strengths Weaknesses Opportunities and Threats
TESSA	Toolkit for Ecosystem Service Site-based Assessment
VFPMC	Village Forest Protection and Management Committee
WHS	Water Harvesting Structure
WII	Wildlife Institute of India
WWF	World Wide Fund





Chapter 1

Introduction and Background Information

1.1 Name and Status of Constitution/Notification

1.1.1. Name

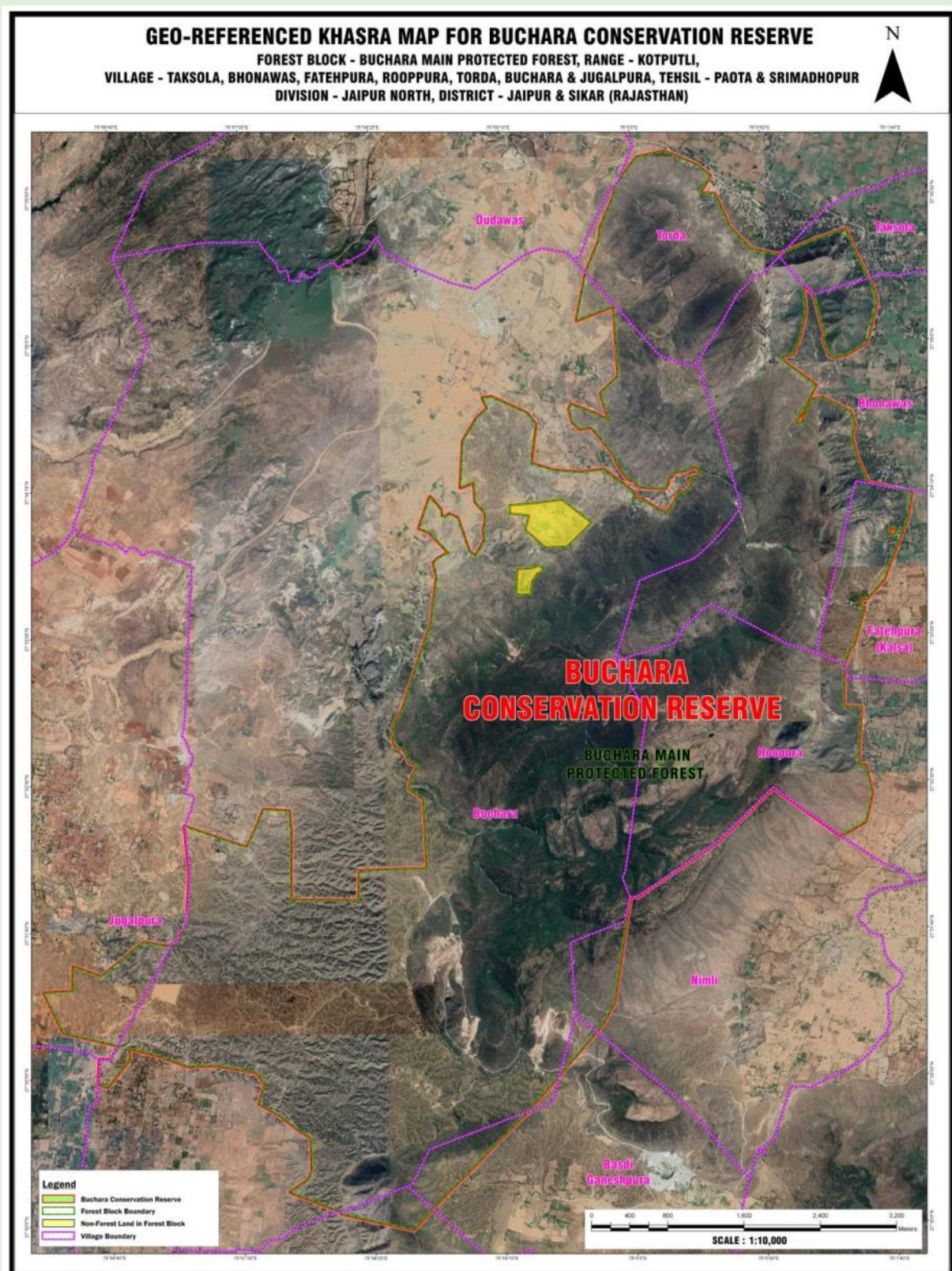
This plan is proposed for the "Buchara Main Conservation Reserve", Kotputli- Beherod and Sikar District Rajasthan, notified vide notification P.A3 (9) Van/2025 Dated 04.08.2025, The Buchara Main Protected Forest, covering a total area of 4,437.921 hectares, comprises 4,374.10 hectares in Kotputli–Behror District and 63.82 hectares in Sikar District. This area has been declared as the Buchara Main Conservation Reserve. The seven villages situated adjacent to the Buchara Main Forest Block are Tuscola, Bhonawas, Fatepura, Rooppura, Jugalpura, Torda, and Buchara. The Buchara Main Protected Forest, covering a total area of 4,437.921 hectares, comprises 4,374.10 hectares in Kotputli–Behror District and 63.82 hectares in Sikar District. This area has been declared as the Buchara Main Conservation Reserve. The seven villages situated adjacent to the Buchara Main Forest Block are Tuscola, Bhonawas, Fatepura, Rooppura, Jugalpura, Torda, and Buchara.

1.1.2. Constitution

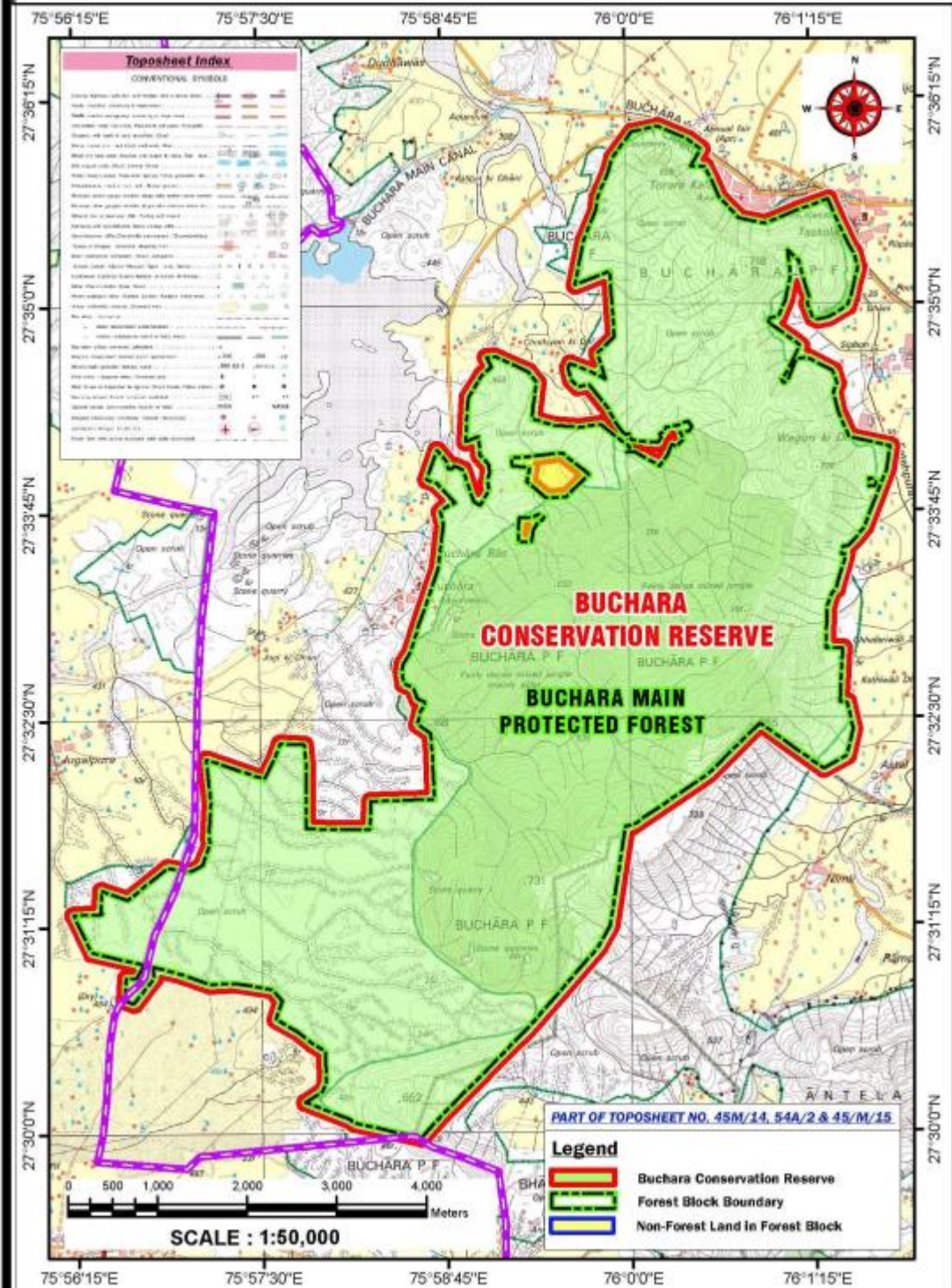
As a result of extensive plantation efforts, the Buchara Main Protected Forest now supports dense and well-developed vegetation, providing a suitable habitat for 200–230 species of birds, along with Sambar, Porcupine, Fox, Wild Cat, Hyena, and Panther, as well as various species of Snakes, Frogs, Toads, and Lizards.

Due to its rich biodiversity and ecological importance, this forest block has been designated as a Conservation Reserve to ensure the long-term protection and sustainable management of its natural habitats and wildlife. Proposals for this have been sent to the State Government under the provisions of Section 36A of Wild Life (Protection) Act 1972. As per State Government notification P.A3 (9) Van/2025 Dated 04.08.2025, the land of Protected Forest Buchara Main whose total area is 4437.921 hectares has been declared as Conservation Reserve.

1.2 Map of Conservation Reserve



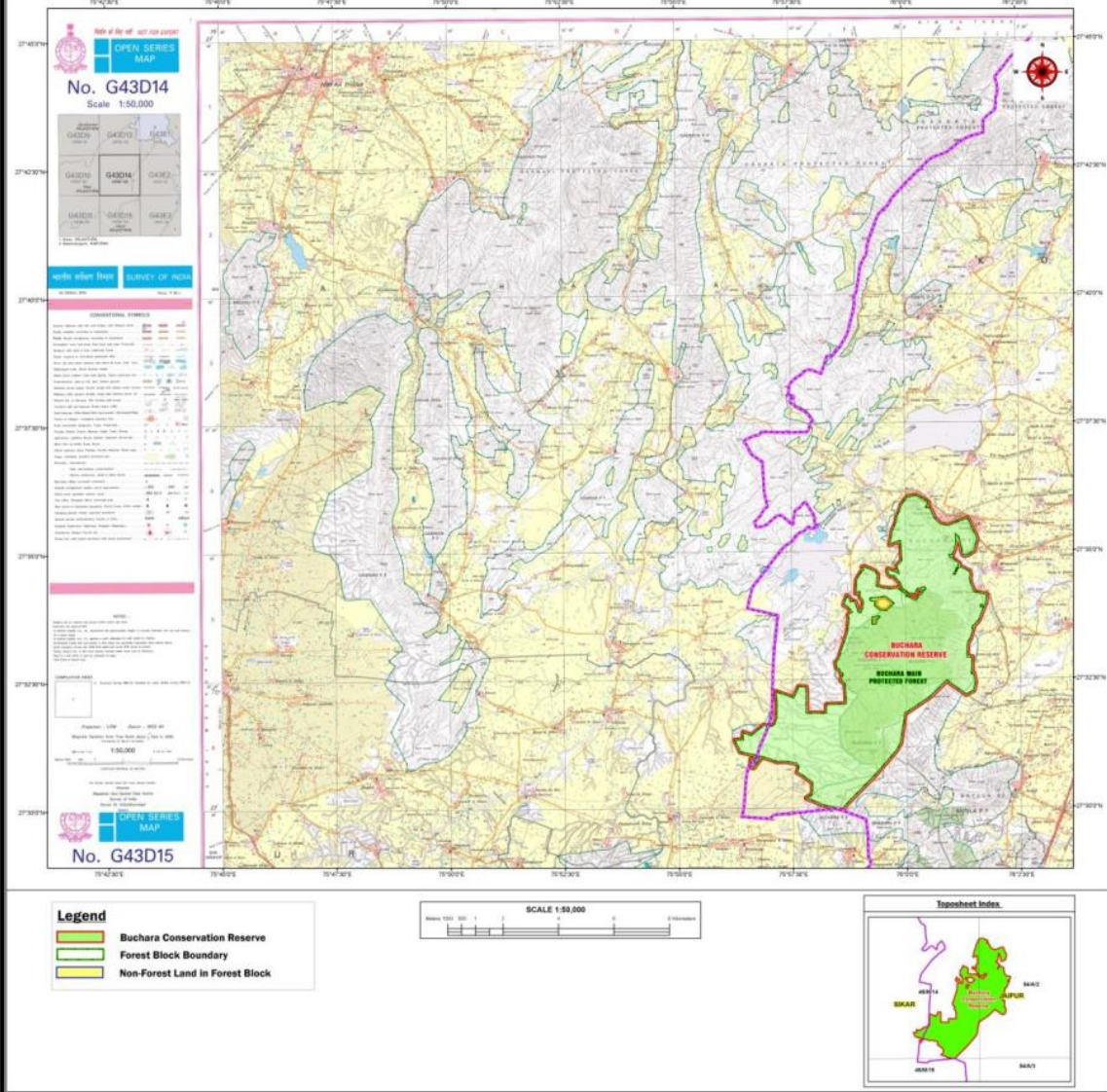
MAP SHOWING GEO-REFERENCED SURVEY OF INDIA TOPOSHEET WITH BUCHARA CONSERVATION RESERVE
FOREST BLOCK - BUCHARA MAIN PROTECTED FOREST,
RANGE - KOTPUTLI, DIVISION - JAIPUR NORTH, DISTRICT - JAIPUR (RAJASTHAN)

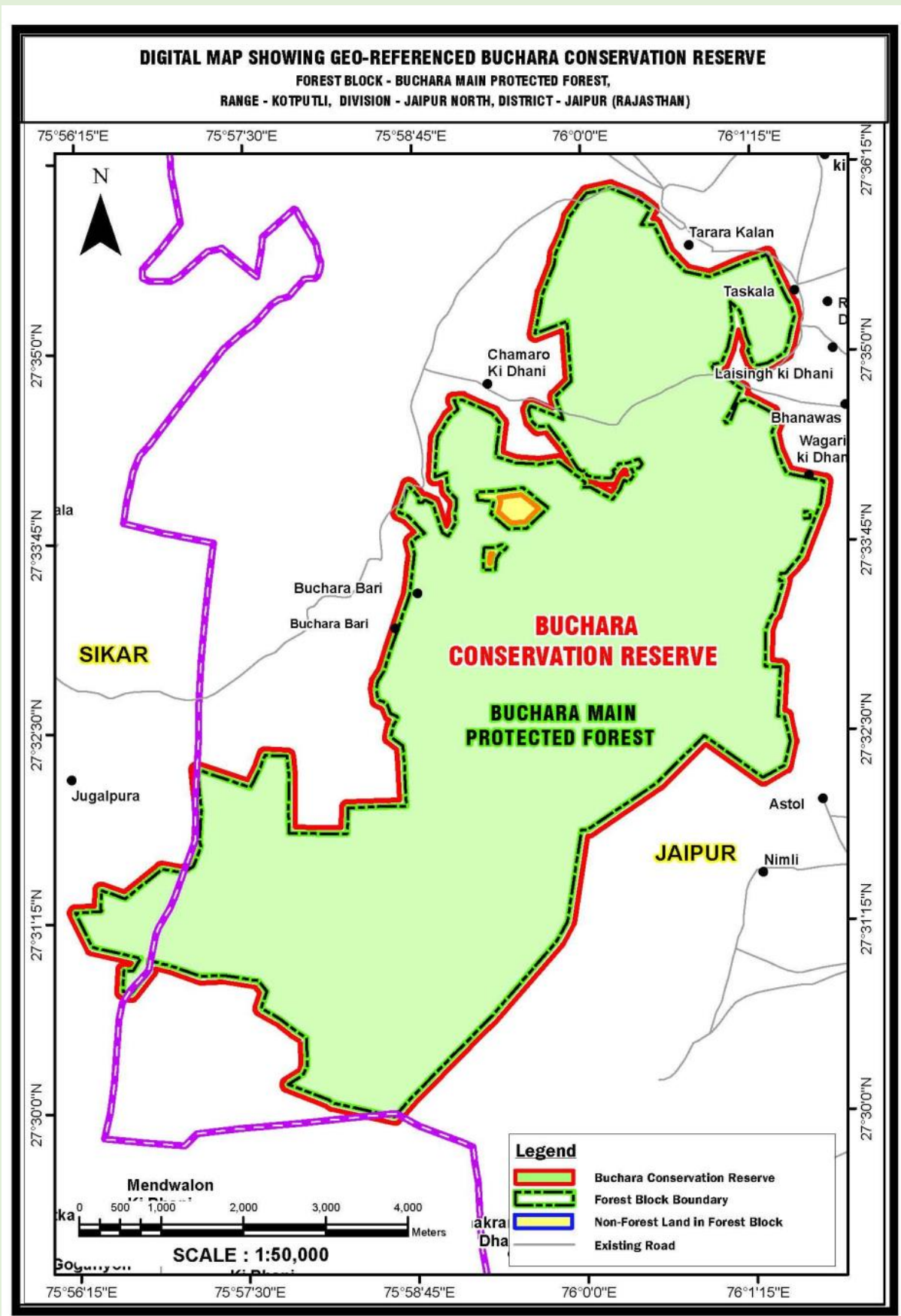


MAP SHOWING GEO-REFERENCED SURVEY OF INDIA TOPOSHEET WITH BUCHARA CONSERVATION RESERVE

FOREST BLOCK - BUCHARA MAIN PROTECTED FOREST,
RANGE - KOTPUTLI, DIVISION - JAIPUR NORTH, DISTRICT - JAIPUR (RAJASTHAN)

PART OF TOPOSHEET NO. 58M/14, 54A/2 & 45/M/15





1.3 Location, Physical Boundaries, and Extent

Location

The Buchara Main Forest Area of Kotputli Tehsil, which was notified as a Protected Forest Block on January 1, 1975, is located 7.50 kilometers west of Kotputli town. The area is 117 kilometers north of Jaipur District Headquarters and faces northeast. The Buchara Forest Block lands were notified as Protected Land.



Location map of Buchara Main CR

Boundaries of the reserve are as follows:-

The Forest Department has designated the forest land of Buchara Main Protected Forest as the Buchara Main Conservation Reserve.

The boundaries of the reserve are defined as follows:

Northern Boundary: Northern boundary of Buchara Main Protected Forest, Compartment No. 1

Southern Boundary: Southern boundary of Buchara Main Protected Forest, Compartment No. 5

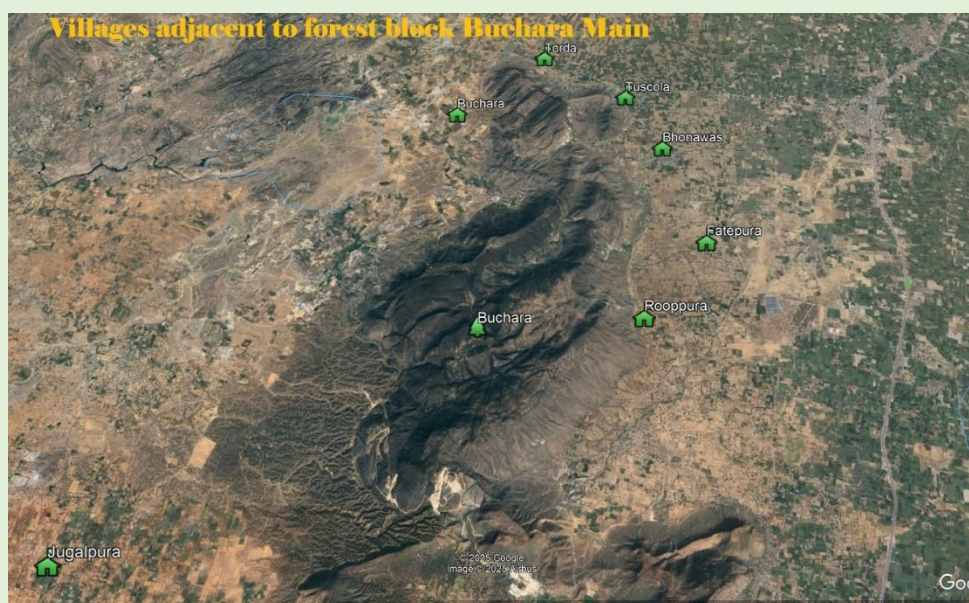
Eastern Boundary: Eastern boundary of Buchara Main Protected Forest, Compartment No. 4

Western Boundary: Western boundary of Buchara Main Protected Forest, adjoining the village boundary of Jugalpura (Sikar District).

The legal status of the area remains as Protected Forest. The terrain of the conservation reserve is undulating, characterized by broken hill ranges with elevations varying from 415 m to 720 m above mean sea level (MSL).

Adjacent Villages:

The villages adjoining the Buchara Main Forest Block include Tuscola, Bhonawas, Fatepura, Rooppura, Jugalpura, Torda, and Buchara.

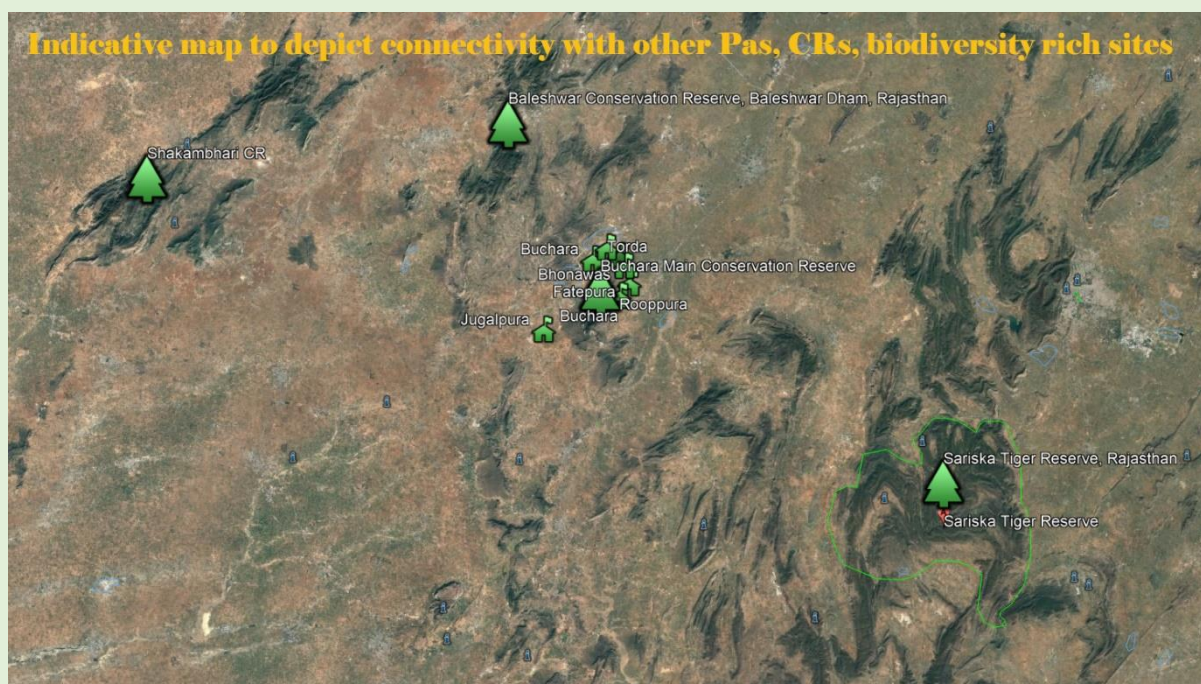


1.1.4. Extent

Area of Buchara Main Conservation Reserve (BMCR) is 4437.921 hectares out of which 63.820 hectares of Sikar District and 4374.1 hectares of Kotputli- Beherod District.

1.4 Indicative map showing connectivity with other Protected Areas (PAs), Conservation Reserves (CRs), and biodiversity-rich sites:

Buchara Main Conservation Reserve (BMCR) forms a critical ecological node within the northern Aravalli hill system, functioning as a natural linkage between multiple Protected Areas (PAs), Conservation Reserves (CRs) and biodiversity-rich habitats of eastern Rajasthan. Its geographical placement ensures continuity of wildlife movement and gene flow across a wider conservation landscape that includes Sariska Tiger Reserve in the southeast, Baleshwar Conservation Reserve to the north, and Shakambhari Conservation Reserve further west. This connectivity strengthens the broader Aravalli wildlife corridor network, which is essential for maintaining viable populations of wide-ranging mammals such as leopard (*Panthera pardus fusca*), striped hyena (*Hyaena hyaena*), golden jackal (*Canis aureus*), nilgai (*Boselaphus tragocamelus*), and chinkara (*Gazella bennettii*).



The undulating terrain, rocky outcrops, and interspersed dry deciduous forests create a semi-continuous habitat mosaic that allows stealth cover, resting patches, and safe dispersal routes for carnivores and herbivores. Seasonal water pools and community-managed grazing landscapes located between BMCR and adjacent conservation units further enhance its utility as a functional wildlife corridor. Ecological connectivity also supports smaller faunal groups including reptiles, birds, and invertebrates, enabling range shifts in response to climatic and anthropogenic pressures.

From a metapopulation perspective, BMCR works as a “stepping-stone habitat” bridging genetic exchange between isolated wildlife pockets of the northern Aravallis. Its role is particularly significant for leopard movement from Sariska landscape towards the Shakambhari–Baleshwar belt, thereby reducing local extinction risks through dispersal-based rescue effects. The corridor-like terrain also supports transitory sub-adult dispersers, using intermediate habitats before settlement in core forest blocks.

In addition to wildlife corridors, BMCR’s connectivity enhances ecological processes such as pollination, seed dispersal, predator-prey balance, and restoration of degraded forest tracts through natural recruitment. Maintaining this connectivity is therefore crucial not only for the persistence of flagship and keystone species, but also for sustaining the ecological integrity of the entire northern Aravalli landscape.

Similarly, in the western direction, landscape-level linkages are visible towards the Shakambhari Conservation Reserve, another significant biodiversity-rich site within the northern Aravalli system. Shakambhari provides a complementary habitat matrix of ravine tracts, hill slopes, and pasture-dominated buffers that together sustain ecological flows across districts. Seasonal dispersal routes and water-linked movement corridors further strengthen this connectivity.

The indicative map therefore demonstrates that Buchara is not an isolated habitat patch but a functional ecological node within a larger conservation mosaic. Its position enhances north–south and east–west connectivity for semi-arid wildlife assemblages of Rajasthan, reinforcing its

importance in maintaining metapopulation stability, genetic flow, and long-term ecological resilience of the Aravalli landscape.



1.5. Statement of Significance — Buchara Main Conservation Reserve

1.5. 1. Location & Context

Buchara Main Conservation Reserve lies in the Kotputli-Behror / Kotputli area of northern Rajasthan (Jaipur/Kotputli region). The area sits in the transition between the lower hills and plains of the Aravalli foothills and agricultural landscapes of Jaipur/Kotputli, and is being developed as a protected/managed conservation landscape by state agencies and tourism initiatives.

1.5. 2. Unique habitat values

Semi-arid scrub and rocky outcrop mosaic — the reserve conserves a characteristic mosaic of dry thorn/scrub vegetation, rocky hills and water-holding depressions (khads/ponds) typical of the lower Aravalli foothills. This mosaic provides microhabitat diversity (shelter, nesting/den sites,

seasonal water) that is uncommon in the intensively farmed plains around Kotputli. (Local imagery and reports indicate rocky pools and pond features in Buchara).

Connectivity function — Buchara acts as a landscape connector between larger and established protected areas of the region (for example, Sariska Tiger Reserve and neighbouring Conservation Reserves), increasing its value as a corridor and buffer in a fragmented landscape. The state's strategy for creating linked conservation units and new reserves in Rajasthan supports the importance of such connectors.

1.5. 3. Unique biodiversity values

The area exhibits strong potential for supporting a high diversity of small mammals, reptiles, and shrubland bird species. Habitats of this nature in Rajasthan are typically associated with a rich assemblage of dryland specialists, including small carnivores, foxes, Indian gazelle (*Gazella bennettii*), and blackbuck (*Antelope cervicapra*) in adjacent grassland tracts. Additionally, the presence of insectivorous and granivorous passerines, as well as reptiles and amphibians around seasonal waterbodies, further enhances the ecological diversity of the site.

Furthermore, the site holds significant potential for sustaining large carnivores and their prey base. Recent state-level reports and local development plans for a proposed “Leopard Safari” or Leopard Conservation Zone in the Buchara area underscore the site’s perceived ecological importance for leopards (*Panthera pardus*) and associated prey species. While the existence of a resident leopard population requires systematic field verification, the habitat’s structural attributes and its landscape connectivity make it an important component of the regional biodiversity network.

Knowledge gap: There is limited publicly available, peer-reviewed inventory data for Buchara. A standardized biodiversity survey (camera traps, point counts, herpetofaunal transects, vegetation plots) is recommended to quantify species lists, conservation status, and key habitat patches.

1. Unique Flora

According to Champion and Seth (1968) classification, the vegetation falls under Tropical dry deciduous Forests, Northern Tropical dry deciduous Forest, Dry deciduous scrub Forests, Desert Thorn Forests, Desert dune Forests, Tropical thorn Forests. Most of the undisturbed areas are covered by Dhonk, Salar, Kumta, Khejdi (*Prosopis cineraria*), Babul (*Acacia nilotica*), Guggal (*Commiphora* spp) and Khirni (*Wrightia tinctoria*). 21 species of mammals, 200 Birds, 29 species of reptiles and 4 species of amphibian are found in this Reserve.

The vegetation is primarily xerophytic, adapted to conserve water. Species like *Prosopis cineraria* (Khejri), *Tecomella undulata* (Rohida), and *Salvadora persica* (Toothbrush tree) are iconic. Grasses such as *Cenchrus ciliaris* and *Lasiurus indicus* play a crucial role in stabilizing sand dunes and providing fodder.

2. Endemic and Rare Fauna

Mammals: Home to species like the Indian desert fox, and caracal, which are specifically adapted to the arid ecosystem.

Birds: A vital habitat for globally significant bird species.

Insects and Arthropods: The desert harbors numerous specialized insects, including endemic species of beetles and scorpions.

1.5. 4. Migratory & breeding grounds

Seasonal waterbodies as breeding/refuges. Natural ponds and khads shown in local imagery and cited documents often function as seasonal breeding sites for amphibians, waterbirds and as vital dry-season water points for mammals and birds. These water features amplify Buchara's role as a local breeding/refuge ground during monsoon and early post-monsoon periods.

Stopover/foraging for migratory birds. Shrubland/pond mosaics in the region commonly receive transient migrants and wintering birds; Buchara's ponds and scrub could therefore function as

stopover and foraging habitat for migratory passerines and waterfowl. This role should be confirmed by seasonal bird surveys.

1.5. 5. Adaptations for survival (landscape & species)

Vegetation and microhabitat resilience. Native thorn scrub and drought-adapted shrubs/trees store soil moisture, reduce erosion on rocky slopes and support faunal sheltering behaviour. Species in this landscape exhibit classic xeric adaptations (nocturnality/crepuscular activity in mammals, diurnal thermoregulation and burrowing in reptiles, drought-resistant phenology in plants).

Hydrological refugia. Rock pools/ponds and small streams (noted in environmental clearances and local accounts around Bucharā) provide crucial refugia in dry months and allow persistence of species that cannot survive on landscape without these water pockets.

1.5. 6. Ecosystem services

Water regulation & recharge. Ponds, khads and vegetated slopes in the reserve help local groundwater recharge and seasonal water storage for people and livestock in surrounding villages. Environmental clearance documents for nearby areas explicitly note local canals and seasonal streams in the Bucharā vicinity, highlighting hydrological importance.

Soil conservation & erosion control. Vegetation cover on rocky slopes reduces erosive runoff, protecting downstream agricultural land and infrastructure.

Livelihood & cultural services. The reserve supports non-timber resources (grazing, medicinal plants, fuelwood in regulated amounts), nature-based recreation and local cultural/religious

values tied to landscapes and sacred water bodies. Planned eco-tourism (e.g., leopard safari proposals) further indicates potential economic services for local communities.

1.5. 7. Role in regional & global biodiversity conservation

Corridor & buffer for larger conservation units. By providing stepping stones and lower-intensity habitat between major protected areas (for example Sariska and other CRs in the region), Buchara increases regional landscape permeability for wide-ranging species, making it strategically important for metapopulation stability and genetic flow. This connectivity role scales up to contribute to national conservation objectives for threatened species and to India's commitments under global biodiversity frameworks.

1.5. 8. Demographic uniqueness & social dimensions

Interface with local communities. Buchara lies close to villages (e.g., Buchara village, Kotputli tehsil) and supports traditional uses; conservation planning must therefore integrate community rights, grazing regimes, and livelihood needs. Environmental filings around the village show land-use pressures such as small mining leases and agricultural lands near the reserve, underlining the human-wildlife interface.

Potential for community-based conservation. The reserve's scale and proximity to local settlements make it suitable for co-management approaches (eco-development committees, regulated eco-tourism, grazing-informed management) that can deliver local benefits while reducing illegal extraction and disturbance.

1.5.9. Demographic uniqueness

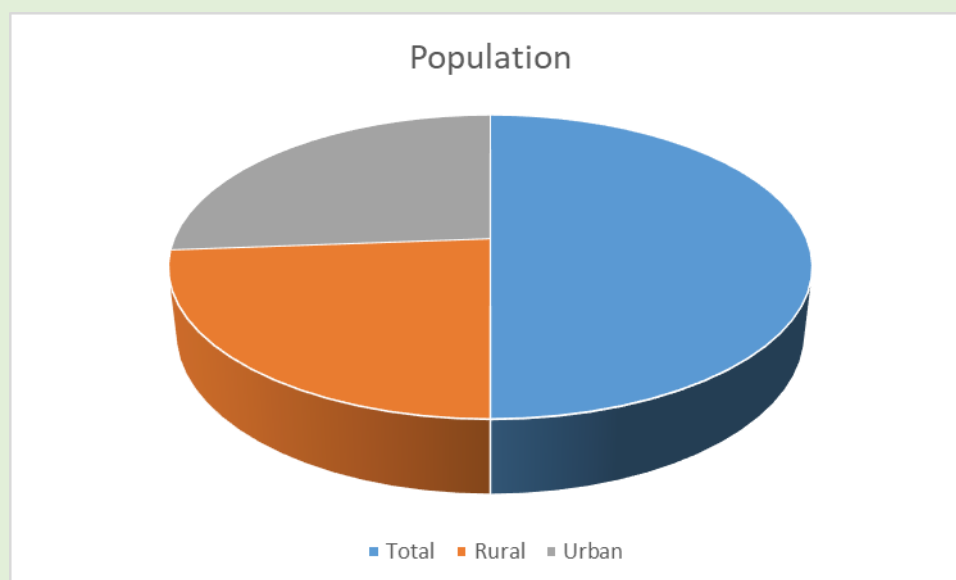
The distribution of population and vegetation status are influenced by the climatic factors like rainfall, temperatures, relative humidity, winds, soil, water resources which are directly or indirectly related with the vegetation status. Many other factors like dryness in the air, seasonal

changes and seasonal influences, distribution of sand dunes topography, prevailing of hot winds during summer season also influences the vegetation status. One can see the impact on population vegetation status in different points like population density population literacy and occupational structure of population. As per available of census records (2011) the observations in this aspect revealed some interesting facts which are being discussed here.

According to the 2011 Census of India, the Jaipur district had a population of 6,626,178. The data provides further breakdowns on gender, religious, and rural/urban demographics.

Demographic summary

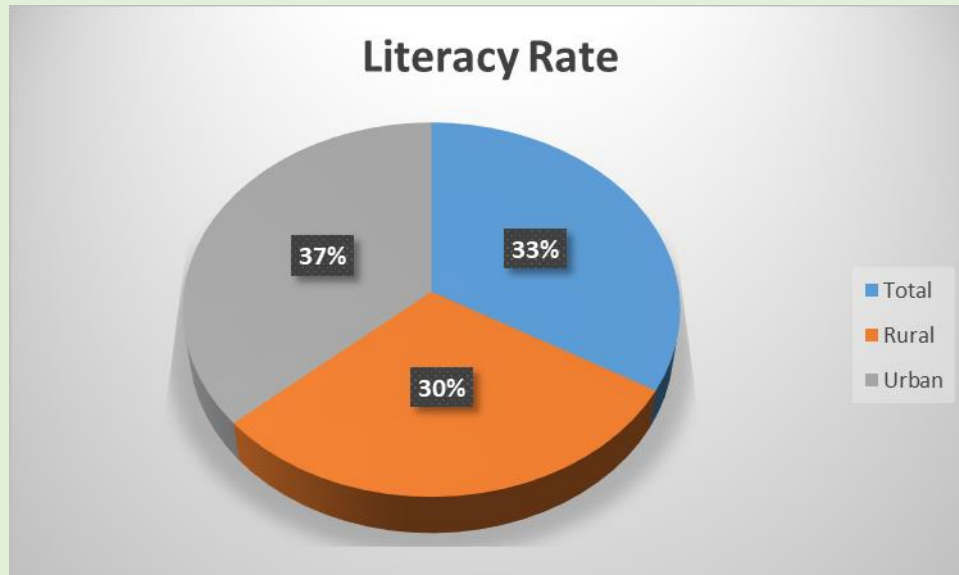
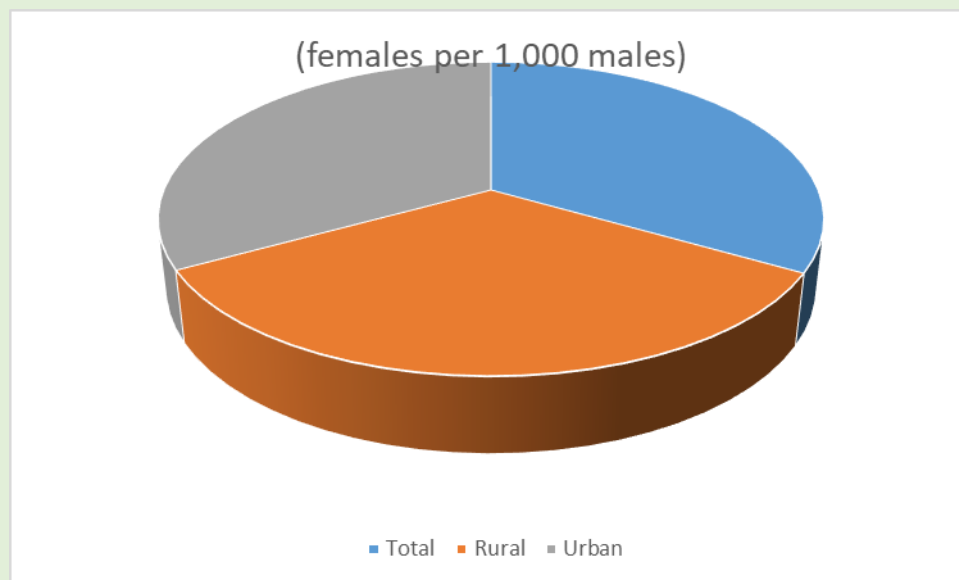
Category	Total	Rural	Urban
Population	6,626,178	3,154,331	3,471,847
Male	3,468,507	1,642,924	1,825,583
Female	3,157,671	1,511,407	1,646,264

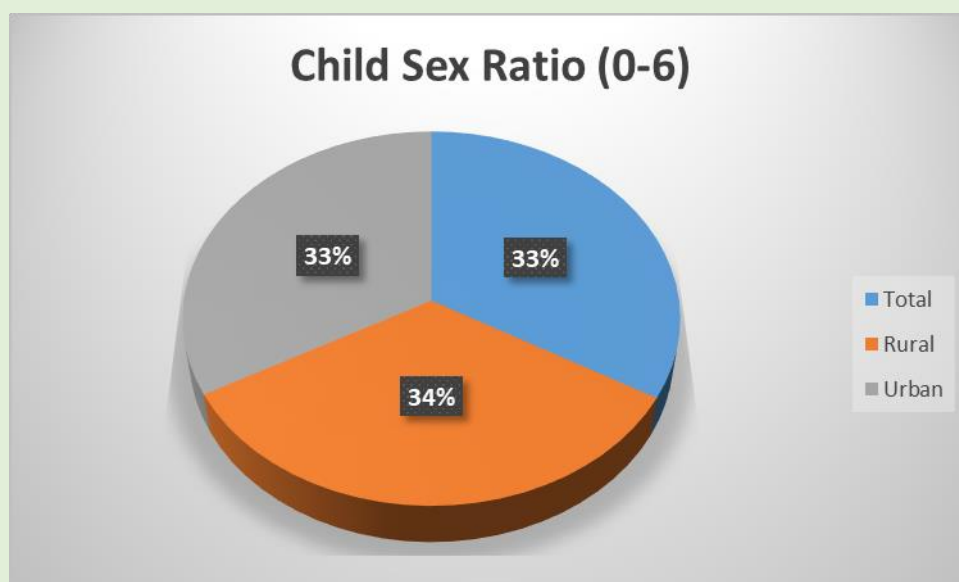
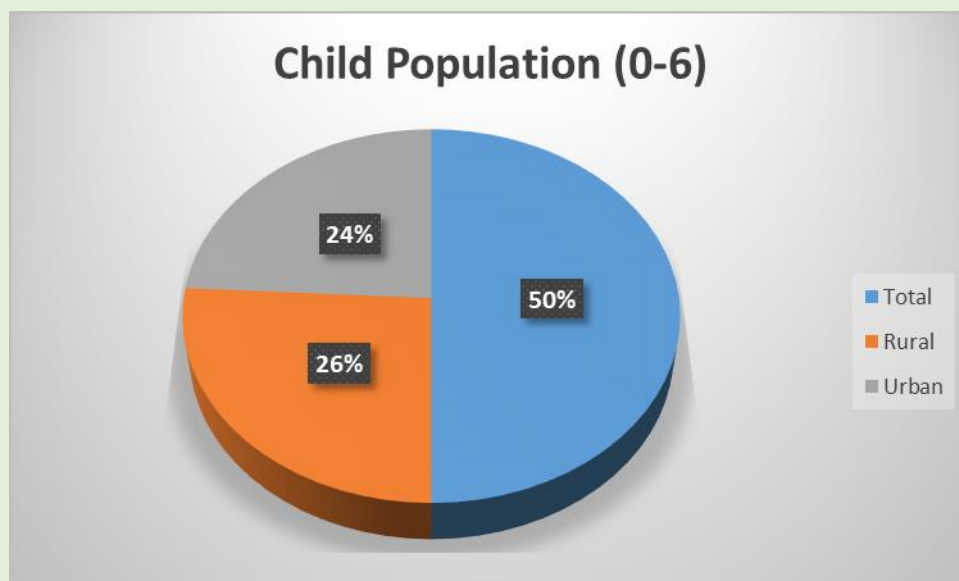


Sex Ratio

Category	Total	Rural	Urban
----------	-------	-------	-------

(females per 1,000 males)	910	920	902
Literacy Rate	75.51%	67.62%	82.47%
Child Population (0-6)	9,29,926	4,81,315	4,48,611
Child Sex Ratio (0-6)	861	869	853



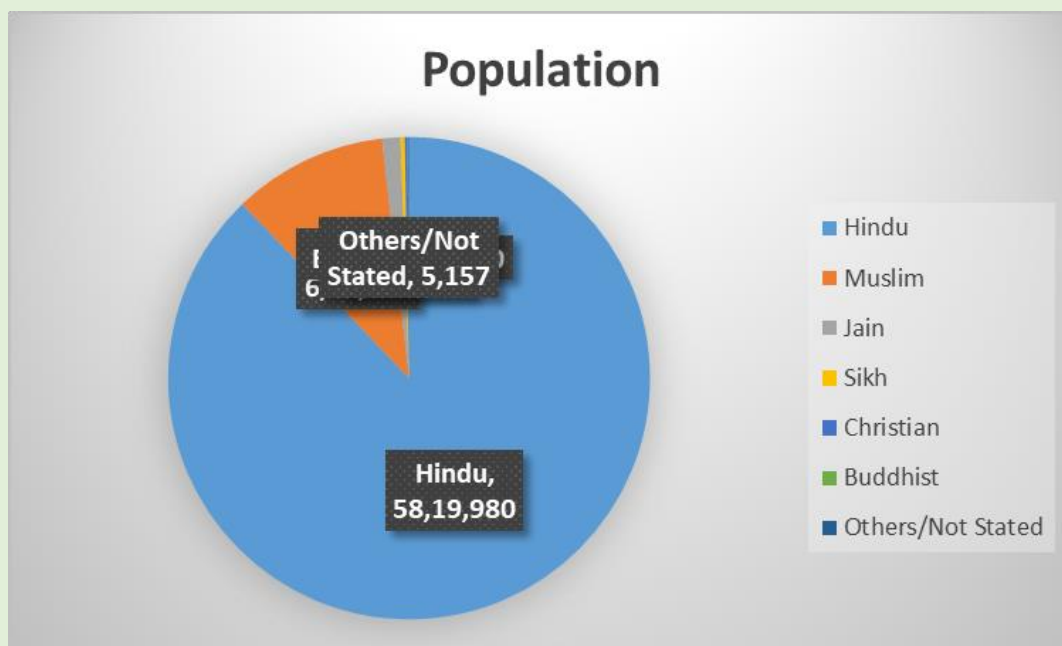


Religious breakdown

The religious composition for the Jaipur district in 2011 was predominantly Hindu, followed by a significant Muslim population.

Religion	Population	Percentage
Hindu	58,19,980	87.83%
Muslim	6,87,452	10.37%

Jain	81,079	1.22%
Sikh	18,782	0.28%
Christian	12,708	0.19%
Buddhist	1,020	0.02%
Others/Not Stated	5,157	0.07%



Other notable statistics

Population density: The district had a population density of 595 people per square kilometer.

Decadal growth rate: Between 2001 and 2011, the population increased by 26.19%.

Caste data: The Scheduled Caste population was 1,003,302 (15.1% of the total), while the Scheduled Tribe population was 527,966 (8% of the total).

Households: A total of 1,177,096 families resided in the district.

Demography of Seven Villages adjacent to forest block Buchara Main are Tuscola, Bhonawas, Fatepura, Rooppura, Jugalpura, Torda, Buchara given below

Name	No_H H	TOT_P	TOT_M	TOT_F	P_06	M_06	F_06	P_SC	M_SC	F_SC	P_ST	M_ST	F_ST
Taskola	683	4224	2184	2040	694	362	332	673	344	329	170	94	76
Torda													
Goojran	637	3887	2054	1833	692	372	320	691	356	335	216	108	108
Bhonawas	884	5257	2772	2485	783	461	322	1365	729	636	406	223	183
Buchara	460	2782	1486	1296	473	256	217	595	315	280	717	367	350
Fatehpura	476	3566	1854	1712	491	256	235	200	97	103	56	28	28
Jugalpura	174	969	496	473	194	100	94	253	142	111	55	35	20
Rooppura	315	1794	974	820	294	171	123	138	74	64	0	0	0
Name	P_LIT	M_LIT	F_LIT	P_ILL	M_ILL	F_ILL	TOT_W ORK_P	TOT_W ORK_M	TOT_W ORK_F	MAINW ORK_P	MAINW ORK_M	MAINW ORK_F	MAIN_C L_P
Taskola	2370	1489	881	1854	695	1159	1975	1114	861	943	642	301	488
Torda													
Goojran	2046	1338	708	1841	716	1125	1610	982	628	1341	903	438	809
Bhonawas	3321	2015	1306	1936	757	1179	1870	1277	593	1190	877	313	537
Buchara	1470	955	515	1312	531	781	1263	687	576	1075	598	477	849
Fatehpura	2324	1442	882	1242	412	830	1538	911	627	1251	808	443	662
Jugalpura	501	319	182	468	177	291	590	303	287	411	229	182	250

Rooppura	917	618	299	877	356	521	826	428	398	694	370	324	579
Name	MAIN _CL_ M	MAIN _CL_F	MAIN_A L_P	MAIN_A L_M	MAIN_A L_F	MAIN_ HH_P	MAIN_ HH_M	MAIN_ HH_F	MAIN_ OT_P	MAIN_ OT_M	MAIN_ OT_F	MARGW ORK_P	MARGW ORK_M
Taskola	245	243	61	49	12	17	14	3	377	334	43	1032	472
Torda													
Goojran	452	357	206	176	30	13	11	2	313	264	49	269	79
Bhonawas	322	215	100	86	14	48	33	15	505	436	69	680	400
Buchara	428	421	50	24	26	8	8	0	168	138	30	188	89
Fatehpura	383	279	143	112	31	15	12	3	431	301	130	287	103
Jugalpura	93	157	4	2	2	0	0	0	157	134	23	179	74
Rooppura	314	265	67	31	36	1	1	0	47	24	23	132	58
Name	MARG WORK _F	MARG _CL_P	MARG_C L_M	MARG_C L_F	MARG_ AL_P	MARG_ AL_M	MARG_ AL_F	MARG_ HH_P	MARG_ HH_M	MARG_ HH_F	MARG_ OT_P	MARG_ OT_M	MARG_ OT_F
Taskola	560	537	236	301	384	172	212	20	7	13	91	57	34
Torda													
Goojran	190	18	10	8	217	51	166	10	7	3	24	11	13
Bhonawas	280	18	8	10	158	135	23	9	1	8	495	256	239

Buchara	99	49	33	16	94	33	61	2	1	1	43	22	21
Fatehpura	184	133	65	68	6	4	2	1	1	0	147	33	114
Jugalpura	105	105	61	44	7	1	6	0	0	0	67	12	55
Rooppura	74	37	17	20	70	30	40	0	0	0	25	11	14
Name	MARG WORK _3_6_ P	MARG WORK _3_6_ M	MARGW ORK_3_ 6_F	MARG_C L_3_6_P	MARG_C L_3_6_M	MARG_ CL_3_6 _F	MARG_ AL_3_6 _P	MARG_ AL_3_6 _M	MARG_ AL_3_6 _F	MARG_ HH_3_6 _P	MARG_ HH_3_6 _M	MARG_ HH_3_6 _F	MARG_ OT_3_6 _P
Taskola	711	312	399	308	115	193	319	152	167	17	6	11	67
Torda													
Goojran	222	53	169	4	0	4	192	41	151	7	5	2	19
Bhonawas	567	361	206	16	7	9	155	133	22	9	1	8	387
Buchara	127	57	70	16	14	2	74	26	48	2	1	1	35
Fatehpura	226	74	152	90	41	49	5	4	1	1	1	0	130
Jugalpura	72	14	58	3	1	2	2	1	1	0	0	0	67
Rooppura	130	56	74	36	16	20	69	29	40	0	0	0	25

Name	MARG _OT_3 _6_M	MARG _OT_3 _6_F	MARGW ORK_0_ 3_P	MARGW ORK_0_3 _M	MARGW ORK_0_ 3_F	MARG_ CL_0_3 _P	MARG_ CL_0_3 _M	MARG_ CL_0_3 _F	MARG_ AL_0_3 _P	MARG_ AL_0_3 _M	MARG_ AL_0_3 F	MARG_ HH_0_3 _P	MARG_ HH_0_3 _M
Taskola	39	28	321	160	161	229	121	108	65	20	45	3	1
Torda													
Goojran	7	12	47	26	21	14	10	4	25	10	15	3	2
Bhonawas	220	167	113	39	74	2	1	1	3	2	1	0	0
Buchara	16	19	61	32	29	33	19	14	20	7	13	0	0
Fatehpura	28	102	61	29	32	43	24	19	1	0	1	0	0
Jugalpura	12	55	107	60	47	102	60	42	5	0	5	0	0
Rooppura	11	14	2	2	0	1	1	0	1	1	0	0	0
Name	MARG _HH_0 _3_F	MARG _OT_0 _3_P	MARG_ OT_0_3_ M	MARG_O T_0_3_F	NON_W ORK_P	NON_ WORK_ M	NON_W ORK_F						
Taskola	2	24	18	6	2249	1070	1179						

Torda													
Goojran	1	5	4	1	2277	1072	1205						
Bhonawas	0	108	36	72	3387	1495	1892						
Buchara	0	8	6	2	1519	799	720						
Fatehpura	0	17	5	12	2028	943	1085						
Jugalpura	0	0	0	0	379	193	186						
Rooppura	0	0	0	0	968	546	422						

POPULATION BY SEX-RATIO

In any discussion on population, an inquiry in to the proportion of men to women is always an essential and relevant one. We no longer argue whether one sex is superior to the other. But are the males and females equal in number? It is an important question. If men are in excess, some will not get partners and in certain societies the bride price will go up. Truly speaking, the equality in number of males and females in all countries and at all times is an ideal seldom attained. Even if an equal number of male and female babies are born, their chances of survival at various ages are very unequal. In fact there has been a fall in sex ratio. Though the results are provisional yet there is a need for further examination about the declining trend in sex-ratio over the years. Studies made so far have offered several explanations for this phenomenon in the past. Some of them are a preference for male children resulting in neglect of female babies causing higher mortality rate among females, sex-ratio at birth favourable to males, longer in migration of males in search of work, the neglect of females at all ages-right from birth to death may be responsible for high mortality rates among females etc.

1.5.4. Tourism importance

The Bucharra Main Conservation Reserve holds considerable importance from an ecotourism perspective. The area is emerging as a significant wildlife tourism destination in Rajasthan, supporting a diverse assemblage of fauna such porcupine (*Hystrix indica*), fox (*Vulpes bengalensis*), wild cat (*Felis silvestris ornata*), and striped hyena (*Hyaena hyaena*).

Promoting responsible and sustainable wildlife tourism in this reserve can play a vital role in conserving natural ecosystems while simultaneously providing socio-economic benefits to local communities. The landscape offers opportunities for nature-based activities such as guided walks and wildlife observation. Furthermore, the Rajasthan State Budget (2023) announced plans to develop the Bucharra area as a key tourism destination, highlighting its growing recognition for both ecological and recreational value.

Chapter - 2

Profile

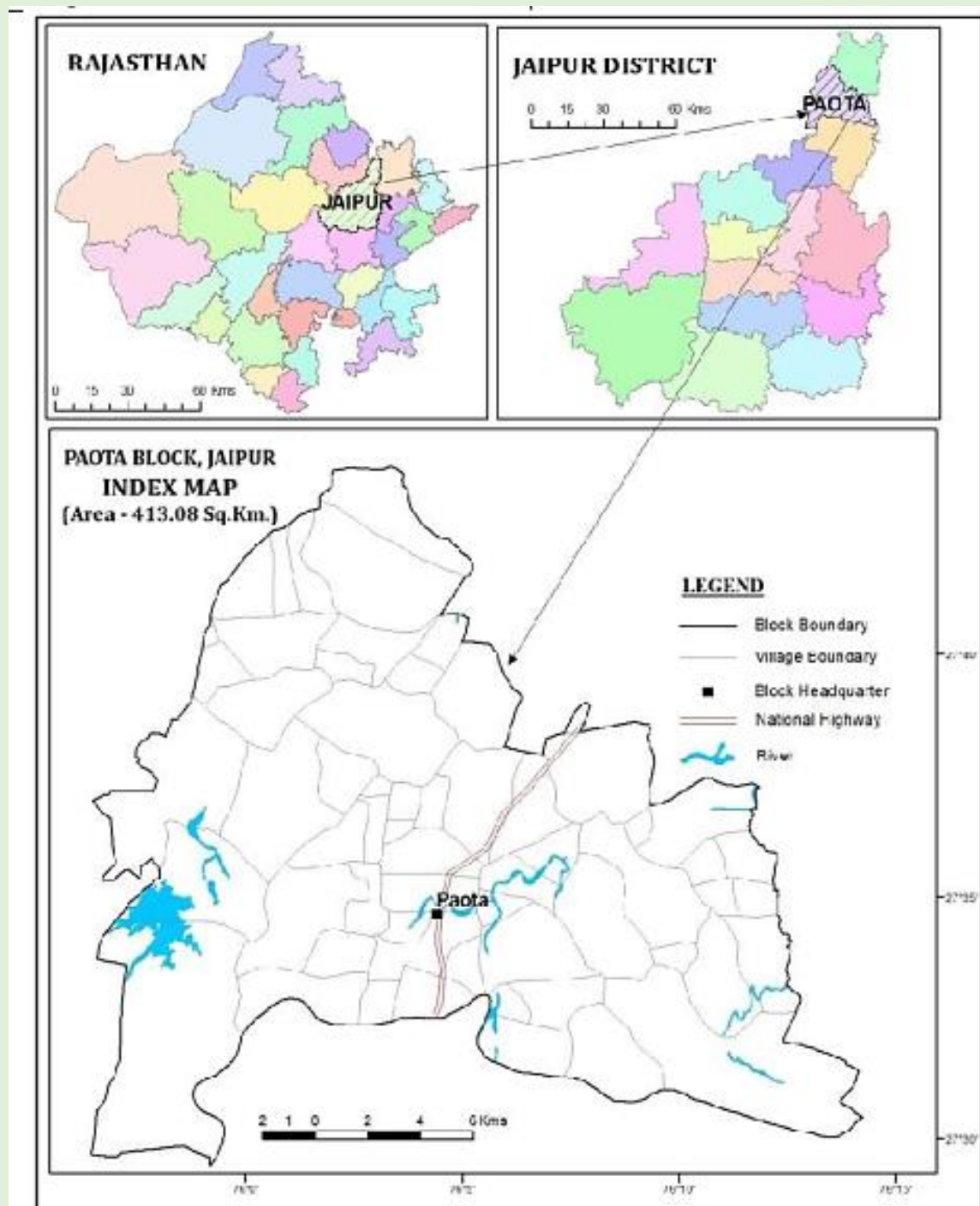
2.1 General Information

The Buchara Main Forest Area of Kotputli Tehsil, Jaipur District, which was notified as a protected forest block on January 1, 1975, is located 7.50 kilometers west of Kotputli town. The area is 117 kilometers north of Jaipur District Headquarters and faces northeast. The Buchara Forest Block lands were notified as protected land.

Forest Land Description: Forest cover in Jaipur District is less than 8.56 percent. Due to the increasing population, there is significant pressure on existing forest resources, increasing the likelihood of encroachment. Therefore, it is essential to declare this biodiversity-rich forest land as a protected area. The total area of Buchara Main Reserve Forest Block is 4437.921 hectares. The topography of the said land is hilly, plateau, flat valley etc. The seven villages of the forest block; Taskola, Bhonawas, Fatepura, Rooppura, Torda, and Buchara fall within the Jaipur district. Jugalpura is located in the Srimadhapur tehsil of Sikar district.

The Buchara Forest Block is part of the Paota Block. Important details regarding the Paota Block follow.

Block Name	Paota
Longitude	75°56'31" and 76°14'09"
Latitude	27°29'52" and 27°44'09"
Geographical Area Sq.km	447.8
Hilly Area (Sq.km)	54.12
Population (2011)	181061
Population Density	404
Distance from District HQ in km	88



2.1.1 Features of the Buchara Main Forest Block: This forest block lies on the Jaipur-Sikar border and is a single expanse. The vegetation density in this block is up to 0.9. Some streams in the forest block have water flowing throughout the year. This maintains a green cover around the streams, and palm trees are abundant. Due to the availability of water and vegetation cover, carnivorous wildlife such as the tiger also exist in this block. Endangered tree species such as the Kadasa are

listed in the schedule. The flora list, including grasses, herbs, shrubs, vines, and tree species, is attached.

2.1.2 Archaeological Significance:

1. **Buchara Village:** Buchara is an ancient and historic village whose streets, mansions, and forts are indicative of its rich artistic and archaeological significance. Buchara Village is also associated with the Jaipur royal family. In the 18th century, the Jaipur Maharaja was married at Buchara estate.

2. **Tapkeshwar Mahadev Temple:** Buchara houses an ancient temple, which devotees access via a footpath, located on a hill. The temple is quite old, and the path dates back to before independence. Even today, the path paved with large stones (of archaeological significance) can be seen. This temple is called Tapkeshwar Mahadev Temple. There is a water source here that flows year-round. The Tapkeshwar Mahadev Temple is located at a high altitude, and the slope is steep, making the path quite difficult. Despite these difficult conditions, a large number of devotees visit the temple for worship.

2.1.3. **Buchara Dam:** According to the Irrigation Department, the ancient Buchara Dam was constructed in 1889. The dam's total area is 309.76 square kilometers. A canal network has been established, and irrigation facilities have been developed for 2023 hectares from the Buchara Dam. Previously, the Buchara Dam supplied drinking water to the town of Paota. Water was also available for irrigation. Currently, this dam is dry.

2.1.4. **Geological Importance:** The Buchara Forest Area holds considerable geological significance. The region is rich in mineral resources, including thamsakechant, phanantjra, and ptvad vatham (a type of black stone), which are found in considerable quantities within the forest area. Due to their high economic value, illegal extraction activities by local mining groups have occasionally been reported. Such unauthorized mining not only causes landscape degradation and loss of vegetation but also threatens soil stability, groundwater quality, and the overall ecological balance of the area.

2.1.5. **Natural Vegetation:** The Buchara Main Forest Block is an example of the diversity of natural vegetation. Approximately 166 plant species, including the endangered

Kadaya, Guggul, Kalam/Kaim, Salar, Khirni, and wild date palm, are naturally present in this block, making it a unique habitat.

2.1.6. Wildlife: The main carnivorous animals in this block are the tiger, jackal, sehi, and other deer. Herbivorous animals include the Nilgai and the rabbit, and approximately 150 bird species can be observed.

2.1.7 Boundaries of the reserve are as follows:-

The Forest Department has designated the forest land of Buchara Main Protected Forest as the Buchara Main Conservation Reserve. The reserve encompasses the entire extent of the existing protected forest, maintaining the same administrative and natural boundaries on all sides.

Northern Boundary: Corresponds to the northern boundary of Buchara Main Protected Forest, Compartment No. 1.

Southern Boundary: Corresponds to the southern boundary of Buchara Main Protected Forest, Compartment No. 5.

Eastern Boundary: Corresponds to the eastern boundary of Buchara Main Protected Forest, Compartment No. 4.

Western Boundary: Corresponds to the western boundary of Buchara Main Protected Forest, adjoining the village boundary of Jugalalpura in Sikar District.

This delineation formally defines the spatial extent of the Buchara Main Conservation Reserve, ensuring administrative clarity and effective management under the jurisdiction of the Forest Department.

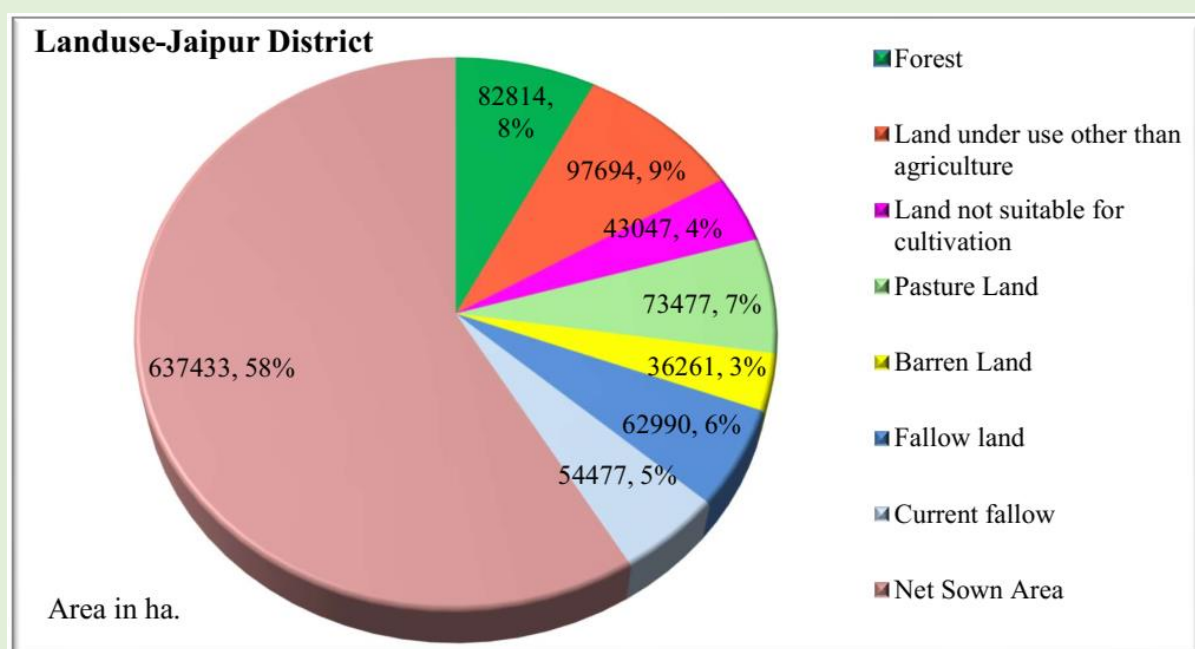
2.2 Current Land Uses/Activities in the Area

The land use dynamics of the district are significantly influenced by socio-cultural and economic factors across both rural and urban areas. In addition to these human drivers, natural determinants such as landforms, slope, soil characteristics, and the availability of natural resources play a vital role in shaping land utilization patterns.

The analysis of land use in the district is based on data from the Statistical Outline of the District (2020) published by the Government of Rajasthan. The land is predominantly utilized for

agricultural purposes, with approximately 58% of the total geographical area under net sown land, while forest areas occupy about 8% of the total area.

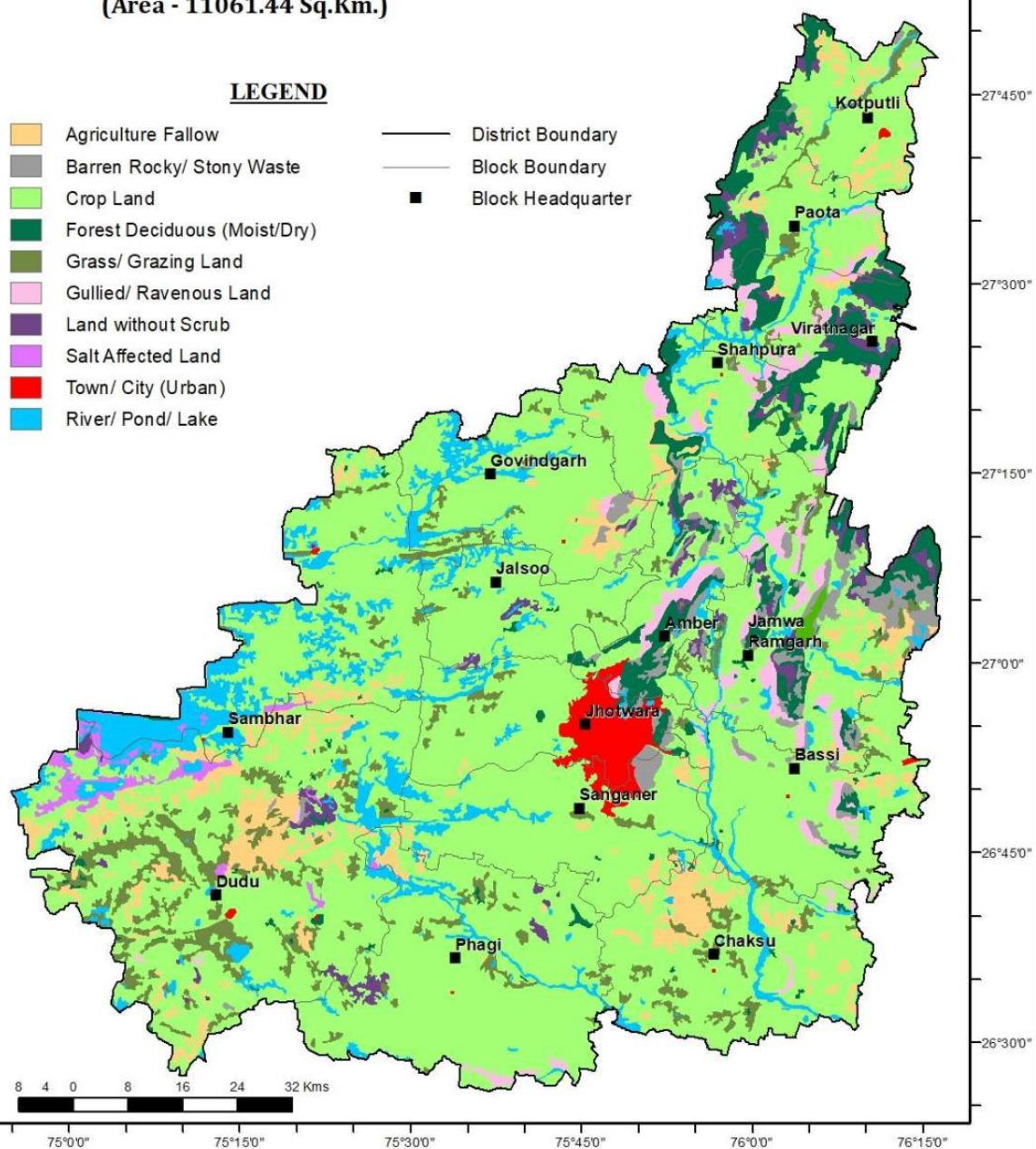
Landuse in ha	2018-19	%
Total Geographical Area	1106144	100
Forest	82814	8
Land under use other than agriculture	97694	9
Land not suitable for cultivation	43047	4
Pasture Land	73477	7
Barren Land	36261	3
Fallow land	62990	6
Current fallow	54477	5
Net Sown Area	637433	58
Gross Sown Area	980987	-
Area sown more than once	343554	-
Net Irrigated area (based on sources)	280330	-

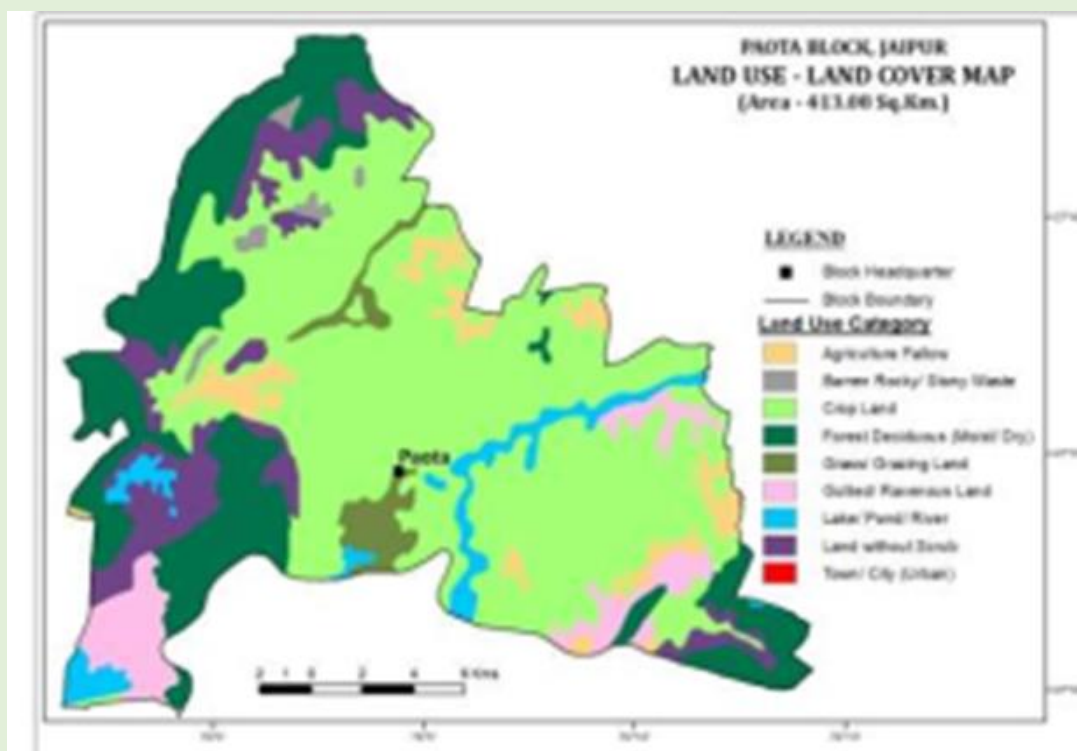


JAIPUR DISTRICT, RAJASTHAN
LAND USE - LAND COVER MAP
(Area - 11061.44 Sq.Km.)

LEGEND

- | | | | |
|---|------------------------------|---|-------------------|
|  | Agriculture Fallow |  | District Boundary |
|  | Barren Rocky/ Stony Waste |  | Block Boundary |
|  | Crop Land |  | Block Headquarter |
|  | Forest Deciduous (Moist/Dry) | | |
|  | Grass/ Grazing Land | | |
|  | Gullied/ Ravenous Land | | |
|  | Land without Scrub | | |
|  | Salt Affected Land | | |
|  | Town/ City (Urban) | | |
|  | River/ Pond/ Lake | | |





Classification of Land Use in Paota block

LAND USE, AGRICULTURE, IRRIGATION & CROPPING PATTERN OF PAOTA

Geographical Area in ha.	44780
Forest Area in ha.	5395
Cultivable Area	
Net Sown Area in ha.	24140.79
Gross Sown Area in ha.	43439.63
Area sown more than once in ha.	19298.84
Area under Irrigation (Net) in ha	20526.5651
Surface Water	0
Ground Water	20526.57
Other sources	0
Season-wise Sown Area in ha	
Kharif	
sown	21656.7

Irrigated	925.9
Rabi	
sown	20922.9
Irrigated	20374.4
Zaid Rabi	
sown	860.0
Irrigated	860.0
Principal Crops	
Crop Type	Wheat, Bajra, Jau, Mustard
Oil Seeds	Mustard & Til
Pulses	Gram & other Pulses

Agriculture

Agriculture activity in the district is, by and large, confined to traditional kharif cultivation depending on monsoon rainfall and rabi cultivation is prevailing in areas where irrigation facilities are available. The major crops grown in the area are given in below table

Major crops of Jaipur District

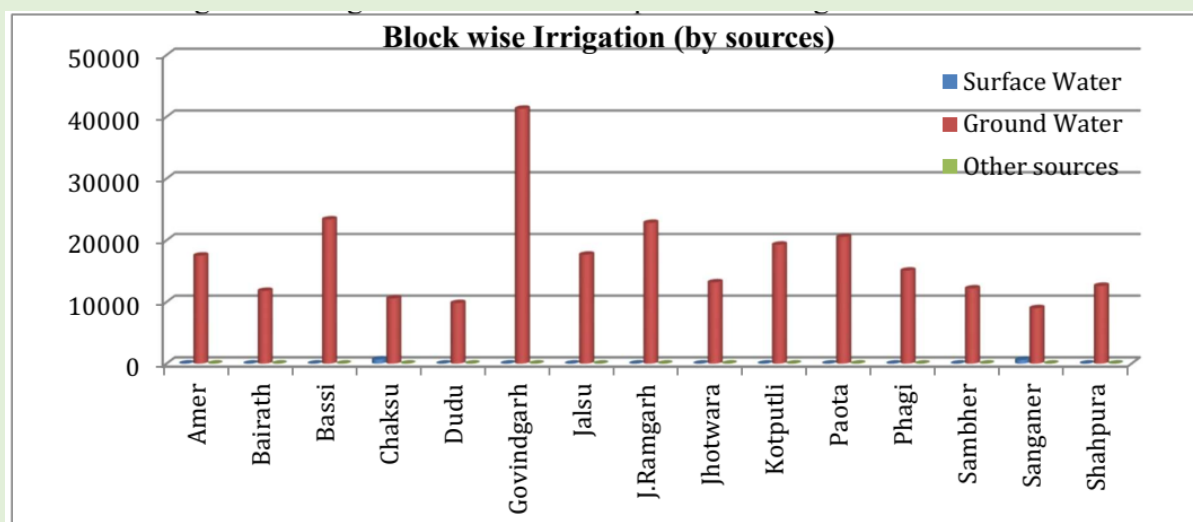
Food Grain	Bajra, Wheat, Jau
Cereals	Gram
Oil seeds	Rai & Mustard, Ground Nut, Taramira

Irrigation

In Paota Block, groundwater constitutes the primary source of irrigation, with wells serving as the predominant means of water extraction. The contribution of groundwater to total irrigation in the district is remarkably high, accounting for approximately 99.54% of the irrigated area. This water is primarily utilized through dug wells and tube wells, most of which are operated using electric power.

Out of total gross sown area of 9809.87 sq.km, only 3424.58 sq.km. (35%) area is gross irrigated. There are total 78859 utilizable wells 72 ponds, 57401 irrigation tubewells and 132381 pump sets in the district. Net and gross irrigated area as per source and number of sources of irrigation is given in the table and statistics of irrigation wells since 2019 are presented in below table

	Area in ha	Area in %
Net Irrigated area (based on sources	280330	100
Gross Irrigated area (based on sources)	342458	-
Area irrigated by GW in ha	279044	99.54
Area irrigated by SW (ponds) in ha	1286	0.46
Canals	0	
Other sources	0	
No. of Dug Wells	143423	
No. of Tube wells	57401	



Block wise Irrigation by Sources, Jaipur District

2.3 TERRAIN CHARACTERISTICS

TOPOGRAPHY

Physiography and Drainage

The Paota Block, located in the northeastern part of Jaipur district, exhibits a distinctly undulating to hilly terrain influenced by the Aravalli hill system. The area lies at an elevation ranging between 320 m and 420 m above mean sea level (amsl), with occasional hill ridges rising up to 700–750 m amsl. The general slope of the land is from northeast to southwest, guiding local drainage patterns toward lower plains.

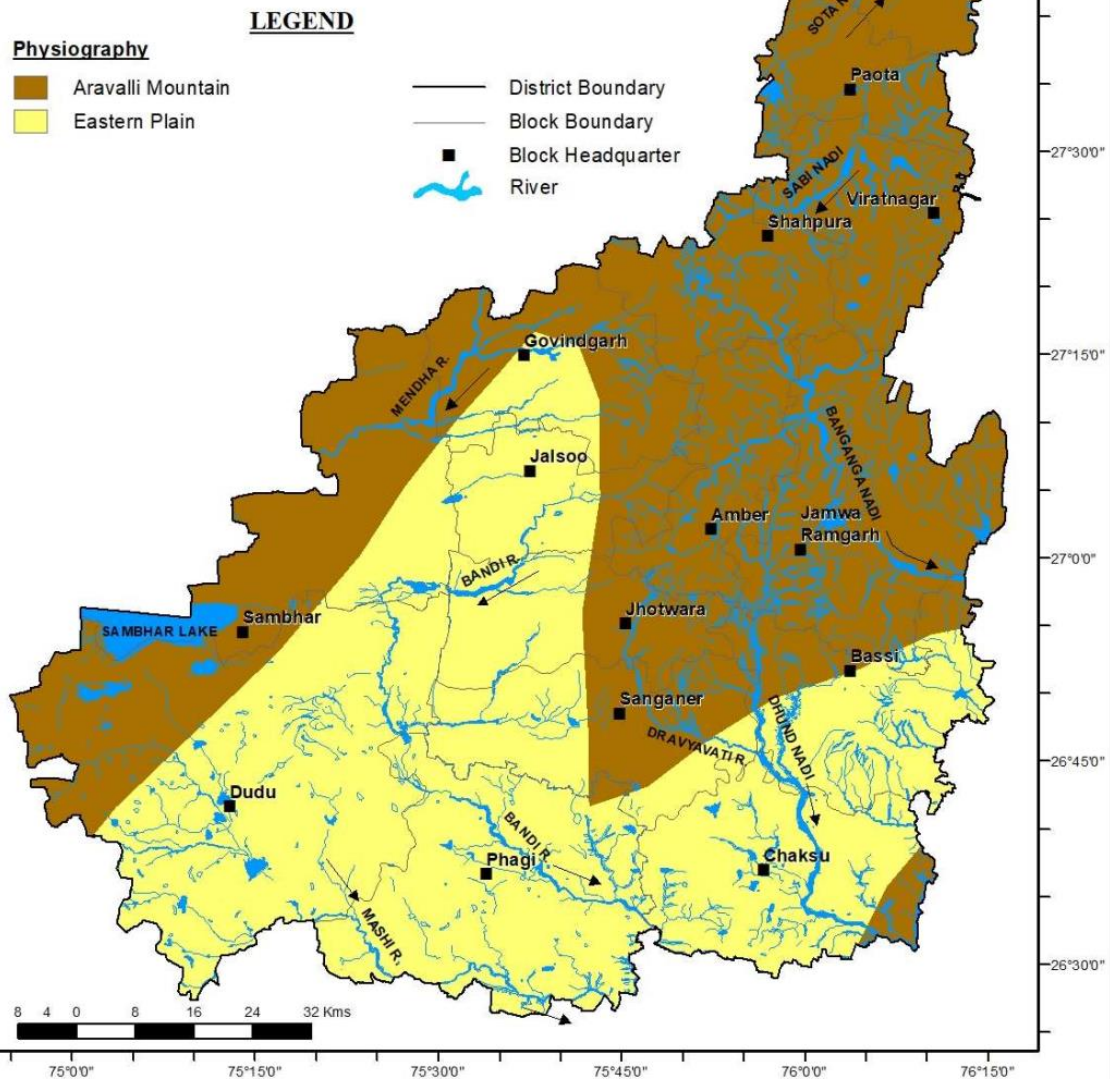
The northern and eastern sectors of Paota are dominated by structural hill ranges and ridges trending NNE–SSW, composed mainly of Delhi Quartzite and schist formations. These hills are narrow and elongated, forming escarpments of 100–200 m and creating a rugged micro-topography interspersed with rocky outcrops and shallow valleys. In contrast, the southern and central portions consist of gently undulating plains with 0–2% slope, suitable for limited agriculture and vegetation growth.

The region is prone to moderate to severe sheet and gully erosion, particularly along the hilly slopes and denuded uplands, whereas the low-lying plains show mild erosional features. The structural control of the Aravalli trends largely determines the landscape configuration and the pattern of soil deposition.

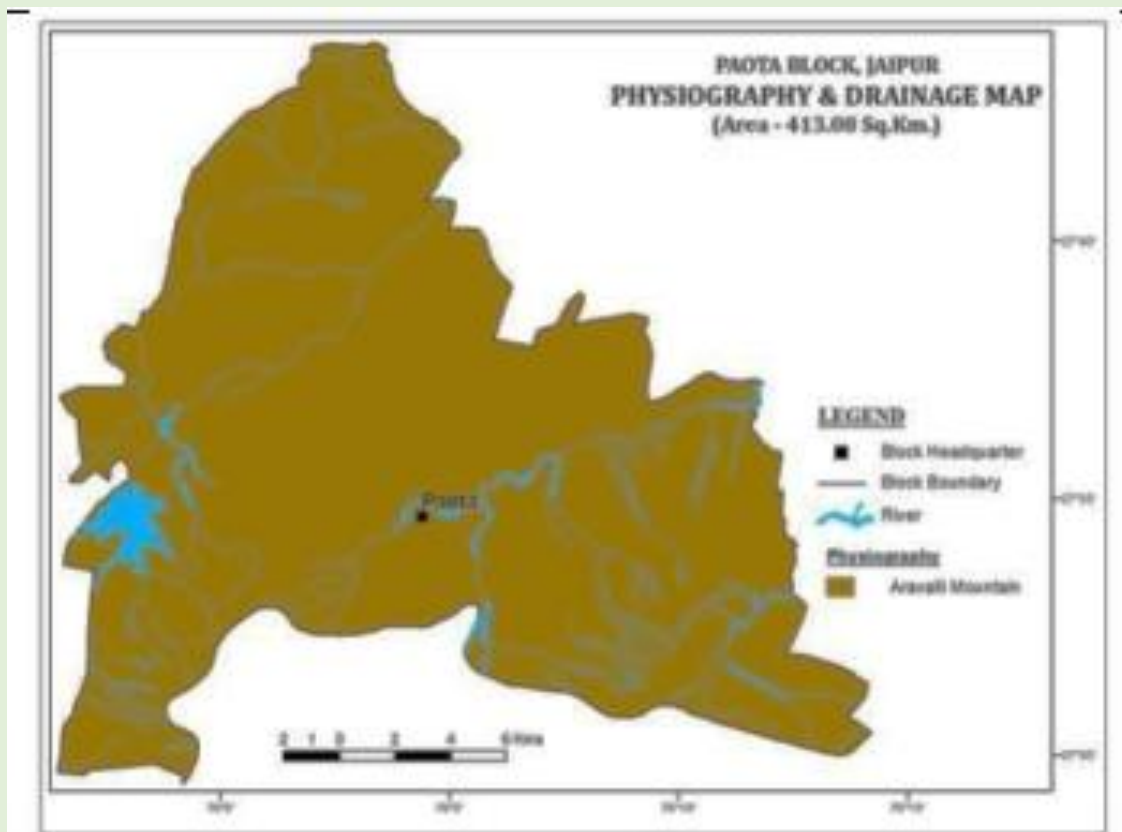
The drainage system of Paota Block is largely seasonal, characterized by ephemeral streams and nalas originating from the surrounding hills. These drainage channels flow southwestward and eventually merge with larger tributaries of the Banganga River system. Natural depressions and seasonal ponds (talabs) serve as important micro-watersheds for local recharge and biodiversity support during the monsoon season.

Overall, the Paota landscape represents a transitional zone between the rocky Aravalli uplands and the alluvial plains, supporting a mosaic of landforms that play a vital role in local hydrology, vegetation distribution, and habitat diversity. The area is drained by Sabi, Banganga, Bandi, Mendha, Mashi and Sota rivers and their tributaries which all are ephemeral in nature. Sota and Sabi rivers in the northern part of district flow northeasterly while south-westerly flowing Banganga river passes through Shahpura, Viratnagar and Jamwa Ramgarh blocks and contribute water to the famous Ramgarh lake from where it flows easterly to enter Dausa district. Mendha River in north-west portion of the district merges with famous Sambhar lake whereas Mashi River in the south-western part flows easterly.

JAIPUR DISTRICT, RAJASTHAN
PHYSIOGRAPHY & DRAINAGE MAP
 (Area - 11061.44 Sq.Km.)



Physiography and Drainage Network Map of Jaipur District

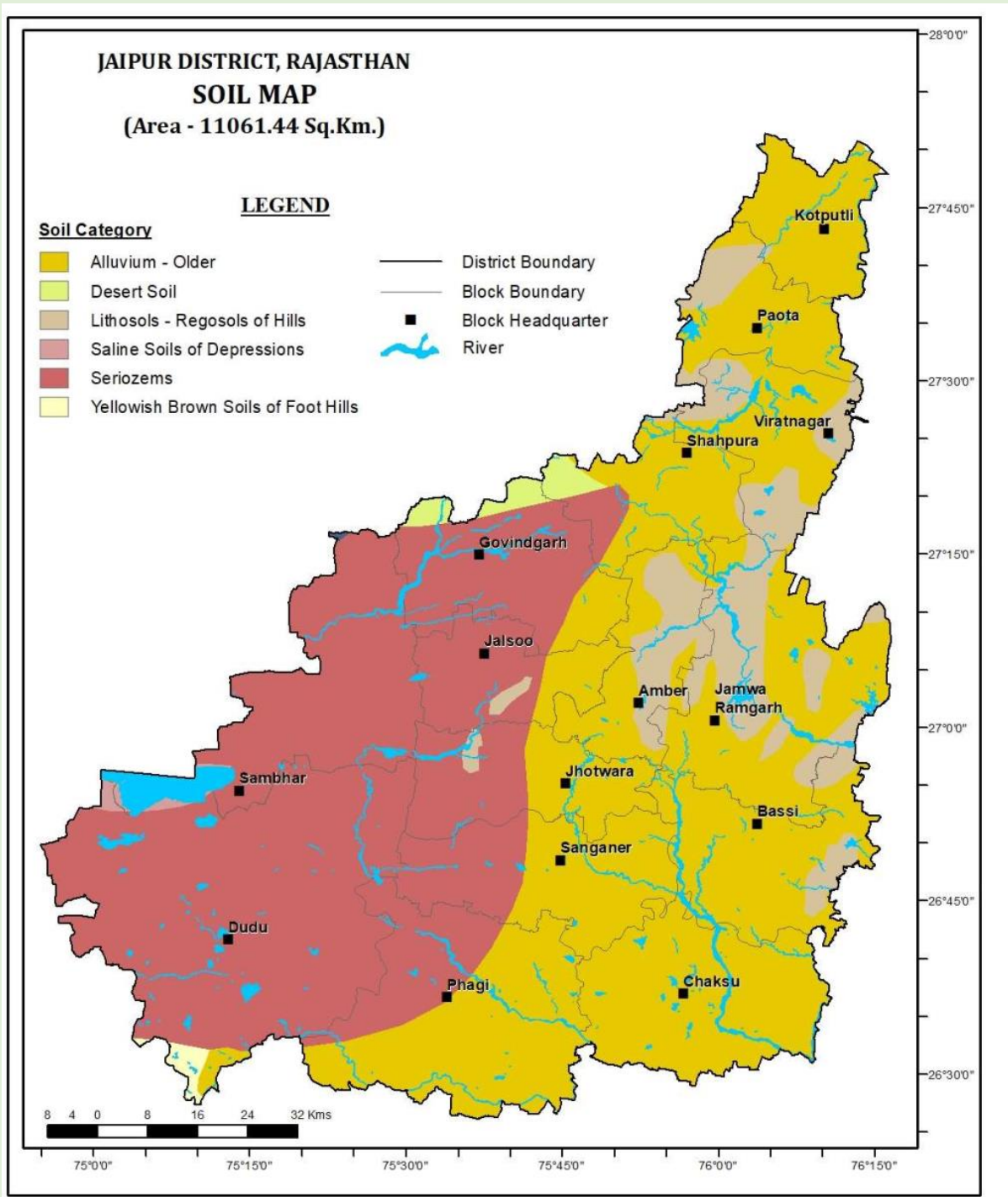


Physiography and Drainage Network Map of Paota Block

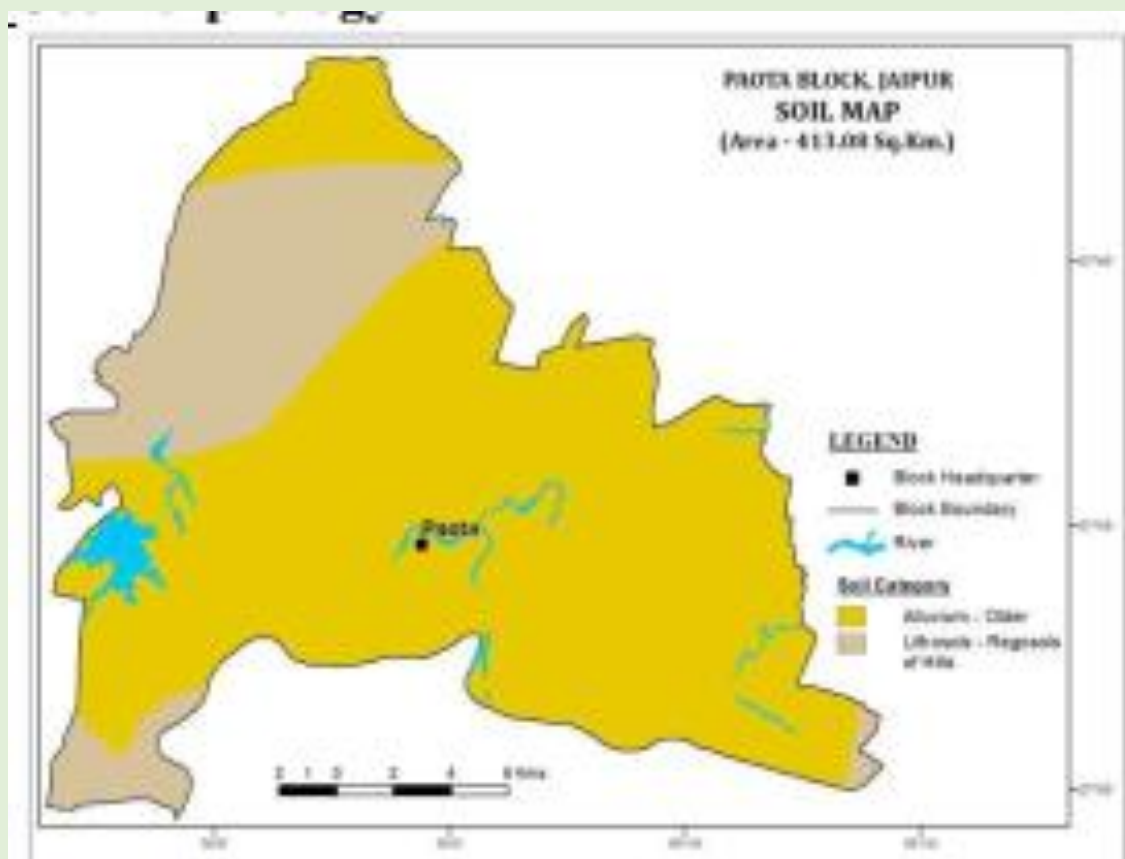
Soil

The major portion of the district is characterized by alluvial sandy loam soils, particularly in its eastern half. In contrast, the western region is predominantly covered by desert soils and serozem types, reflecting arid climatic conditions. The hilly tracts contain lithosols and regosols, while the foothill zones are dominated by yellowish-brown soils.

The spatial distribution of soil types within the district and the Paota block is illustrated in the figures below.



Soil Map of Jaipur District



Soil Map of Paota Block

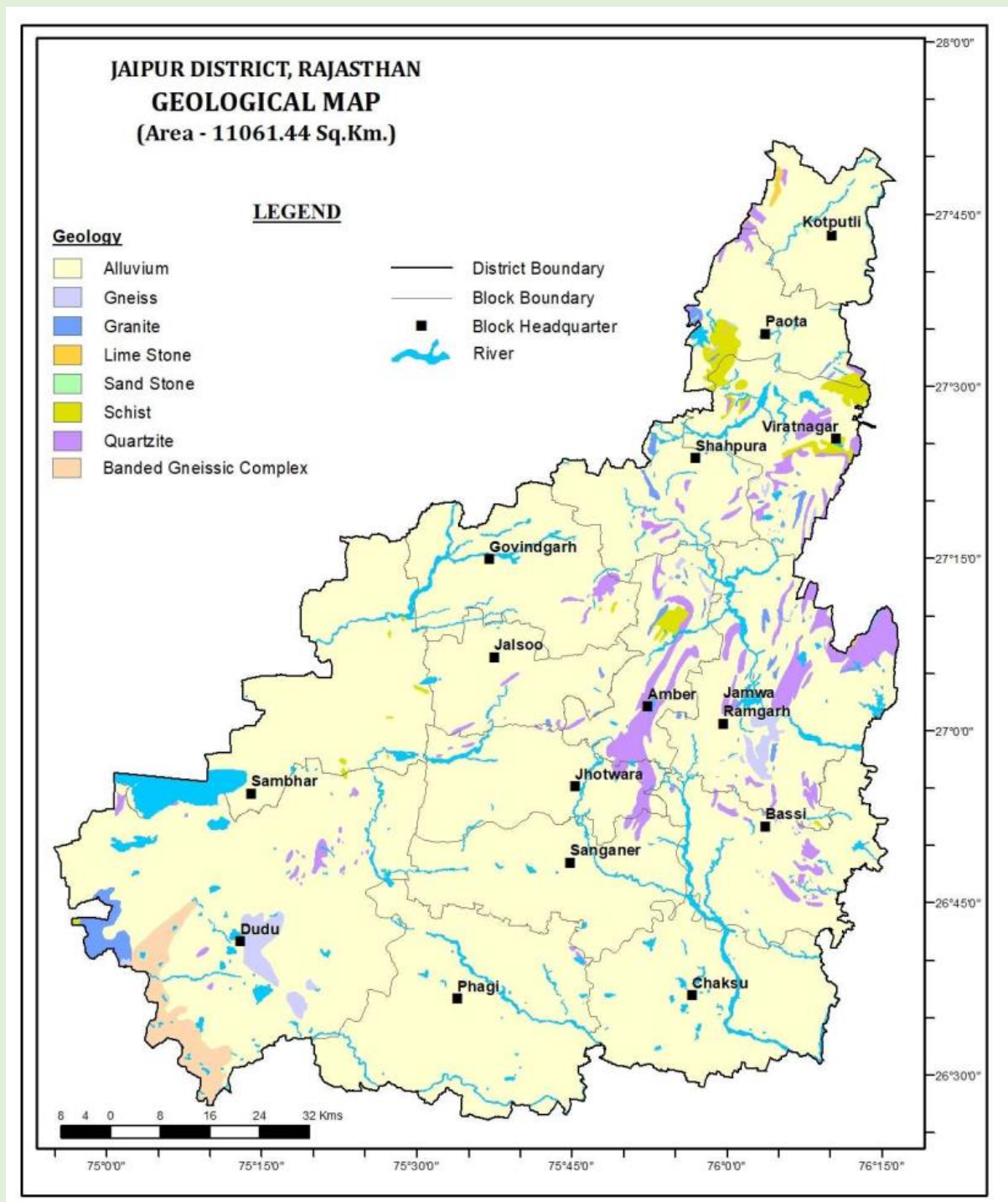
Soil fertility and crops:-

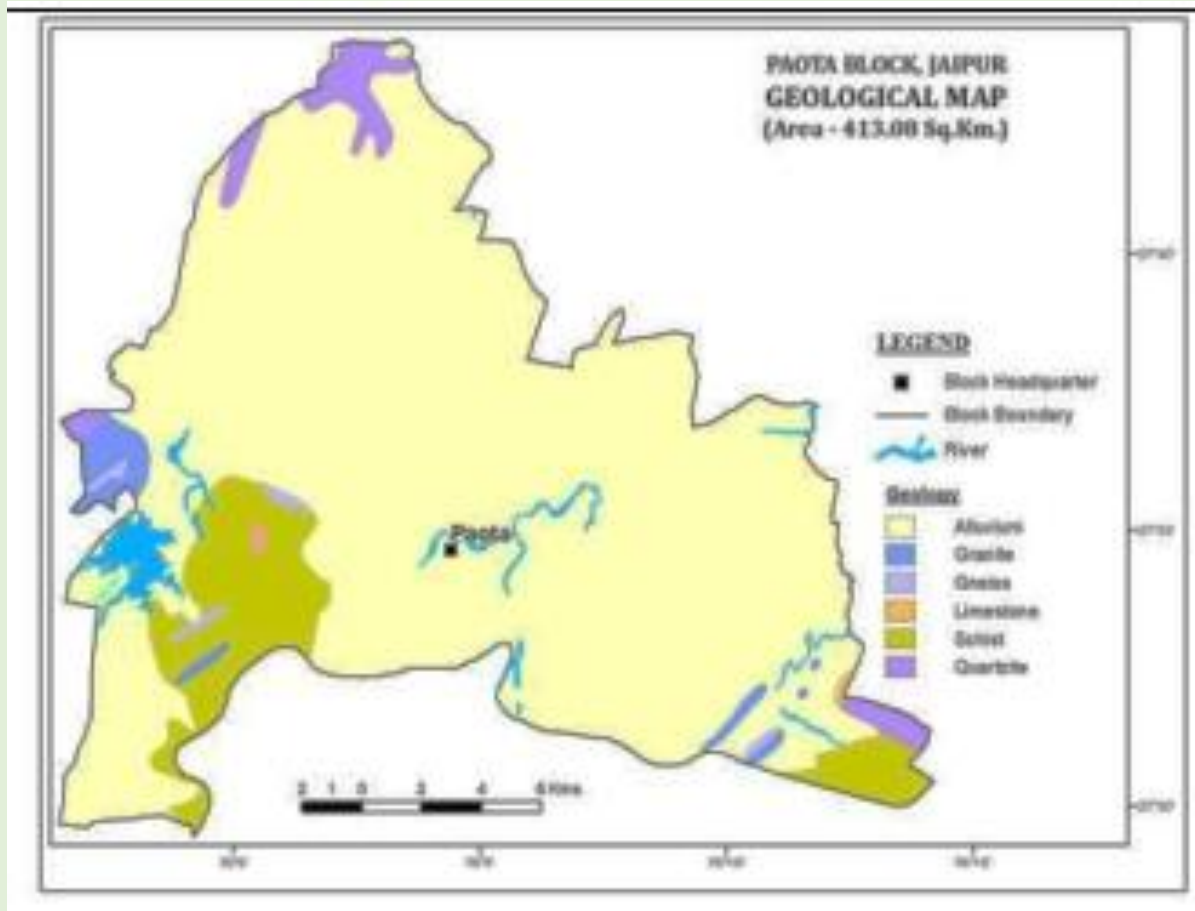
The amount of nutrients (nitrogen/phosphorus/potash) in the soil of this area is not the same. Generally, nitrogen is available in very less quantity in the soil. Whereas the availability of potash is medium and phosphorus is found in medium to high quantity. Phosphorus is found in high quantity in the soil of many of this area.

The fertility of the land varies over time due to natural processes and continuous cultivation. To maintain optimal soil fertility, the application of artificial nitrogen sources in the form of chemical fertilizers is often necessary. Additionally, potash-based fertilizers are required to supplement essential nutrients in the soil. It is important to regulate soil nutrient levels by addressing both deficiencies and excesses through appropriate management practices, ensuring sustained and balanced agricultural productivity.

Millet (*Pennisetum glaucum*) constitutes the primary agricultural crop in the area, while wheat (*Triticum aestivum*) is also cultivated as a major seasonal crop.

2.3.2. Geology, Rocks and Soil:





2.3.2.1 Geology and Rocks:

The Aravalli and Pre-Aravalli rock systems of the region represent some of the oldest geological formations in the world, dating back approximately 2.5 billion years. The area is characterized by a complex stratigraphic succession that includes the Delhi System and Post-Delhi System, comprising diverse lithological formations.

The Aravalli Range, extending in a northeast–southwest orientation across Rajasthan, is recognized as one of the oldest surviving fold mountain systems in the world. Despite extensive geological erosion and weathering over millions of years, it continues to exist as a prominent mountain chain, preserving invaluable records of the Earth's early tectonic history. mountain range was mostly levelled during the Paleozoic period, and later restored during the Mesozoic

period and the effect of this uplift is manifest in exceptionally sharp local bends and faults along the Great Boundary Fault, which is traced for about 480 km.

Across the Aravalli range, great variations are observed in the degree of metamorphism of the three systems which constitute the Aravallis, namely the Aravallis, the Rhyolas and the Delhi. The Aravalli System and the two Proto-Aravalli Groups, namely the Bendendanesi Complex and the Bundelkhand Gneiss, are older than the Aravallis, which impose a clear erosional unconformity on them. The junction of the two Proto-Aravalli Groups is hidden at great depths and the relationship between the two is not clear. Nevertheless it can certainly be said that the Bendegani Complex and Bundelkhand Gneiss are the oldest rocks in India on which the Aravallis and subsequent rock formations and structures are formed. Rajasthan Geological sequence is a very complex rock formation in a solid geological structure.

The Aravalli Group extends up to a depth of 3000 m and mainly consists of quartzite, conglomerates, shales, phyllites, mixed gneiss.

There is a large thickness of argillaceous gneiss in the Aravalli Group. Metamorphism has taken place in these rock formations and it is clearly marked from east to west. In the east you find gneiss and towards the west you pass through slates, phyllites and fine mica schists with garnet and magnetite. In some areas there has been alteration with acidic granite resulting in mixed gneiss. Generally it is observed that igneous intrusions other than white quartz veins are not particularly common in the Aravallis.

The northern exposures of the Aravallis are found in South Alwar. The bedrocks occur as anomalies which are irregular and extend southwestwards to the plains of Gujarat. They cover a large part of Mewar and Ajmer-Merwara. Where they are interrupted by irregular anomalies of the full-Aravalli gneiss. The other rocks of the sequence are mainly arkose grit and quartzites which represent the basal beds. The Bundelkhand gneiss or gneiss mixtures with an eroded anomaly configuration are overlying the Bundelkhand gneiss or gneiss mixture. Intercalations of granitic material are also seen in the crystalline and mixed gneiss. Gneiss is extensively developed in this group and its various types characterise the group.

The Raylo Range occurs in the lower middle section of the Aravalli system and is geologically associated with the Delhi Supergroup. The junction between these two formations is characterized by distinct erosional features and structural irregularities. The Raylo Range has been differentiated from the Delhi Group and recognized as a separate geological unit. The predominant rock type of this range is white, crystalline limestone with an average thickness of approximately 612 meters. Notably, the renowned marble deposits of Makrana (Nagaur), Andhi (Jaipur), and Tahla (Alwar) in Rajasthan are associated with this geological formation. A very variegated type of limestone is found in almost complete sequence near Ras in the south-west. The rocks are expressed for about 80 kilometers in a width of about 1.6 kilometers. The main varieties are: - crude white calcite, marble, diopside and white mica interlayered with fine blue-grey sandy limestone.

The older rocks of Rajasthan have undergone more intense folding and igneous differentiation and these rocks differ from the rocks of the same age in other parts of India in these characteristics. In Rajasthan, they are known as Delhi Group.

(c) There is no significant lithological heterogeneity within the local formations between the Delhi Supergroup and the Aravalli Group. The sequence is represented from the northeast near Alwar to the southwest. The Delhi region is primarily underlain by sedimentary deposits resting upon Aravalli schists, Proterozoic gneisses, and granitic formations.

The distribution of the above rock groups between Ajabgarh and Alwar range is according to the succession in Jaipur and Alwar. The Alwar range is not uniform in its entire structure and is well developed in north-south whereas it almost disappears in the middle. In the southern part of the contour where the Delhi range is on the Aravallis, it is fine grained quartzite rocks with intercalations of biotite schist.

In the lower part of the Ajabgarh Range a large thickness of biotite schists intercalated with pegmatites and aplites occurs in large walls and veins. The least metamorphic state observed in these rocks is that of phyllites. A mixed gneiss fractionation from phyllites and biotite schists is also observed. These large-scale facies of pegmatites and aplites are formed through the alternation of dark silicate minerals, such as calc-schist bands and foliated hornblende or

amphibole layers, with lighter-colored silicates, including biotite, enstatite, diopside, and feldspar. The Delhi is interpenetrated by slabs and walls. In the south, siliceous biotite limestone forms a long plateau which starts near Beawar and extends to Mewar in the south-west. The Delhi rocks are comparatively thinner and less metamorphosed in Mewar.

2.3.2.3 Mineral sources:

Many types of important mineral wealth are found in Sikar district, the sale of which gives the state a lot of revenue every year. According to the information received from the Mineral Department, the following types of minerals are found:-

(a) Major minerals:

- (1) Feldspar**
- (2) Quartz**
- (3) Limestone**
- (4) Dolomite**
- (5) Calcite**
- (6) Silica sand**
- (7) Iron**
- (8) Uranium**

(b) Minor minerals:

- (1) Masonry stone**
- (2) Limestone (burning)**
- (3) Marble**
- (4) Brick clay**
- (5) Kankar clay**
- (6) Granite**
- (7) Quartzite**
- (8) Fuller's earth**

Minerals of Jaipur District: A Survey Overview

The mineral resources of the Jaipur district play a significant role in the industrial, social, and economic development of both the district and the State of Rajasthan. The District Survey Report (DSR) identifies the mineral wealth as a key objective and focuses on minor minerals, particularly those used as construction materials.

The main minerals mentioned as available in the district include Copper, Dolomite, Iron, White Marble, Glass, and Silicon.

Overview of Minor Minerals

The DSR, which focuses on minor mineral mining activity, lists the district as rich in the following minerals:

- **Masonry Stone**
- **Marble**
- **Granite**
- **Lime Stone**

Note: Limestone (Cement Grade) and Limestone are specifically mentioned as minerals found.

- **Silica Sand**
- **Quartz**
- **Feldspar**
- **Mica**
- **China Clay**
- **White clay**
- **Calcite**
- **Soap Stone/Dolomite**
- **Industrial Quartzite**
- **Slate stone**
- **Sandstone (as building Dimensional and decorative stone)**

Minerals of Jaipur District: An Expanded Survey Overview

The mineral resources of the Jaipur district are vital for the industrial, social, and economic development of the region and the State of Rajasthan. The District Survey Report (DSR) identifies the mineral wealth as a key objective and provides comprehensive details on the deposits found.

Main Economic Minerals

The report explicitly lists the following as the main minerals available in the Jaipur district:

- **Copper**
- **Dolomite**
- **Iron**
- **White Marble**
- **Glass**
- **Silicon**

Minor Minerals and Construction Materials

Jaipur district is notably rich in minor minerals, many of which are construction and dimensional stones. The DSR lists an extensive array of these, including:

- **Masonry Stone**
- **Marble (including Dolomitic marble)**
- **Granite**
- **Lime Stone (including Cement Grade Limestone)**
- **Silica Sand**
- **Quartz**
- **Feldspar**
- **Mica**
- **China Clay**
- **White clay**
- **Calcite**
- **Soap Stone/Dolomite**

- Industrial Quartzite
- Slate stone
- Sandstone (used as building dimensional and decorative stone)

Beyond the commercially mined deposits, the district's geology reveals the presence of several accessory minerals within the rock types of the Delhi and Bhilwara Supergroups:

- Granite and Pegmatite (Intrusive)
- Amphibolite (Intrusive)
- Quartzite and Schists
- Sericite, Muscovite, Biotite, Tourmaline, and Magnetite are all subordinate constituents found in the felspathic quartzite rocks of the Alwar Group.

One of the finest varieties of China clay occurs in the regions of Bushara, Asthal, Fatehpura, Kishorepura, Khelno, Rasana, Sonarupa, and Torda. The clay is predominantly white to milky white in colour, although occasional reddish, yellowish, or brownish staining is observed due to the presence of iron oxides and other impurities. The clay content ranges between 39% and 61% by weight, with a water of plasticity value of approximately 34%, indicating good workability and suitability for industrial applications.

2.3.3 TERRAIN:

The topography of Jaipur district is undulating in broad sense with largely even in the central and western parts but occasional hills in the east and north. The general topographic elevations in the district are between 300 m to 400 m above mean sea level. The map shown in figure 6 depicts the physigraphic and drainage network of the district. The area is characterized by fairly open undulating plain with hillocks in the north and north eastern part is having low land topography with 0 to 1 percent slope. The hills and uplands have slope of 15% to 20%. The district is characterized by sheet and gully erosion of moderate to severe order and the north-north western part of district is characterized by mild erosion of moderate order. The structural hills constitute conspicuous topography in the area. In the north and north-eastern part of the district,

the terrain is characterized by structurally controlled NNE-SSW trending ridges comprising of Delhi quartzite. The narrow elongated hills attain elevations to the extent of 750 m amsl as a result escarpments of 100 m to 200 m are widely seen in the hilly regions which trend NE-SW. Hills are predominant in Jamwa Ramgarh, Shahpura, Viratnagar and Jaipur whereas, the topography of rest of the district is undulating with occasional hills only.

2.3.4 Climate:

Jaipur, the capital city of Rajasthan, is located along the eastern margin of the Thar Desert, within a semi-arid region of northwestern India. Its considerable distance from both the Arabian Sea and the Bay of Bengal contributes to a predominantly continental climate, characterized by high temperature variability, low humidity, and limited rainfall. During monsoon period from July to September and occasionally during rest period of the year in the wake of western disturbances humidity, cloudiness and rainfall activities increase. The year is broadly divided into four seasons namely - the winter season starts from mid December to mid February, summer or hot weather season from March to May, monsoon season spread from end of June to mid September, and October and November are known as transit period or post monsoon period. The summer in Jaipur are very hot while winters are extremely cold. The maximum temperatures hover at 40 °C to 47 °C in May. Heat waves occur for a few days during the season, when the daytime temperature rises by approximately 4–6 °C above the normal average. The winter minimum temperatures remain about 4 – 9 °C and fall below zero deg. Or so when chilly wind (northerly) blow from Himalayan region. Mist and fog occur in the morning hours after passage of western disturbances. The minimum temperature as low as -2.2 °C was recorded on 16th January, 1964 and 31st January, 1905. The Maximum temperature's upward surge starts from April and reaches at peak in the month of May. The down ward trend in minimum temperatures commences in September and continues up to January. January is the coldest month. Rainfall increases from the month of June when thundery activities start and July and August are the rainiest months. Monsoon withdraws in the middle of September. Rainfall decreases sharply in October and November. These are the transit months.

The climate of this region in eastern Rajasthan is very hot with hot summers, scanty rainfall and short winters. According to meteorologists, the climate falls under the semi-arid climate zone. Mainly the seasons are divided as follows:-

1. Autumn

2. Summer

3. South-west monsoon

4. Retreating monsoon season

But according to ancient Indian knowledge (Hindi Samvatsara) the year is divided into seasonal cycles of 2 months each as follows.

Sr. No.	Season	Months as per Indian Calendar (Samvatsara)	Months as per English Calendar
1	Spring	Chaitra-Baisaakh	March-April
2	Summer	Jyestha-Ashadha	May-June
3	Rain	Shravan-Bhadrapada	July-August
4	Autumn	Ashwin-Kartik	September-October
5	Hemant	Margashirsha-Paush	November- December
6	Winter	Magh-Phalgun	January-February

The region experiences a hot and humid wet season characterized by partly cloudy conditions, followed by a warm and predominantly clear dry season. Throughout the year, temperatures generally range from approximately 47°F to over 109°F, reflecting a broad thermal amplitude typical of semi-arid environments. The best time of year to visit Bucharra Main Conservation Reserve for hot-weather activities are from early April to early May and from mid-September to late October

Annual march of Meteorological parameters

The annual march of maximum/minimum temperatures humidity, rainfall are given in Fig. 2 to Fig. 19. These show that maximum temperatures are at their peak in the month of May and June. These parameters start falling in the month of July and further falls in the month of August due to persistent rainfall. But after withdrawal of monsoon in the month of September these again show a rising tendency in the month of October. From November onward, both maximum and minimum temperatures gradually decline, reaching their lowest levels by January. Afterward both these temperatures start rising and continue their march up to the month of May. The lowest mean maximum/minimum temperatures are realised in the month of January. The highest mean diurnal variation (14 to 15 °c) in temperatures is observed in all months except the monsoon season where it is in the range of 7 to 10 degree Celsius (Fig. 4).

The lowest average monthly rainfall occurs in December, while the highest is recorded in July. July and August together constitute the peak monsoon period, receiving the majority of the annual precipitation. From October onward the rainfall decreases drastically which continues up to the month of April. From May onward the rainfall slightly picks up and reaches at its peak in the month of July. June to September are the main rainy months and this period is referred as the “ Monsoon Season “. The period from March to May is characterized by dry and hot weather conditions, commonly referred to as the summer season. Temperatures are very low during the period of December to February, and is called “ Winter Season “. October and November months are the transit months between Monsoon and winter season. This period is referred as “Post Monsoon Season “.

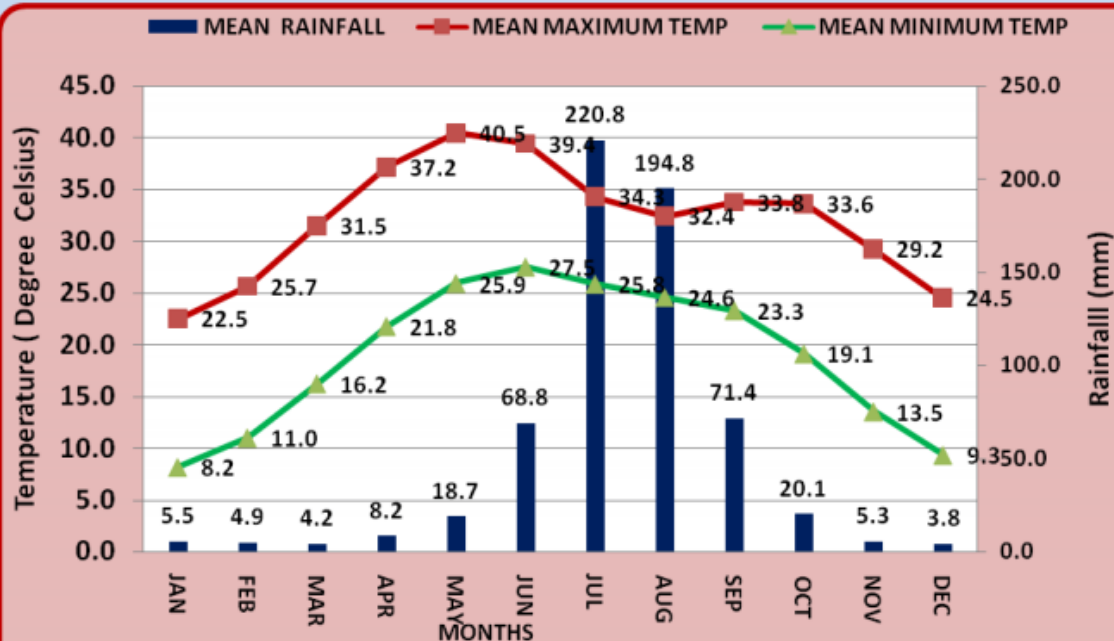


Fig.2. Monthly Normal Maximum & Minimum Temperatures and total Rainfall

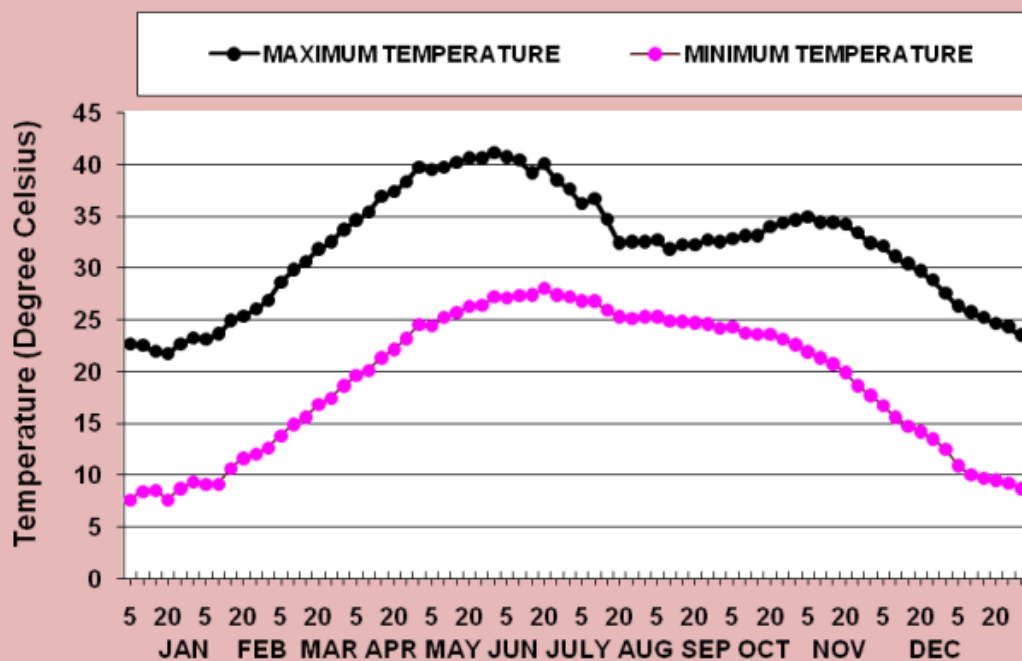
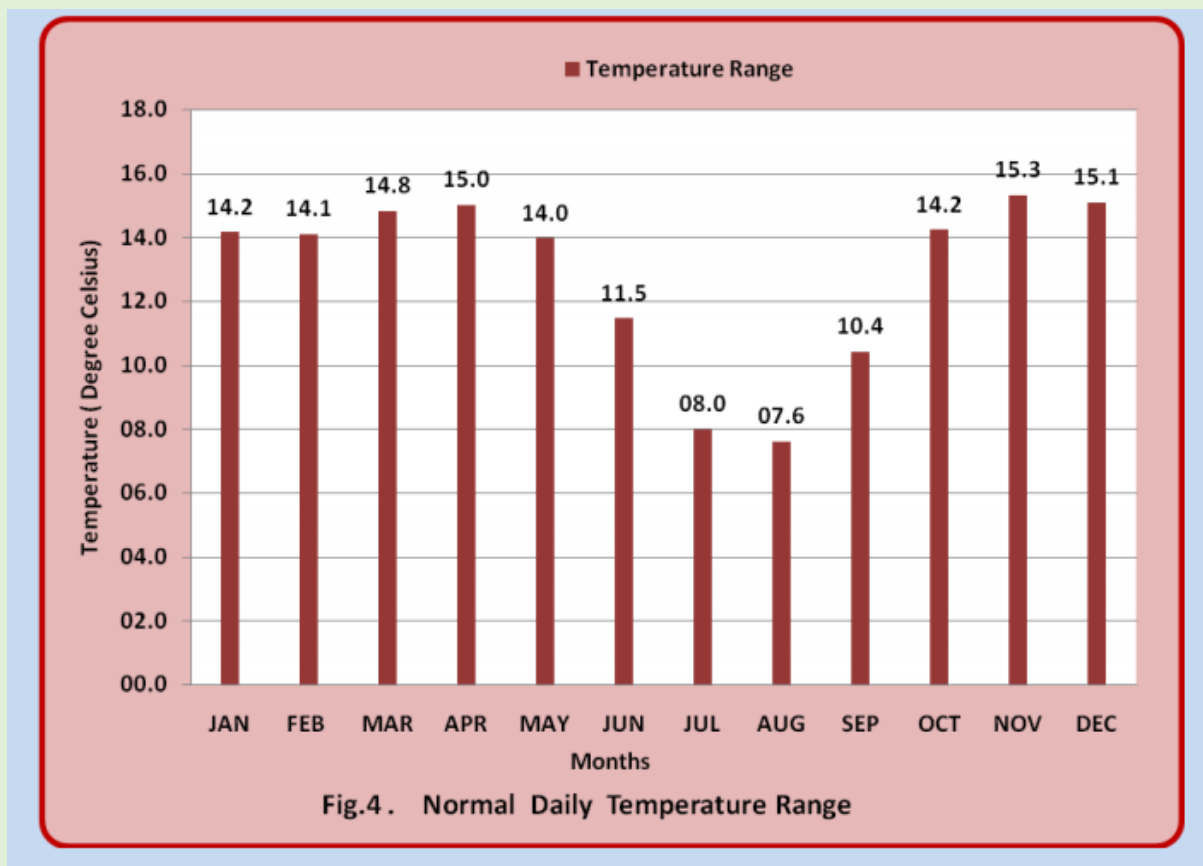


Fig.3. Daily Normal Temperatures Annual



The lowest humidity is observed in the month of April. May onward humidity picks up and increases gradually to have its highest values in the month of August. After this, it decreases slowly up to the month of November. But again shows an increasing tendency for two months namely December and January . From next month onward the humidity again shows a deceasing trend and attains its lowest value during the month of April (figures 5 &6).

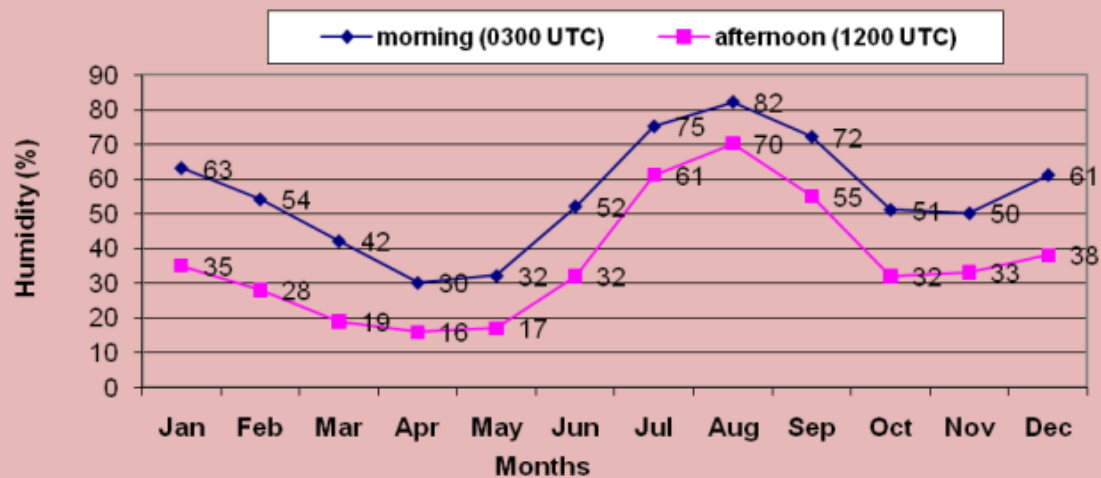


Fig.5. Monthly Normal Relative Humidity

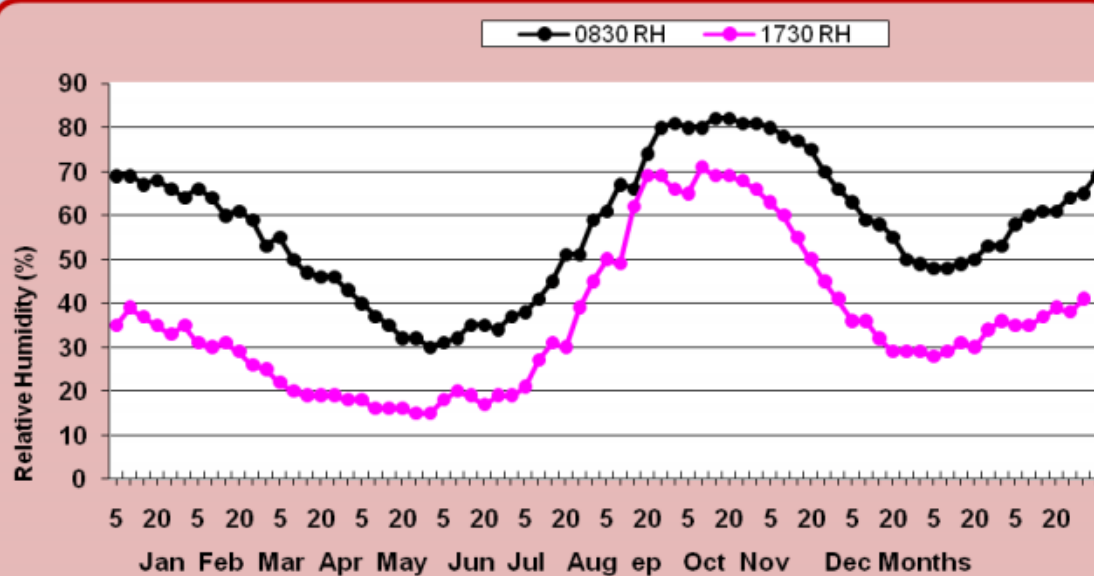
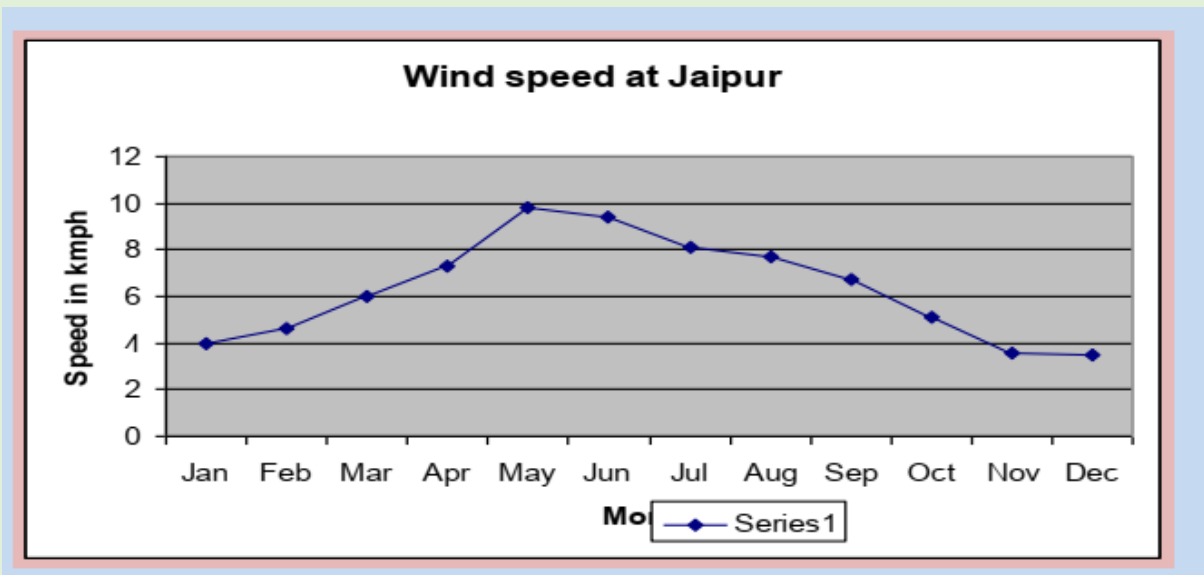
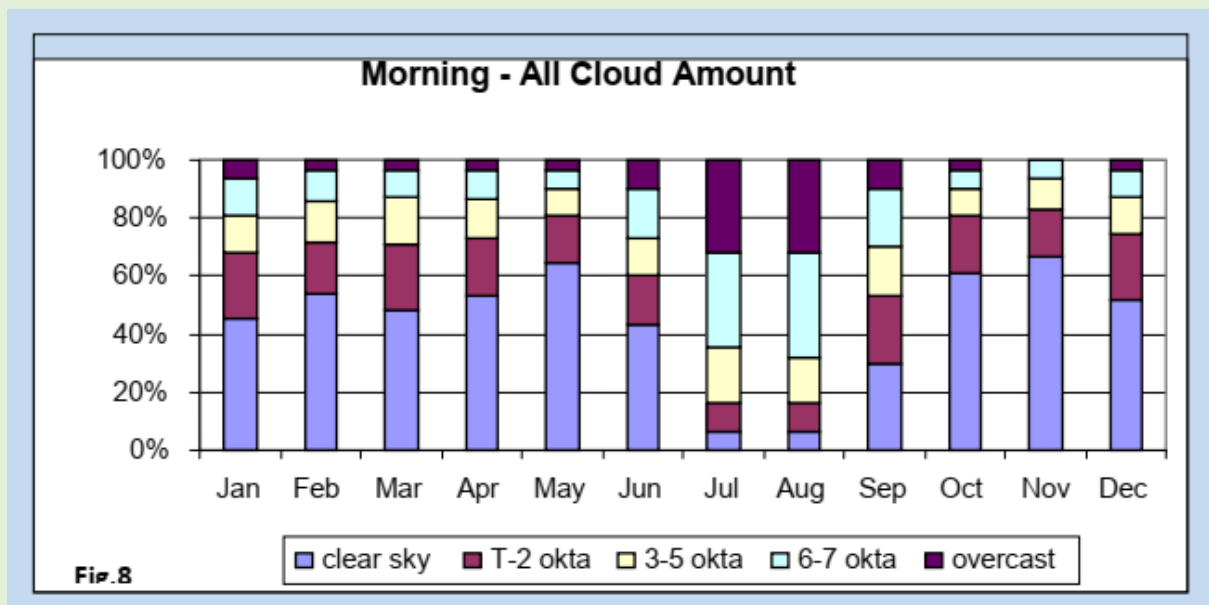


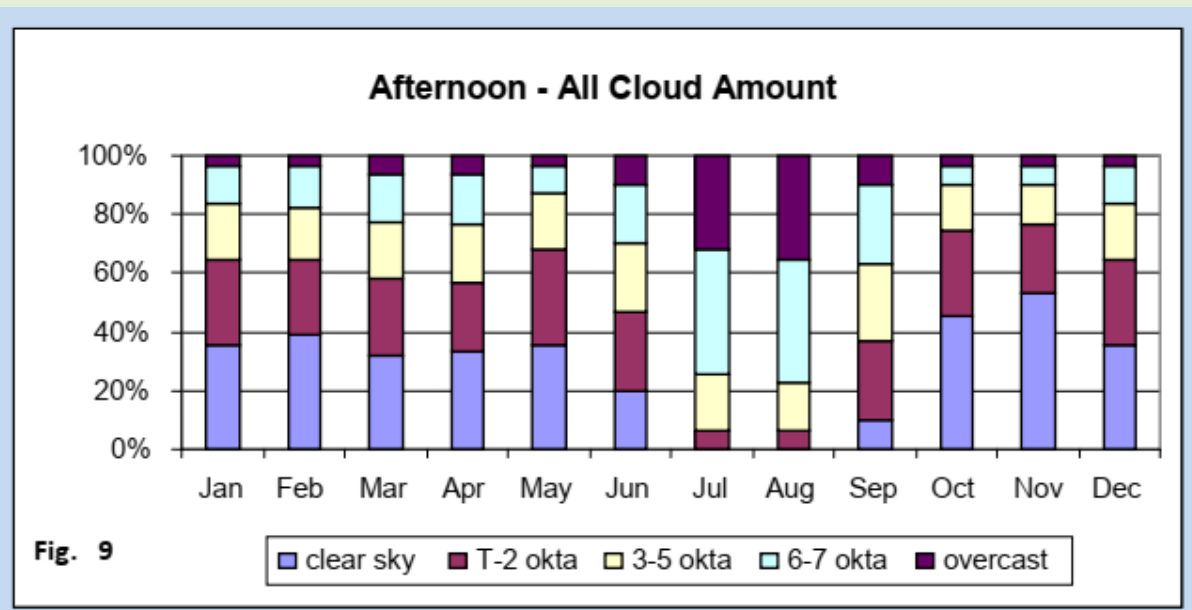
Fig. 6. Daily Normal Relative Humidity

Generally, the average monthly wind speed varies in between 3.0 to 10.0 kmph during the year. But in summer, there are dust storms, dust -raising winds prevailing and wind speed reaches up to 10 kmph (Fig. 7).Maximum wind speed recorded at Jaipur is 113 kmph on 31 May, 2001.



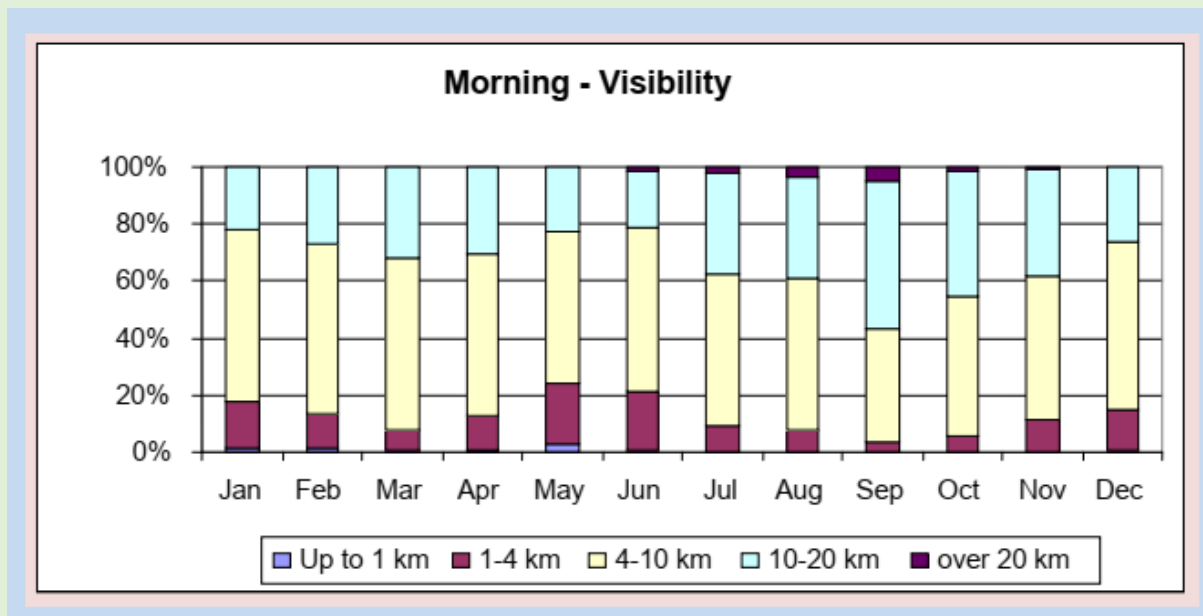
Probability of mainly clear sky during winter and post monsoon season is 70 to 80 %. While the chances of overcast during these seasons are about 7 to 8 % only. Chances of 5-6 oktas clouds or overcast sky during July and August are more than 70% (figures 8 & 9).





Visibility

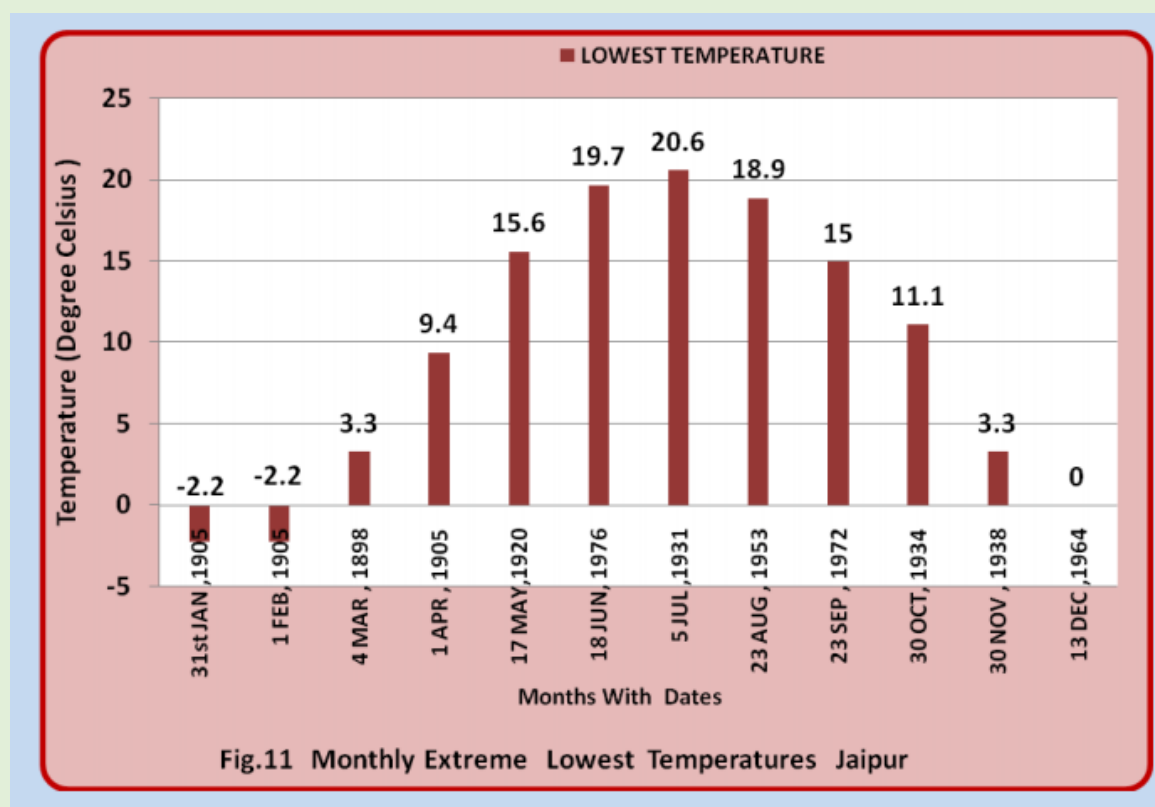
Chances of poor visibility (visibility < 1 km) during morning hours is more in the months of, January, February and May in comparison to rest part of the year. During 2nd half of the year, probability of visibility more than 4 km during morning hours is maximum (> 90%) (Fig. 10)

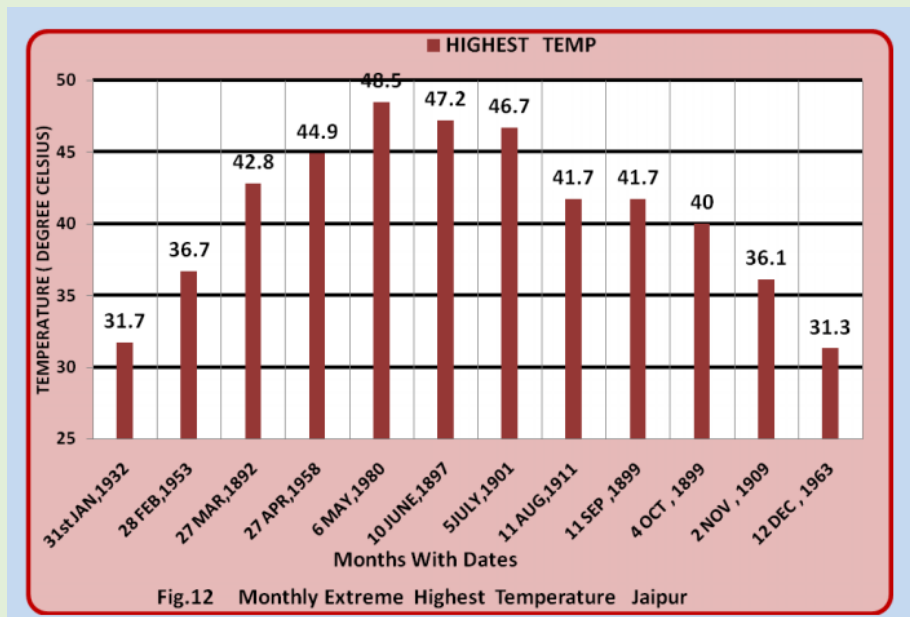


Probability of visibility in different range

Extreme Temperatures

Extreme temperatures are shown in Fig.11 and Fig.12 . These diagrams show that during winter months the lowest temperature even comes down below the freezing level (Zero degree Celsius). On 31st January, 1905 and 1st February 1905 it was recorded -2.2 °C During the summer months, the maximum temperature may rise to around 48 °C, indicating that the region experiences extremely hot summers, while winters are equally severe with very cold conditions. But practically, the duration of cold climate is short (maximum three months) .The highest ever recorded temperature over Jaipur has been observed 48.5 °c on 6th May, 1980. Further, out of 12 months, the highest temperatures have been recorded 40 °C or above during 8 months (March to October) which reflects the warmer climate for longer period over the city. The lowest extreme temperatures shows an increasing tendency from January to July and a reverse tendency from August to January. On the other hand the highest maximum temperature on monthly scale shows a decreasing tendency from July to December while the reverse tendency from January to May.





Monthly normal and highest total rainfall are given in Fig. 13 .The highest monthly rainfall (957 mm) has been observed in the month of July during 1981 which is about 350% more than of the normal (201mm). The monthly highest rainfall during winter and post monsoon months are of the order of 55 to 77 mm . 24 hours highest rainfall values during various months are shown in Fig. 14 . Which shows that 326 mm rainfall was realised as the highest 24 hours rainfall over the city during the year 1981 on 19th July. This is also the ever recorded highest 24 hours rainfall. The one day highest rainfall during winter months are of the order of 40 to 60 mm only.



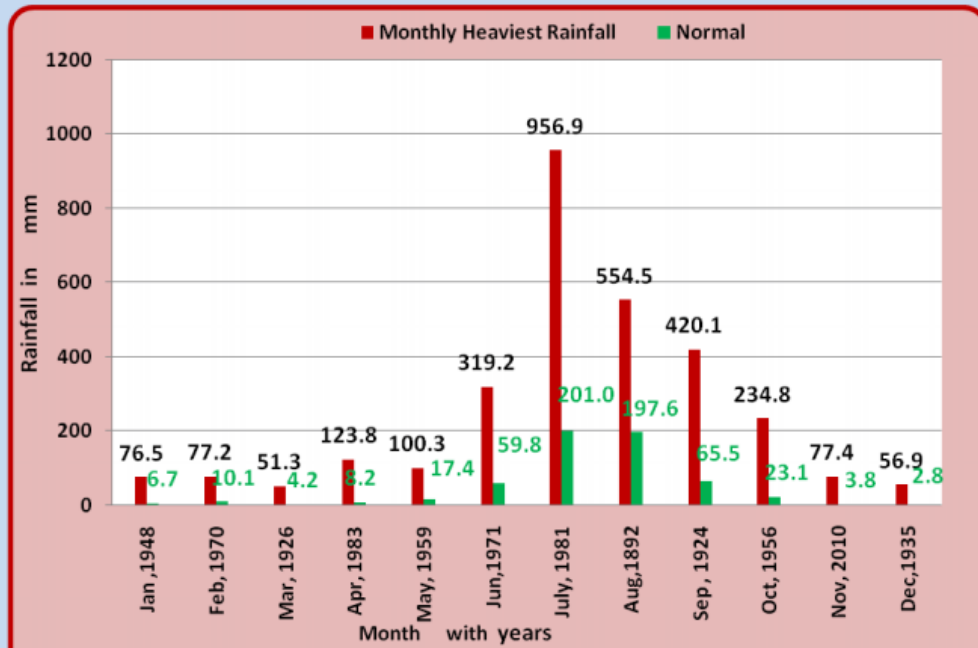


Fig.13 Monthly Heaviest and Normal Rainfall

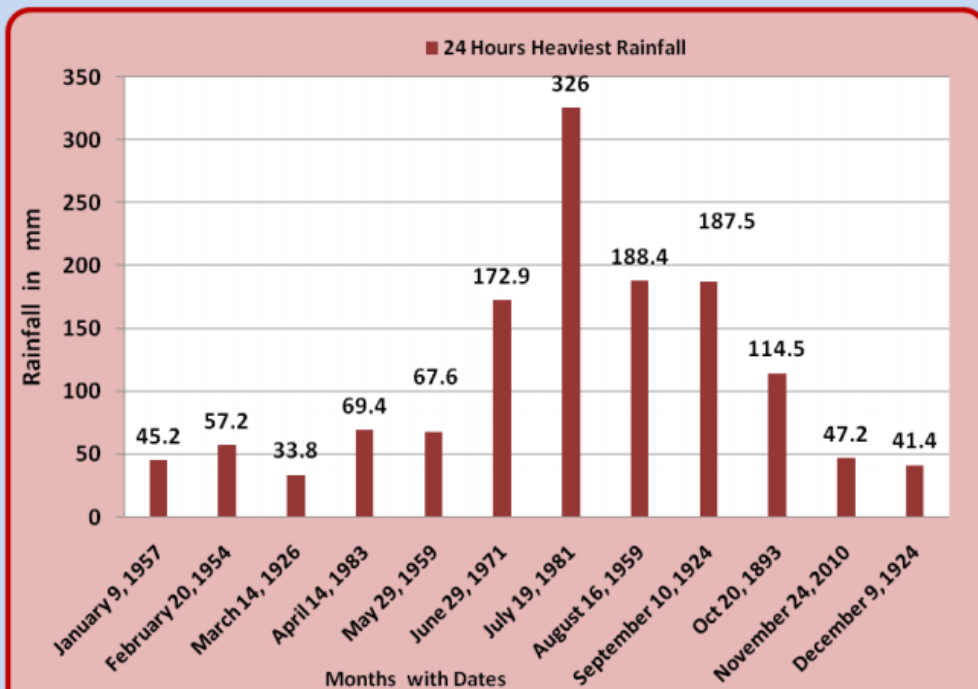
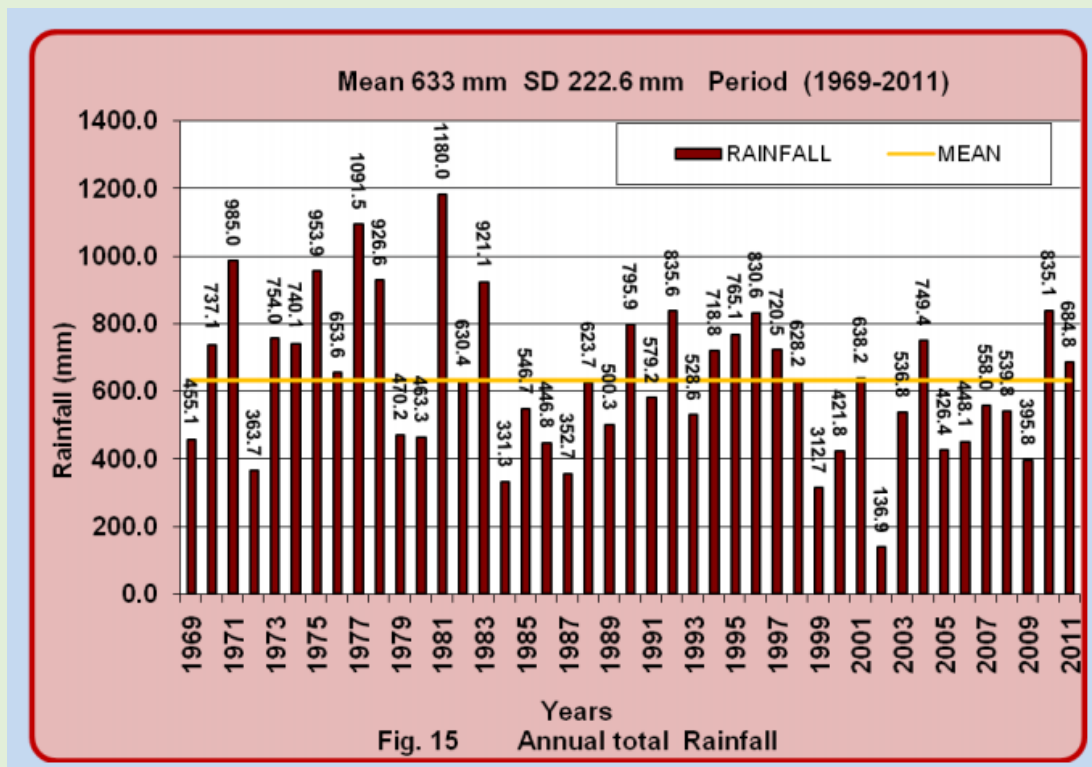


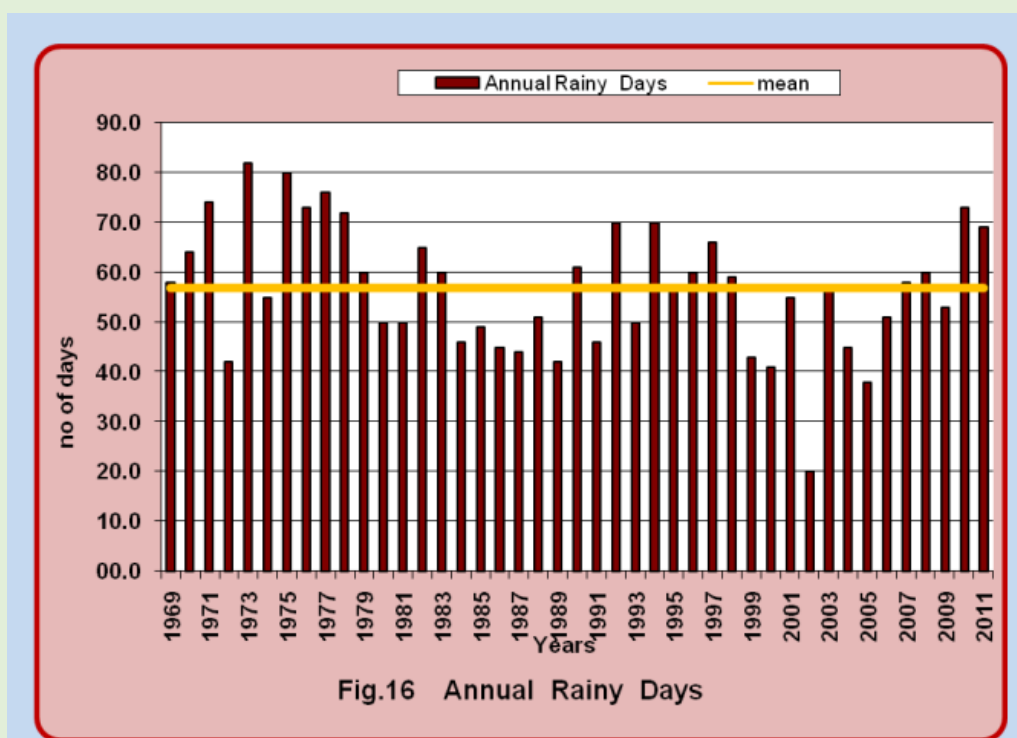
Fig.14 24 Hours Heavy Rainfall

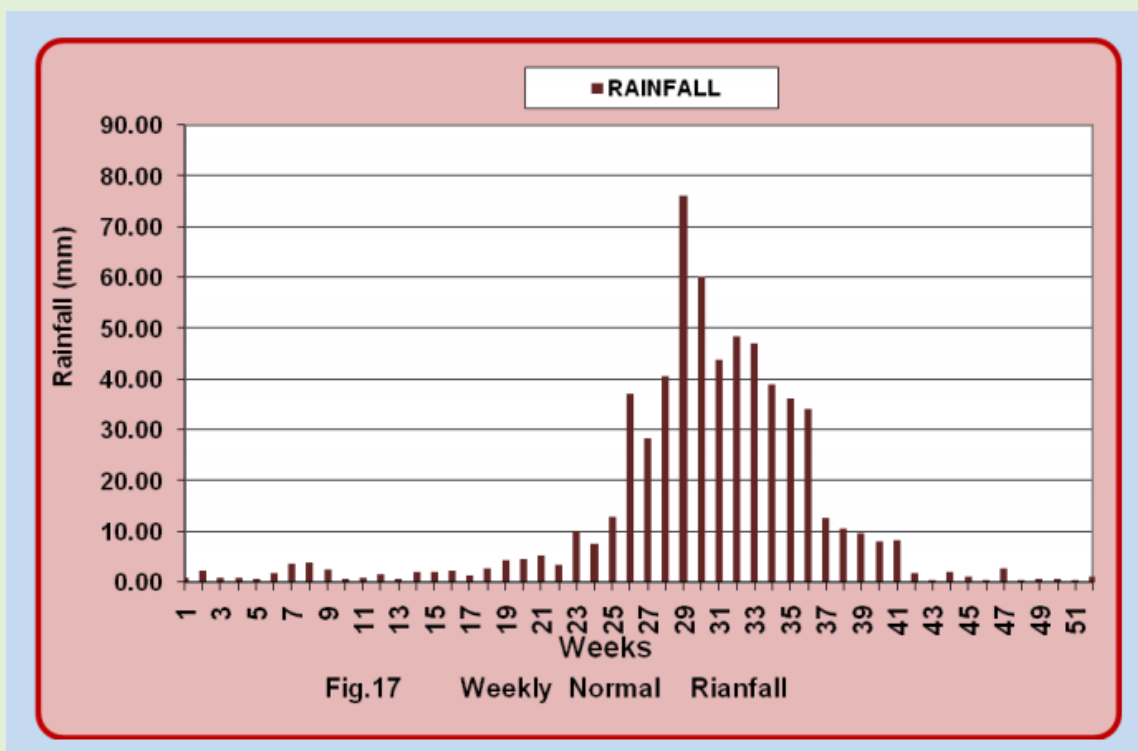
Annual total rainfall variation during the period 1969-2011 is shown in Fig. 15 which shows that the average annual rainfall is 633 mm with standard deviation (SD) 223 mm .The highest annual rainfall 1180

mm and the lowest 137 mm have been observed during the years 1981 and 2002 respectively.

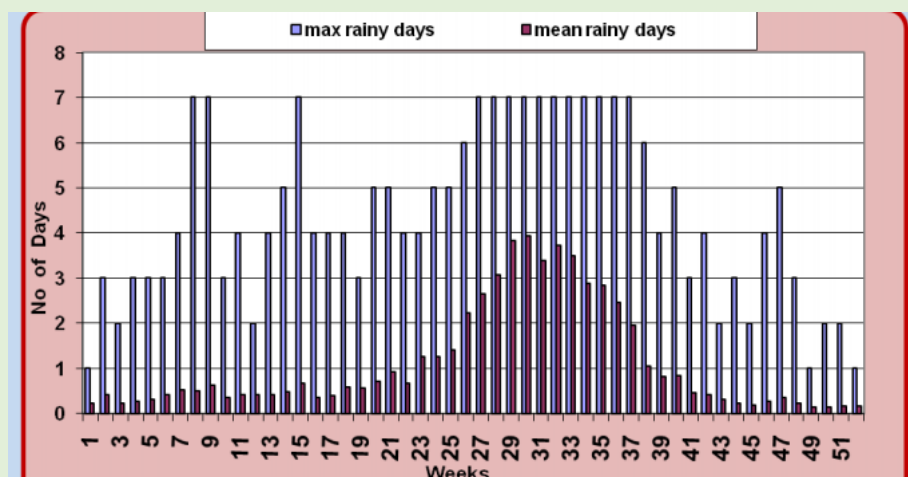


The annual rainy days are shown in Fig. 16. The normal annual rainy days are 58 days. while the highest annual rainy days are 81 days (year 1973) and the lowest are 20 days (year 2002)



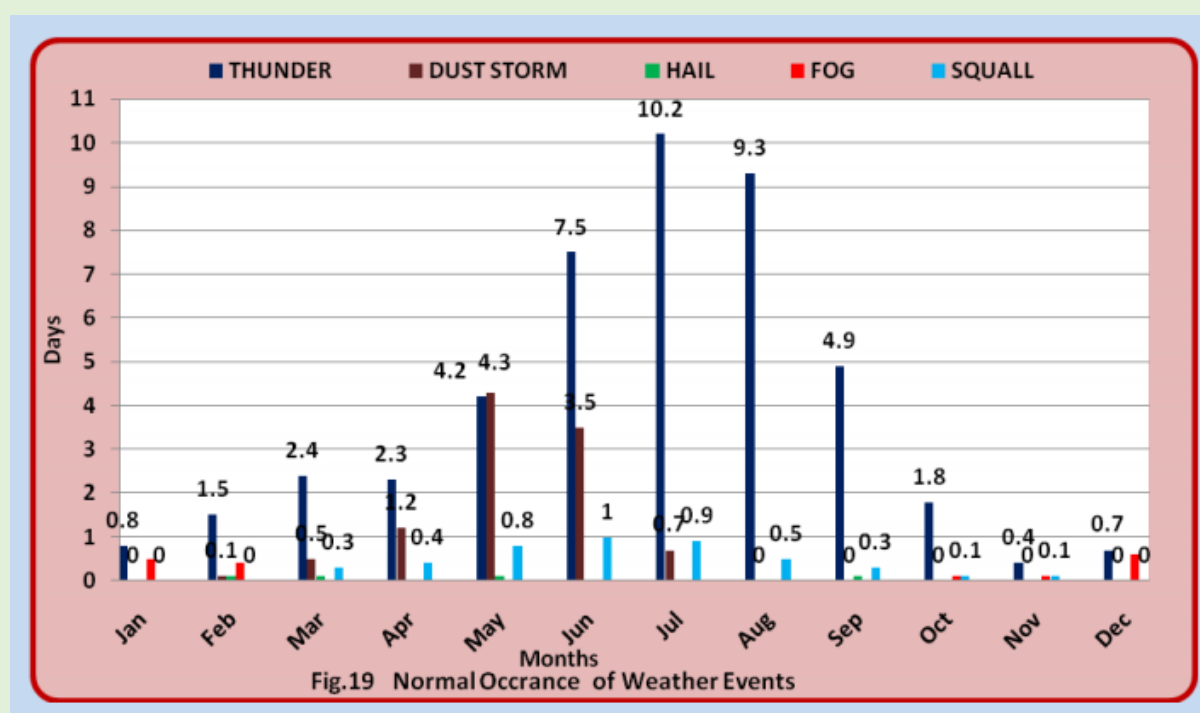


Normal weekly rainfall and rainy days are shown in Fig. 17 and Fig. 18. The heaviest weekly normal rainfall is 76.2 mm, observed in the 29th week which is the 3rd week of July. Most of the weeks during post monsoon season have insignificant rainfall. However all weeks during the period 3rd week of July to last week of September may also have all days as rainy days while normal maximum rainy days during a week are 4 . The average weekly rainy days during post monsoon, winter and summer season are less than 1 day. Maximum weekly rainy days during December and January months are only 2 to 3 days.



Weather phenomena

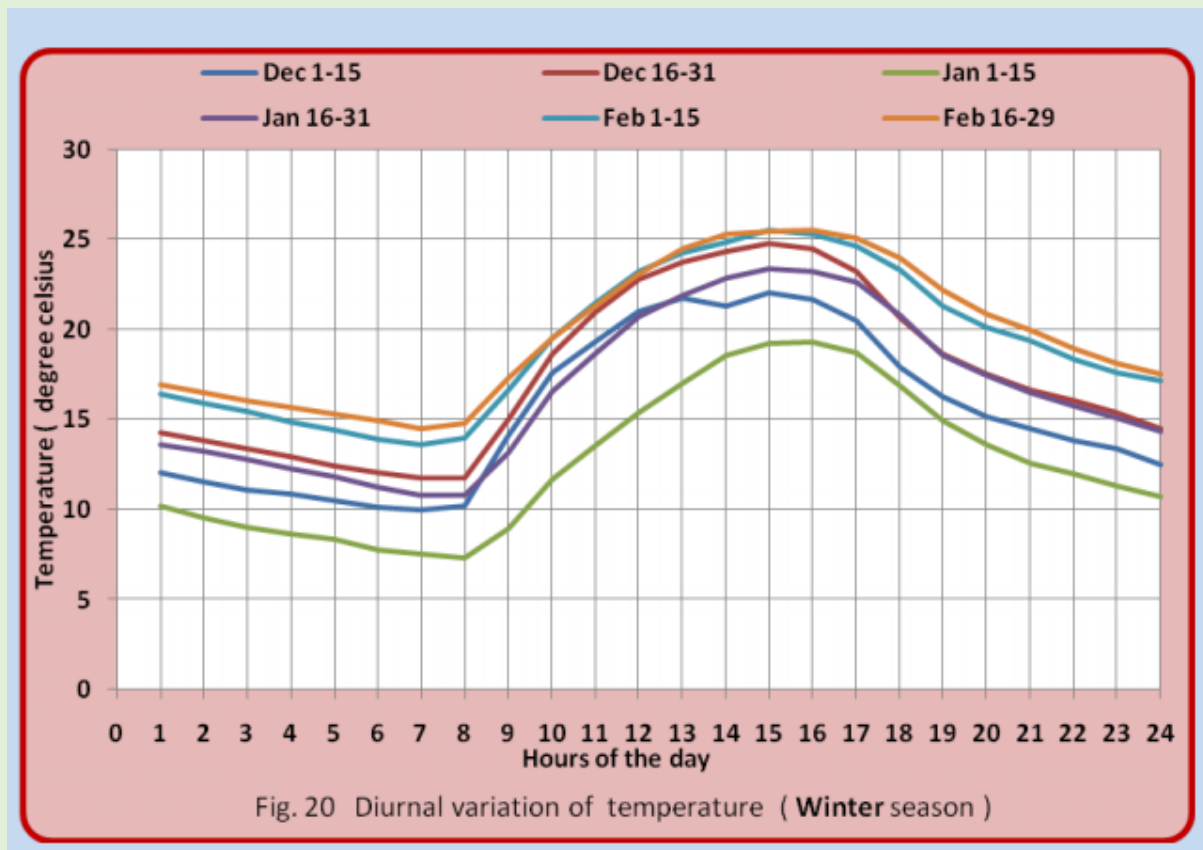
The average frequency of various weather phenomena are shown in Fig. 19. An increasing tendency of thunder storm is observed from January to July while a reverse tendency during the rest period (August to December). Highest (10.2 days) thunder storms are observed in the month of July and the lowest (7 days) in December. Highest Dust storms are observed in the month of May. Dust storm activities are confined only to a limited period of summer and a part of monsoon season (March to July) with an increasing tendency from March to May and a reverse tendency from June to July. Highest (1 day) squall are observed in the month of June. Practically no squall is recorded in winter season . A rising trend in squall occurrences is observed from March to June, followed by a declining tendency from July to November. The average number of foggy days during the winter season is less than two per year, while hailstorms occur on approximately four days annually.



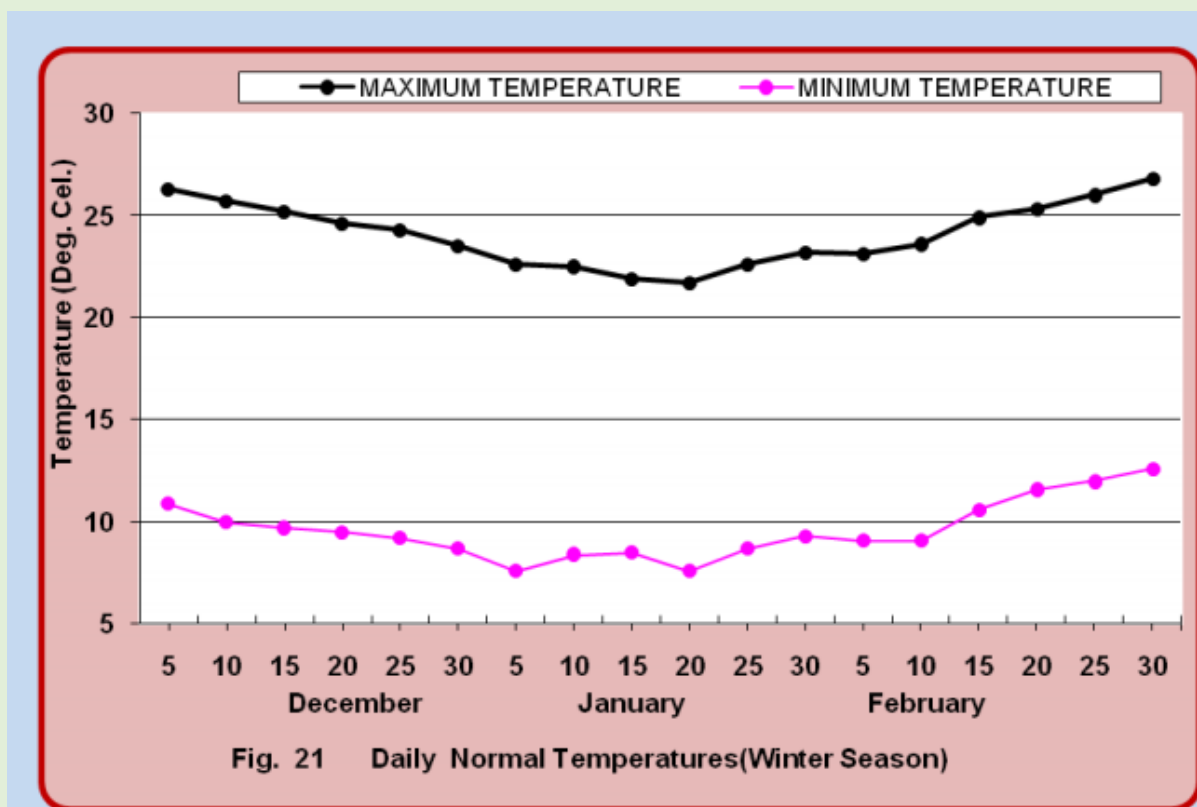
Winter Season

Winter season in Jaipur starts from mid-December and lasts up to mid-February. The winters are moderately cold and temperatures fall when the chilly northerly / northwesterly winds from Himalayan region prevail in the area. Mist or fog typically forms in the wake of a western disturbance, predominantly during the early morning hours, and generally persists for about two

to three days. Temperatures Fig. 20 shows the diurnal variation of daily temperature during winter season. It can be seen that the minimum temperature of the day is observed during morning hours at around 7 to 8 AM and the maximum temperature between 3 to 4 PM.

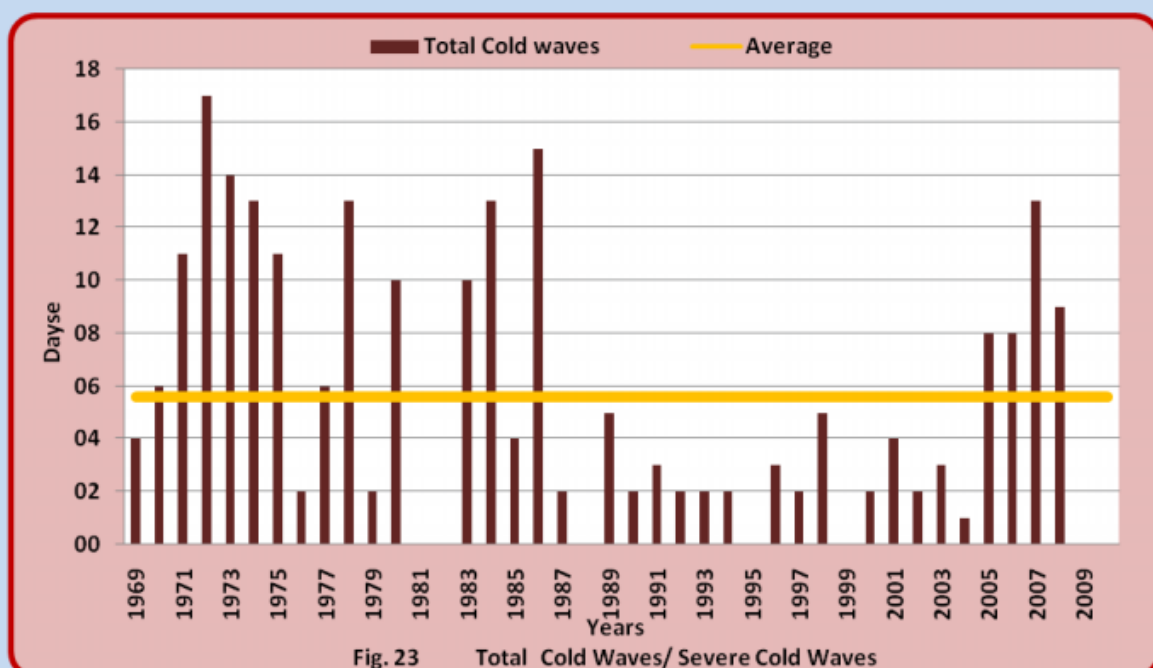
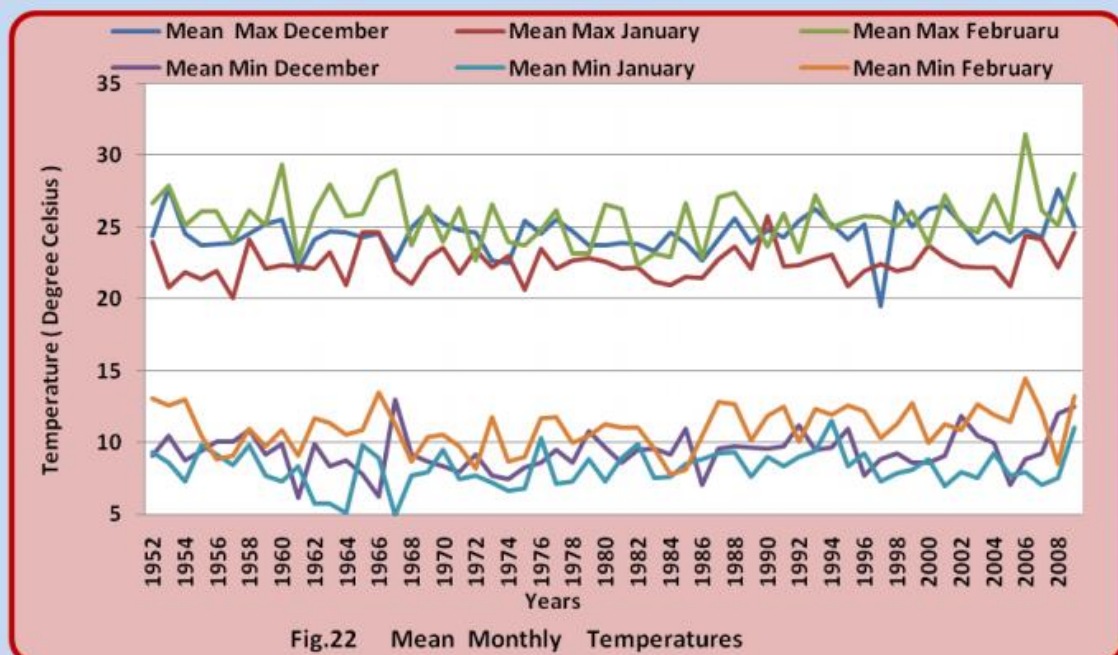


Daily normal maximum and minimum temperatures during the season are shown in Fig. 21 which infer that both maximum and minimum temperatures fall gradually up to the end of January and rise gradually up to the end of season . Daily normal minimum temperature during January is about 7-8 °C Variability of mean maximum and minimum temperatures during different months of the season are shown in Fig. 21.



Climate of Jaipur is also extreme with chilly winters. Daily maximum temperature during winter remains at about 22°C whereas it may dip down to 2°C to 3 °C at night. At a few occasions it has dip down even to -2 °C. The lowest night temperature has been recorded -2.2 °C during 1964 on 16th January on 31st January, 1905 . The daytime climate in Jaipur during winters are comparatively cool and pleasant but the nights are very cold with fog at few occasions during morning hours. January is the coldest month of the season with mean minimum and maximum temperatures 7.8 °C and 22.5 °C. respectively. The mean monthly minimum and maximum temperatures during rest two months viz. December and February are (9.1 & 24.4 °C) and (10.7 & 25.7 °C) respectively. However, the lowest minimum temperatures observed during different months, December, January and February of this season are 0.0 °C (13th Dec, 1964) -2.2 °C (16th January, 1964) and -1.6 °C (7th Feb. , 1974) respectively. Normally cold wave is observed on 6 days per season with highest 17 days (year 1972). During a

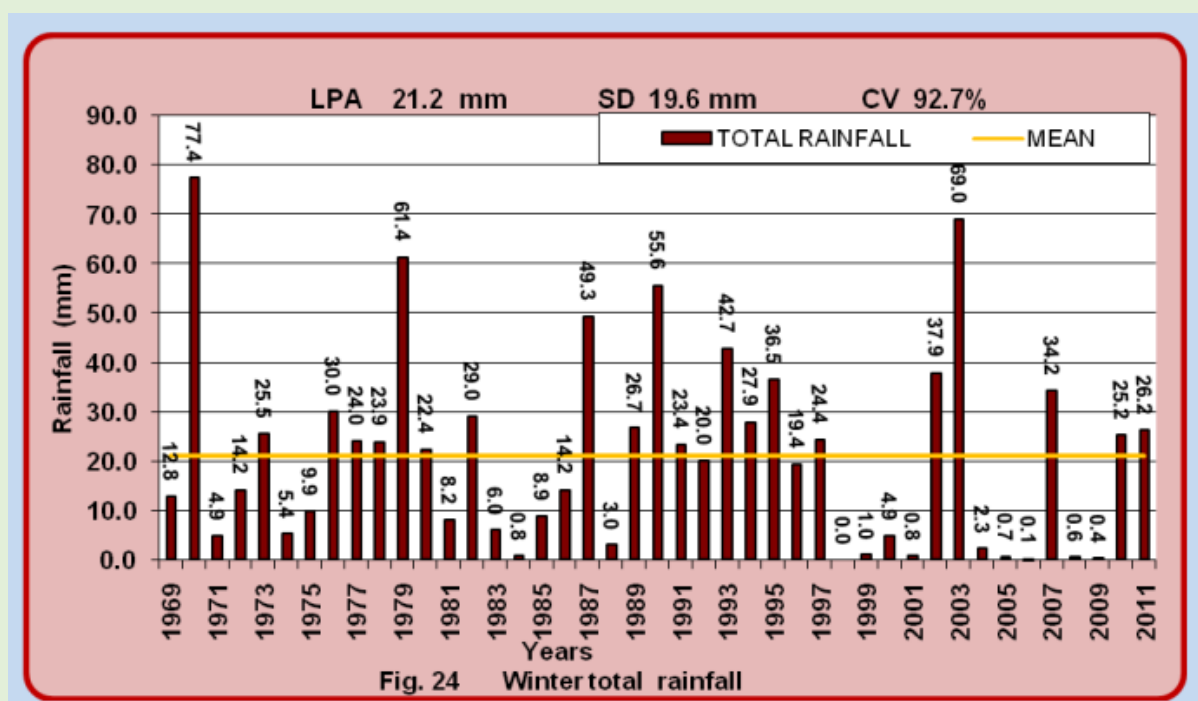
few years viz. 1981, 1982, 1988, 1995 and 2009 no cold wave was observed (Fig. 23).



Rainfall and clouds

During winters Jaipur gets a small amount (21.2 mm) of normal rainfall (3.4% of the annual rainfall) from western disturbances passing through the northern parts of the state from west to east . The

average monthly rainfall for December, January and February are 3.8 mm, 5.5 mm and 11.9 mm respectively. The highest seasonal rainfall (77.4 mm) was observed during the year 1970 while nil rainfall during the year 1998 (Fig. 24). The weekly mean rainy days vary from .2 to .4 days. While the maximum weekly rainy days are 1 to 2 days in December, 2 to 3 days in January and 3 to 7 days in the month of February. There are 68 to 75 % chance of mainly clear sky (0 to 2 okta clouds) during the whole season. Possibility of Overcast sky in the months of January, February and December is 6%, 4% and 3% respectively.



Visibility/Fog/Hail/ Thunder

The probability of morning-time visibility dropping below one kilometre is approximately 2% during December and January, and about 1% in February. During evening hours, the likelihood of visibility reducing to one kilometre or less is negligible. No hail storm in the month of December and January but it is likely at a few occasions (average =.1 days) in February.

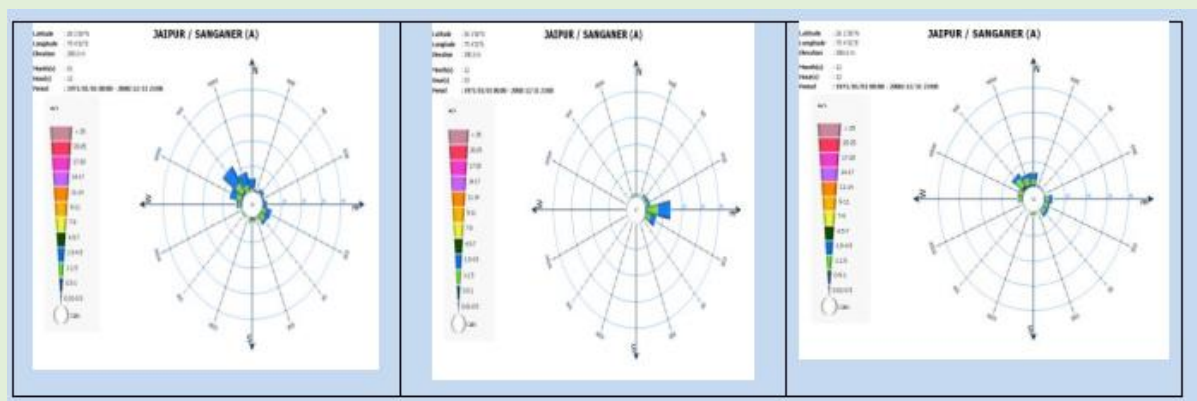
The mean thunder days vary as .7 days in December, .8 days in January and 1.5 days in February.

The mean frequency of fog occurrence was highest in December (0.6 days), decreasing to 0.5 days in January and 0.4 days in February.

Wind

During the season, generally wind blows from East to North sector with speed 1 to 5 m/s . The maximum (15%) days it blows from Easterly direction.

Morning Hours



Evening Hours

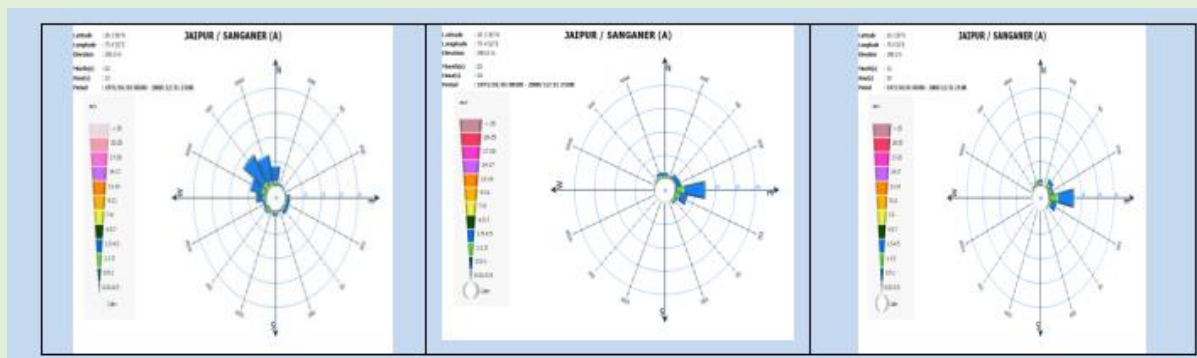
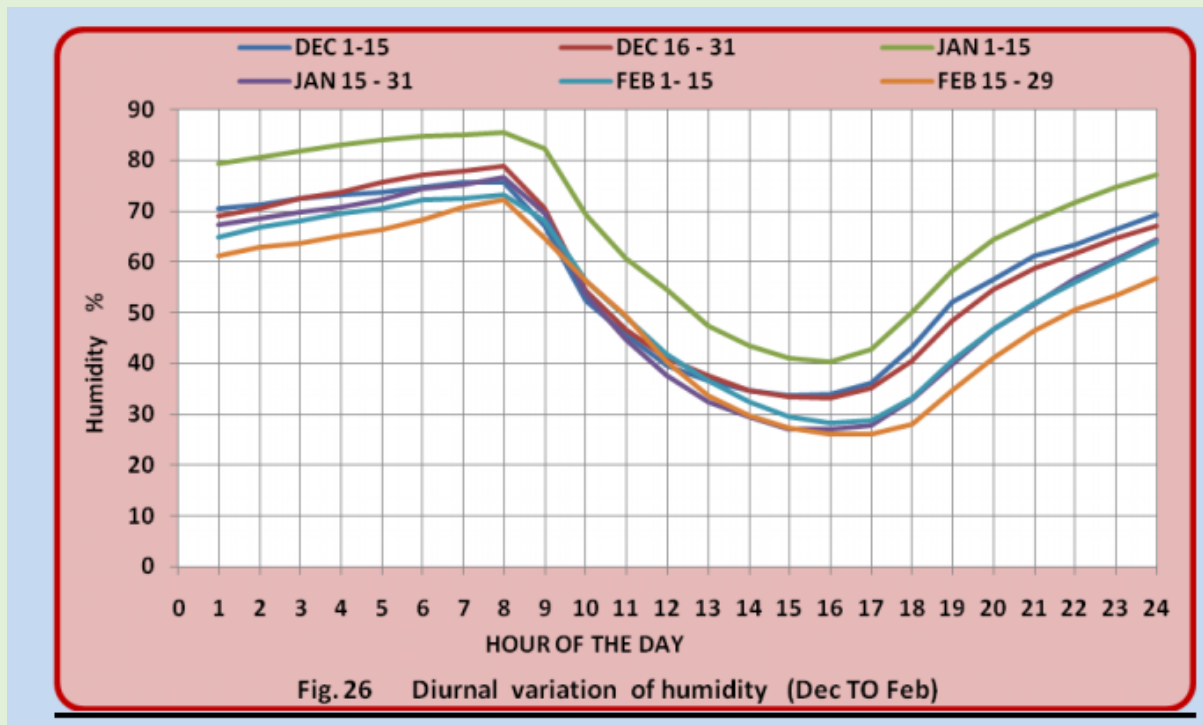


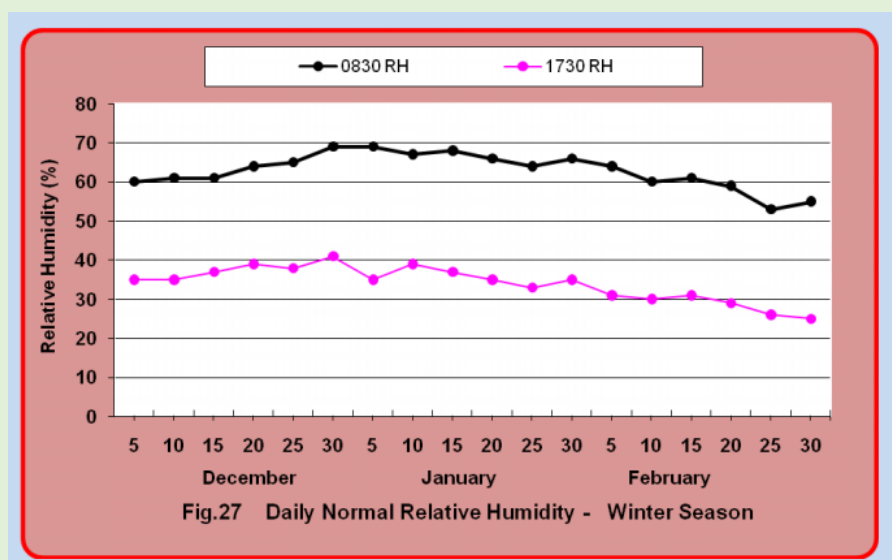
Fig.25 Wind rose diagrams of Jaipur - winter season

Humidity

The diurnal variation of the humidity during winter season is shown in Fig. 26. It can be seen that the humidity during morning hours is maximum and lowest during afternoon hours like other seasons. The average daily variability is of the order of 40%.



The daily mean maximum and minimum humidity represented in the Fig. 27 shows an increasing trend up to mid January. It's value is 60% in the beginning of December and reaches 70 % in the beginning of January. As the season advances, temperature gradually increases and relative humidity decreases accordingly. The mean minimum humidity exhibit the similar tendency. During early December, the relative humidity averages around 35%, increasing marginally to 40% before gradually declining through January and February, and reaching approximately 24% towards the end of the season.



Summer Season

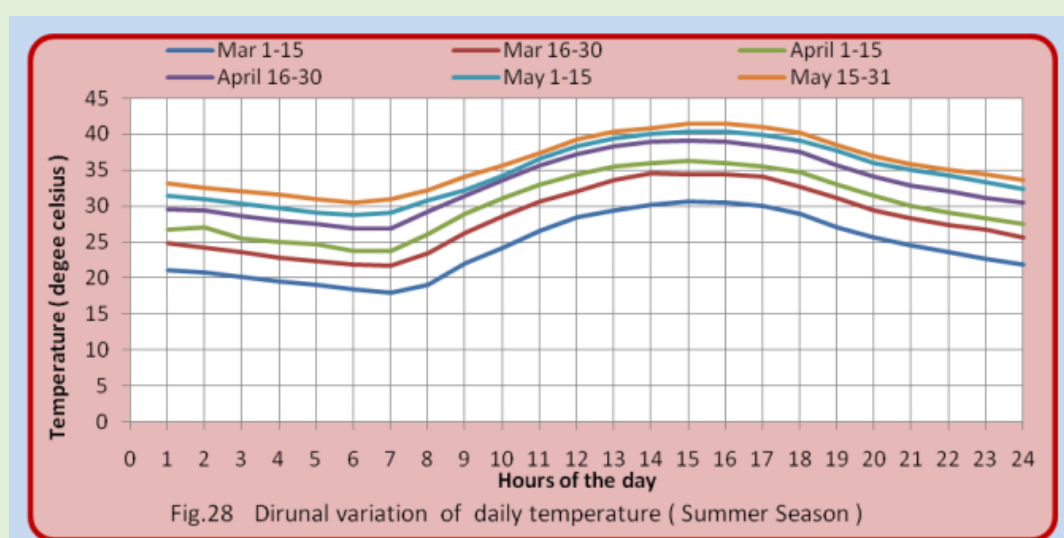
The month of March, April and May constitute the summer season. This period is commonly recognized as the hot weather season in the Jaipur region. The city and its suburbs experience dry and hot weather conditions during these months. The increase in temperature starts after middle of March and the hot conditions prevail up to the end of May. Dry and hot air called loo paralyze the day time activities on many occasions. Rising daytime temperatures and convective weather phenomena—such as thunderstorms, dust storms, hailstorms, dust devils, and squalls—are prominent meteorological characteristics during the latter half of this season.

Dust storms are prominent weather vagaries of this season and are called “Andhi” in lingua franca. Western disturbances strike northwest India during this season. A little of moisture give rise to convective phenomena. A some of them prove very destructive in nature.

Temperatures

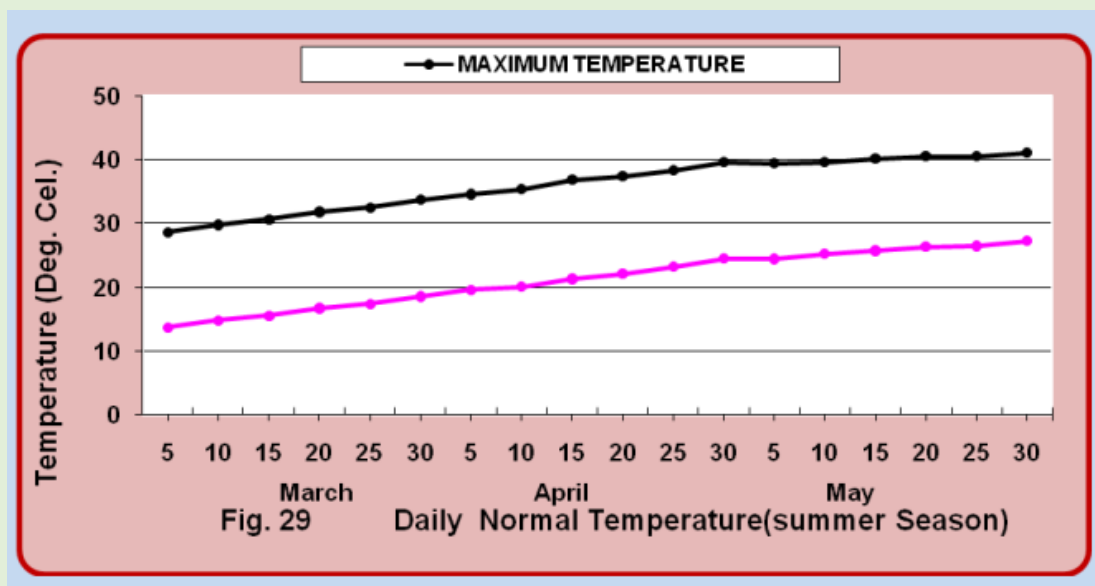
Diurnal variation

Diurnal variation of daily temperatures is shown in the Fig. 28 which shows that the temperature attains its minimum value at around 7 to 8 AM while its maximum value between 4 to 5 PM.

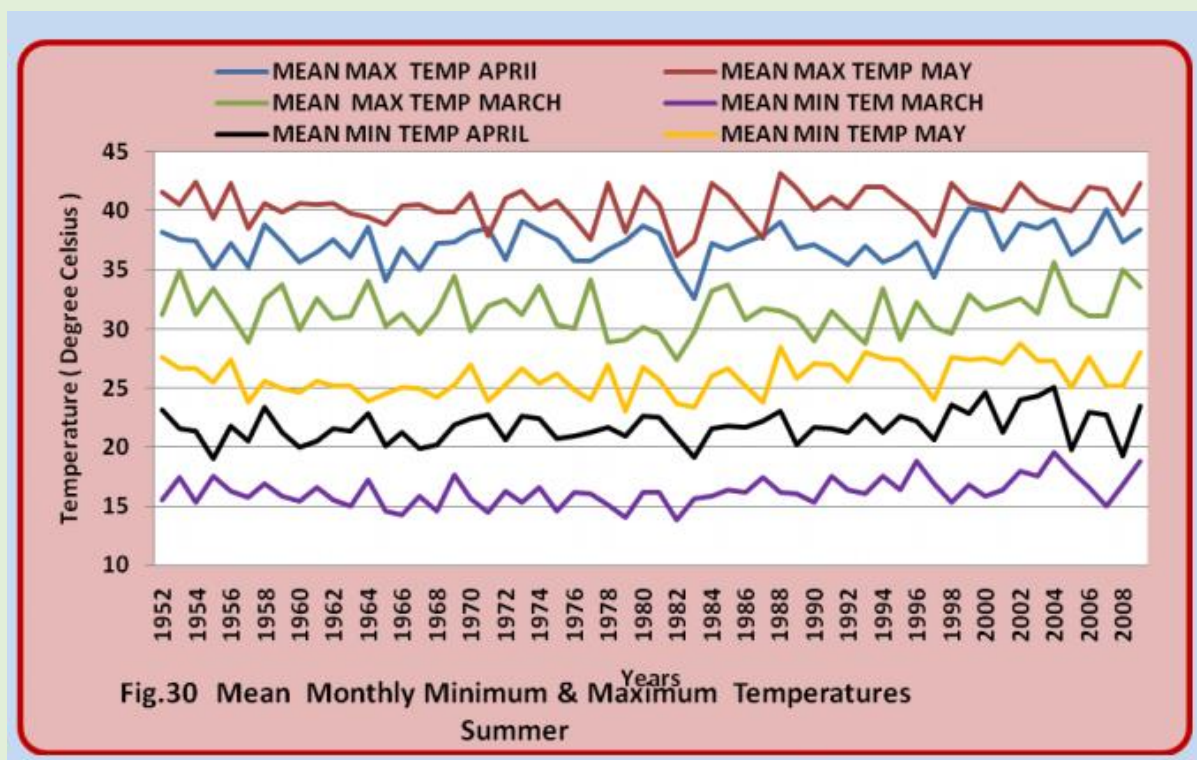


The daily normal minimum and maximum temperatures are given in the Fig. 29. Temperature rising trend commence in the beginning of March

and continue up to May. The average maximum temperature during early March is about 31 °C, increasing progressively to nearly 40 °C toward the end of May.

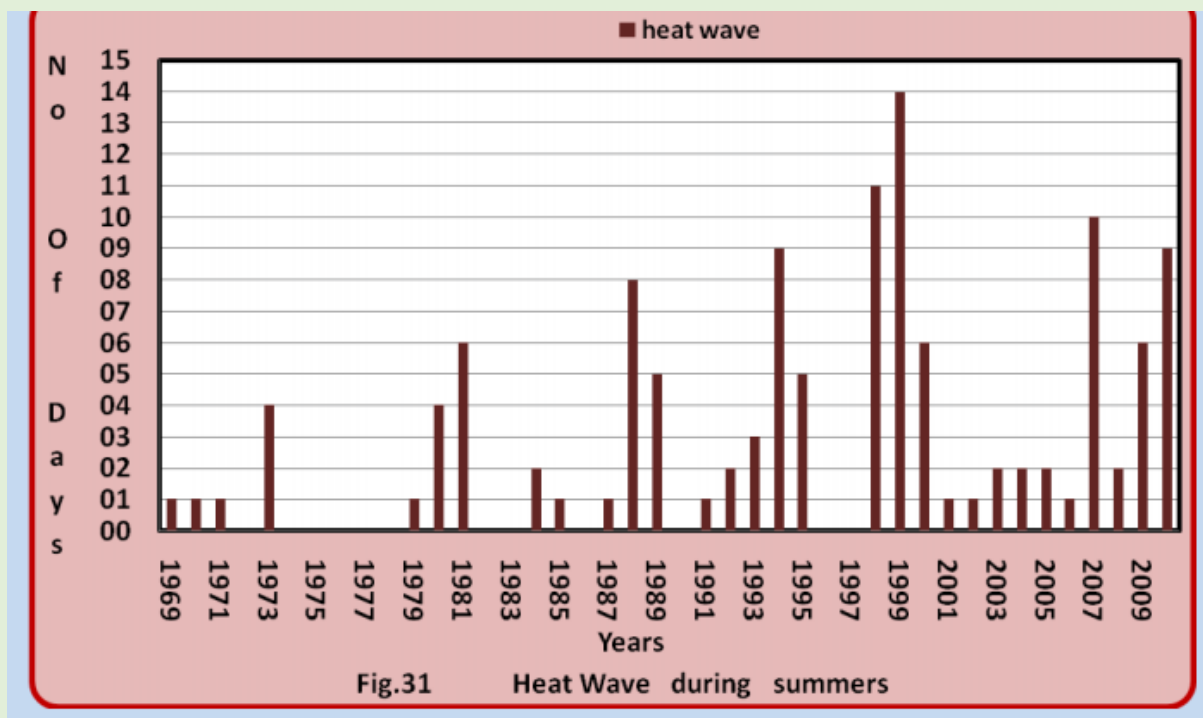


The minimum temperature also has a similar tendency. It marches from 16 °C in the beginning of the season to 27 °C at the end of May. The average minimum/maximum temperatures during March, April and May are 16.2 °C / 31.5 °C, 21.8°C / 37.2 °C and 27.5 °C / 40.5 °C respectively. However, the highest temperatures recorded during these months have been 42.8 °C on 27th March 1892, 44.9 °C on 27th April 1958, 48.5 °C on 6th May, 1980. The increasing trend in temperature during the month of May is very slow or nearly negligible. Rise in temperatures is quite sharp from beginning of March to the end of April. In general May is the hottest month. Daytime temperatures during this month remains around 45 °C at many occasions. Year to year variation of mean minimum and mean maximum temperatures during the period (1952-2009) is shown in Fig. 30.



The highest and lowest maximum temperatures recorded during the season are shown in the fig 11 & fig. 12 above. It can be concluded from the figures that highest maximum temperatures remain between 42-49 °C during the season. The highest maximum temperatures recorded are 42.6 °C (23rd March, 2004), 44.7 °C (29th April, 2009) and 48.5 °C (23rd May, 1994). Occasionally, maximum temperatures dip much below the normal value in the wake of western disturbance passage which brings thundershowers and dust storm in and around the city. The lowest maximum temperatures recorded during the period are 17.6 °C (5th March, 1982), 25.3 °C (4th April, 1994) and 29.0 °C (20th May, 2001).

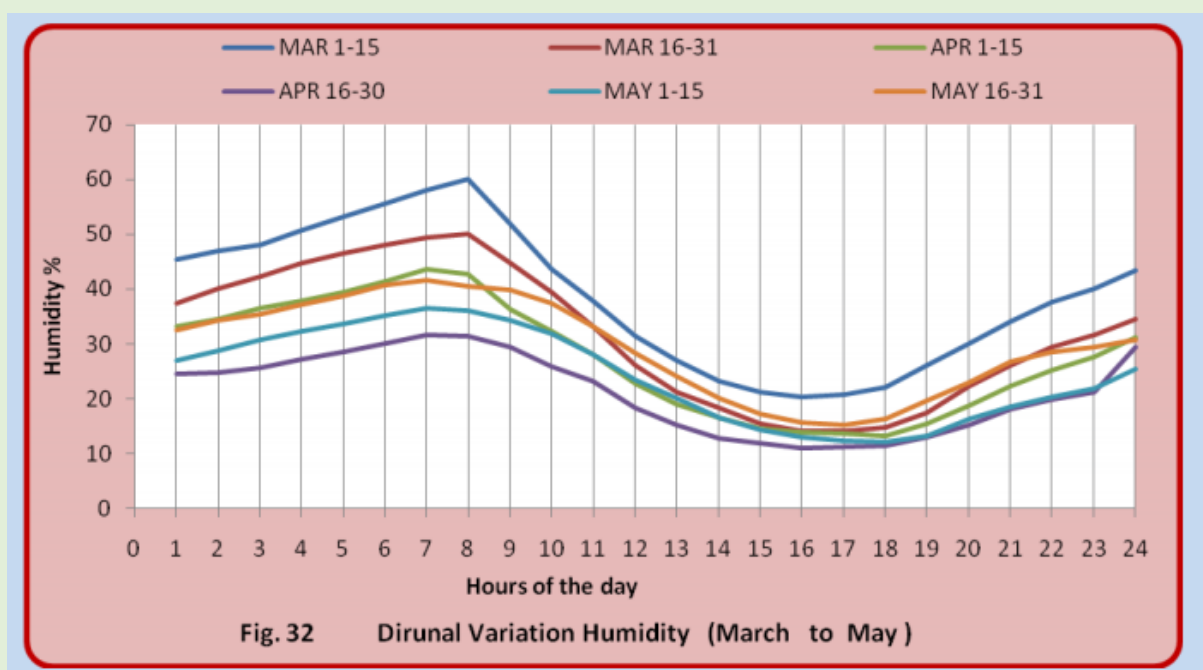
Occasionally, the region experiences heat wave to severe heat wave conditions, which significantly affect various aspects of human activities and wellbeing. On an average heat wave/severe heat wave conditions prevail for 2 days in the season. However, its upper limit is 14 days (observed during 1999) (Fig. 31). The monthly upper limit distribution is 1, 9 and 5 days in March, April and May respectively.



Humidity

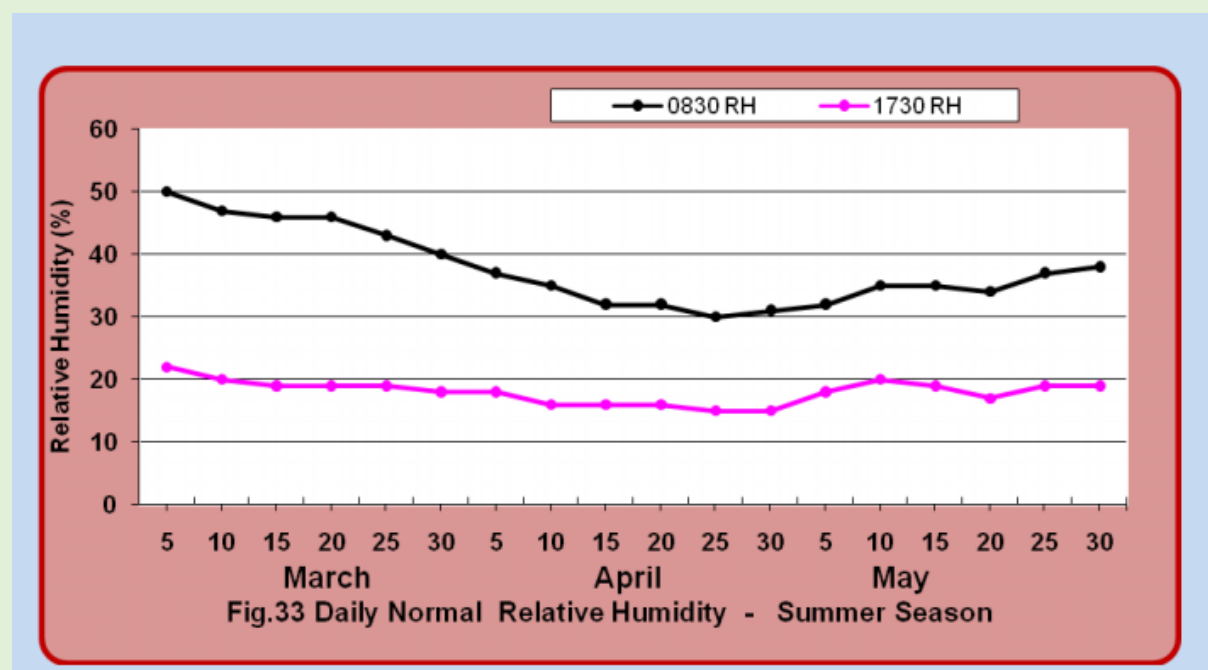
Diurnal variation

The diurnal variation of humidity during the summer season is illustrated in Figure 32. It can be observed that relative humidity is highest during the morning hours and decreases gradually, reaching its lowest values in the afternoon. The maximum humidity is observed around 8 AM and the minimum at around 5 PM during a day.



A marked decline in the daily mean maximum humidity is observed during the first half of the season, reducing from about 50% at the onset to nearly 32% by the mid-season period. Afterward a slow rise is observed up to the end of the season. Thus, an increase of 6% in the end of the season. The minimum humidity varies very less during the season being 20% in the beginning of March and about 17% in the end of May. The range of daily relative humidity (RH) varies from approximately 30% at the beginning of the season to about 18% toward its end. The variability in minimum humidity is around 5%, whereas the variability in maximum humidity is about 20%. (

Fig. 33)

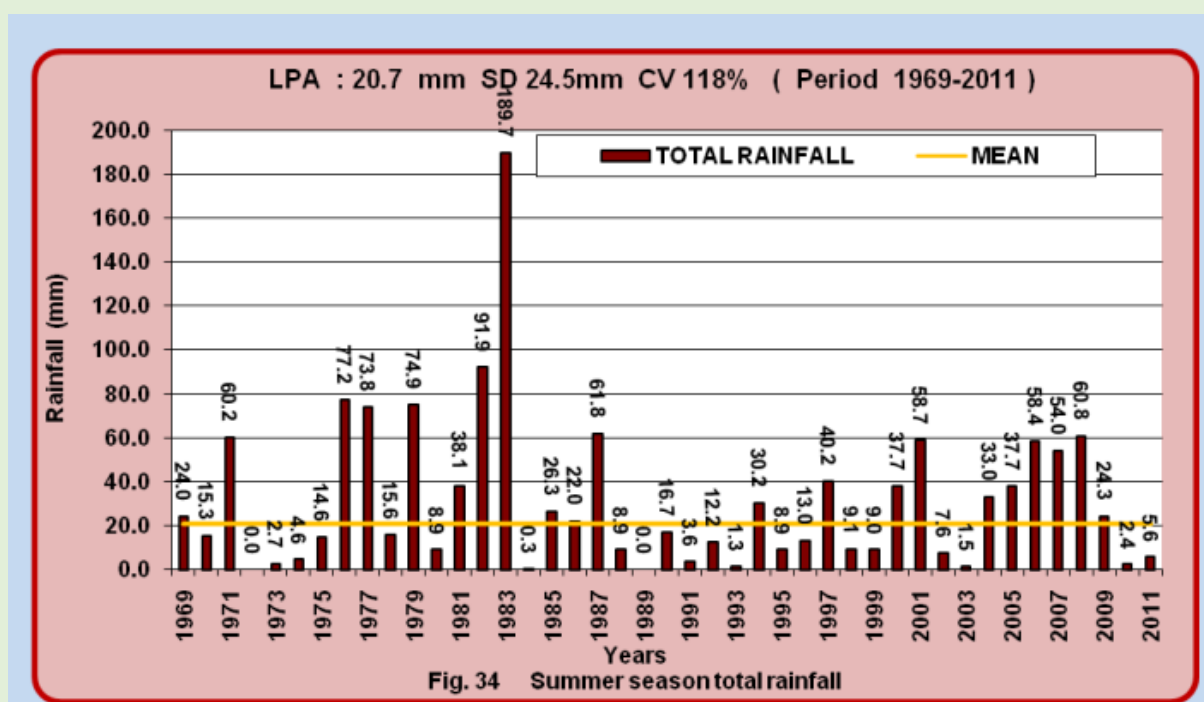


Rainfall

Summer season is characterized by hot and dry weather. Most of the rainfall is realized by western disturbances associated with thunderstorm / dust storm. Dust storms are common phenomena in this season. Dust storms generally strike in the afternoon or late in the night from north westerly direction . During the early part of the summer season, convective activities occasionally result in dust storms and thunderstorms accompanied by light rainfall, primarily during the afternoon hours. These convective phenomena become more frequent toward the later part of the season. The normal monthly rainfall for March, April, and May is approximately 4.2 mm, 8.2 mm, and 18.7 mm, respectively. On a weekly scale, the average rainfall ranges from about 0.5 mm in the first week of April to around 5 mm toward the end of May.

The highest recorded monthly rainfall during the summer months has been 51.3 mm in March (1926), 123.8 mm in April (1983), and 100.3 mm in May (1959). Similar to the winter season, heavy rainfall events are rare during the summer. The heaviest single-day rainfall events ever recorded during this period include 33.8 mm on 14 March 1926, 69.4 mm on 14 April 1983, and 67.6 mm on 29 May 1959. The average number of wet days during these months are 1.7 days, 1.9 days and 2.3

days respectively. However normal weekly rainy days are less than 1 during this season. Highest (189.7 mm) seasonal rainfall has been observed during the year 1983 and there was no rainfall during 1972 summer. The normal rainfall of this season is 20.7 mm with standard deviation (SD) 24.5 mm and coefficient of variation (CV) 118%. Annual variation of the seasonal rainfall is shown in Fig. 34 which concludes that the highest rainfall (189.7 mm) was observed during the year 1983 and the lowest rainfall (0.0 mm) during the years 1972, and 1989.



Thunder/Dust Storm/ Squall/Hail

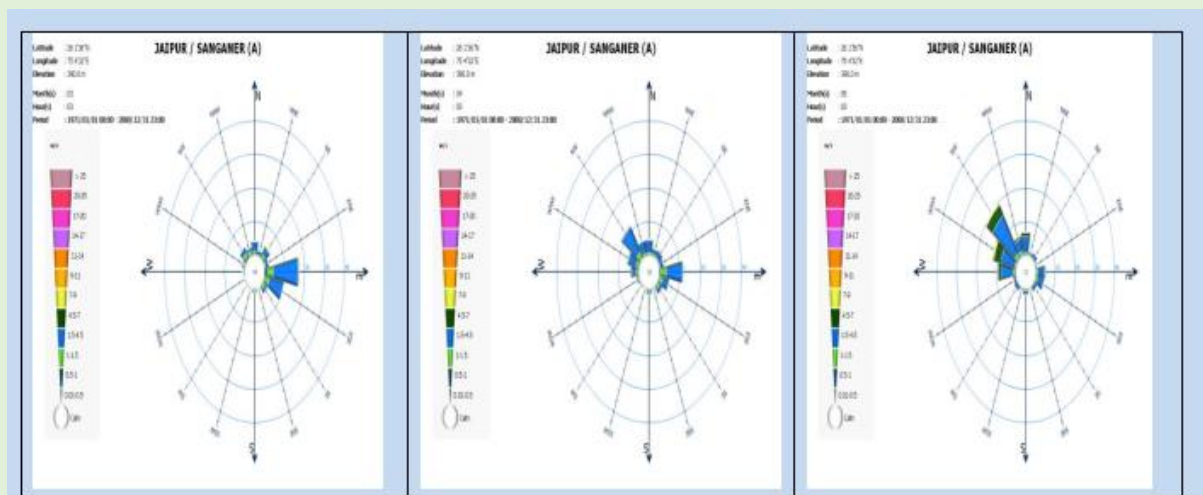
Thunderstorms, dust storms, hail storms and squalls are the common features of summer season. The formation of thunderclouds occurs ahead of an eastward-propagating trough within the middle and upper tropospheric westerlies, provided that adequate atmospheric moisture is present. Down draft from cumulonimbus clouds give rise to convective dust storm and squalls. These generally occur in afternoon or late in the night. The average number of thunderstorm are 2.4, 2.3 and 4.2, dust storms 0.5, 1.2 and 4.3 and squalls 0.3, 0.4 and 0.8 in March, April and May respectively.

Dust storms and squalls often cause severe damage to life and property. In several instances, extensive destruction has been reported, highlighting their significant impact on local environments and human settlements. After the passage of a dust storm temperature drop suddenly about 5-7°C which give rise relief from scorching heat.

Wind

The summer season in Jaipur is characterized by predominantly windy conditions, with average wind speeds ranging between 6 and 10 km/h. During the daytime, solar heating intensifies surface temperatures, leading to convective air movements that further enhance wind velocity. In the month of March and April the wind direction is east to south-easterly during morning hours and northwesterly in all the three months of season during evening hours. Also the wind speed increases from morning to evening (Table 3 & Fig. 35)

Morning Hours



Evening Hours

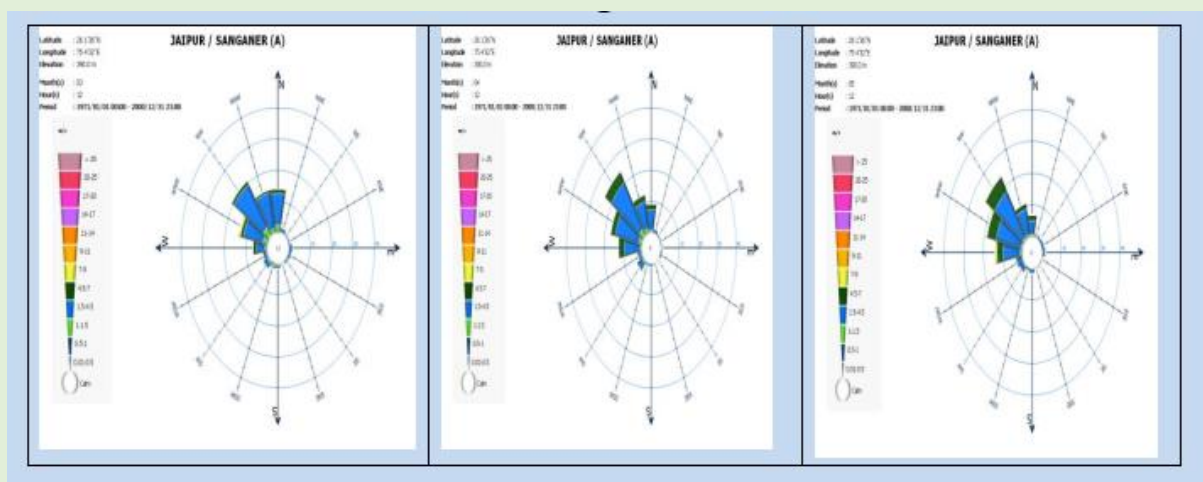


Fig.35 Wind rose diagrams of Jaipur – Summer Season

Monsoon Season

The monsoon season typically extends from the last week of June to mid-September. Monsoon season is boon of nature to this water scarce land. Rainfall, thunderstorms and occasional heavy downpour are the characteristics features of this season

2.3.4.7 Government and non-government agencies with which convergence of conservation programmes is possible; likewise disparities that are a problem

Many of the government departments like Agriculture, local bodies, police, women empowerment, and administration, PHED, Social Justice, Horticulture and Animal Husbandry

have a greater role to play in reducing biotic pressure on natural resources. Public Works Department and Energy Department are the ones having mandates that are non eco friendly and rather damaging the wildlife.

2.4 WATER SOURCES

2.4.1 HYDROGEOLOGICAL FRAMEWORK

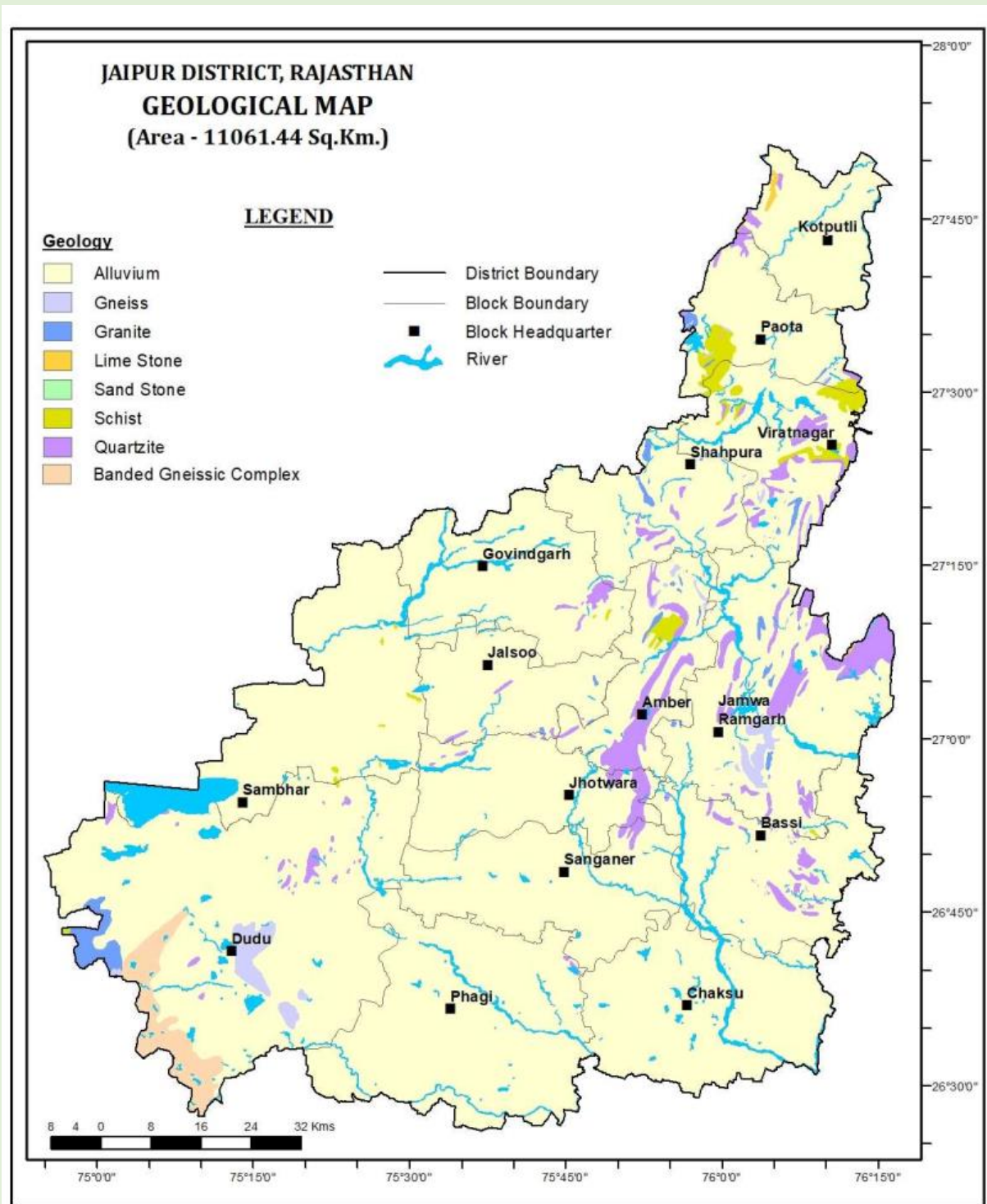
Geology

Geologic succession of Jaipur district is quite wide ranging in terms of age and rocks from Archean to Recent age. Most of the north eastern part of the district is covered by younger and older alluvium which is predominantly sandy to clayey in nature. Gneisses and schists of Bhilwara Super Group are the oldest rock types overlain by quartzites, schists, conglomerates, dolomitic limestone etc. belonging to Alwar and Ajabgarh Groups of Delhi Super Group along with granite, pegmatite and amphibolite intrusives of Post Delhi age (figure 14). Hard rocks in major parts of the district are covered by Quaternary fluvial and aeolian deposits mainly composed of sand, silt, clay, gravel and kankar. Alluvial thickness is less in southern and southwestern parts of the district i.e. in Naraina, Sakhun, Dudu, Mozamabad, Phagi, Chaksu areas etc. Alluvial thickness between 90 and 100m has been observed at Chomu, Jairampura, Nangal Bharra, Dhaunauta areas whereas its thickness over 100m has been found at Risani village (104m).

The general geological succession of the district is presented in table 6 gic Succession of Jaipur

Super Group	Group	Formation
Recent to Sub recent	Sand, Clay, Clay Kankar	
Post Delhi	Granite, Pegmatite, amphibolites (intrusive)	
Delhi	Ajabgarh	Schists, Phyllites, Marble and Quartzite
Alwar	Quartzite, Conglomerate and Schists	
Raialo	Dolomitic marble and Quartzite	

Unconformity -----X-----		
-X-----X-----X-----		
Bhilwara	Gneisses, Schists and Migmatites	



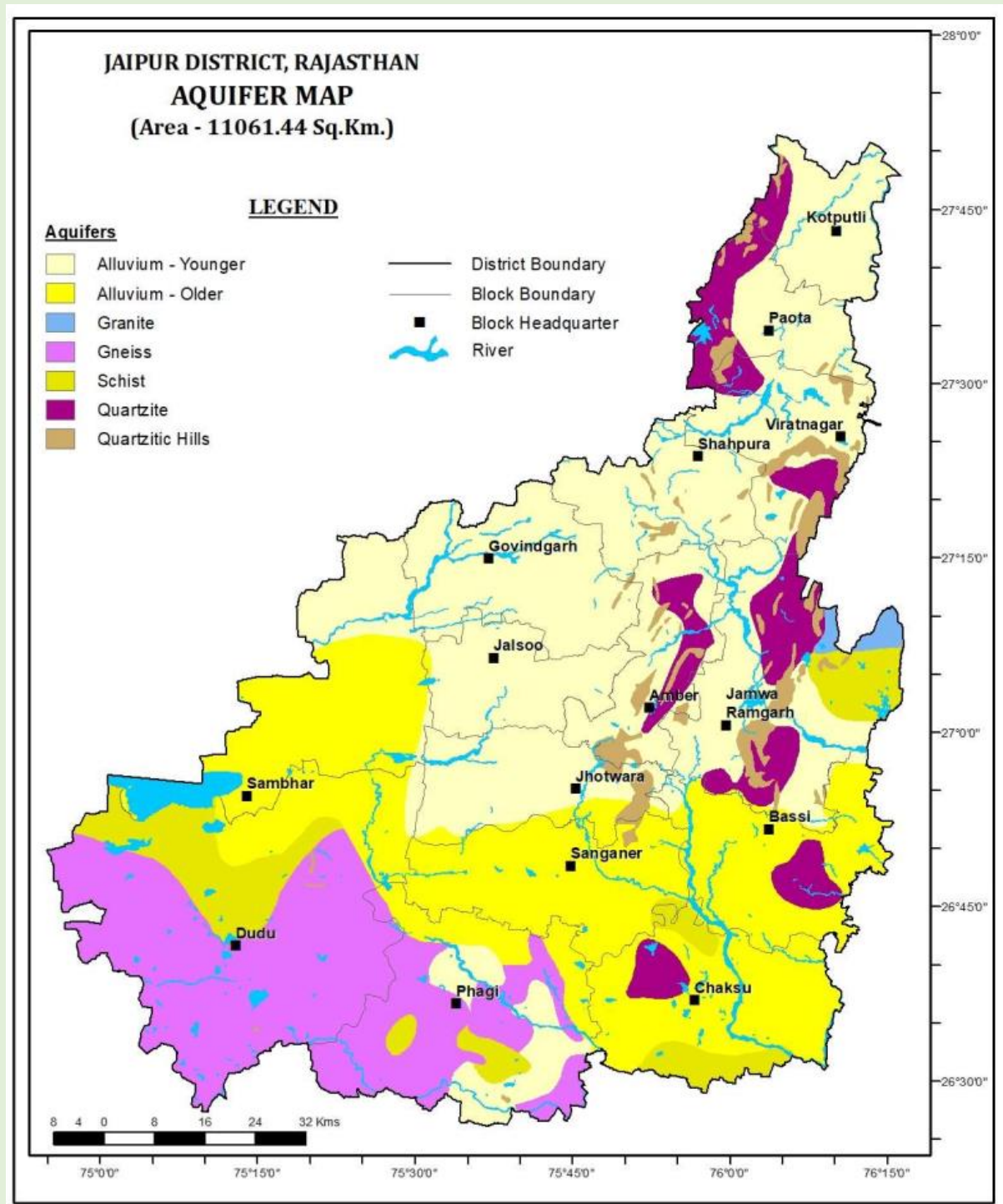
Hydrogeology

The hydrogeological framework is essentially controlled by geological setting as circulation and movement of groundwater is controlled by the interconnected primary and secondary porosities of the geological formations constituting the aquifers.

The major part of the district is covered by aeolian and fluvial Quaternary sediments underlain by Bhilwara and Delhi Super Group of rocks. The major hydrogeological units are Quaternary alluvium (younger and older), quartzites of Delhi Supergroup and phyllite, schists, and granitic gneiss of Bhilwara supergroup. The distribution of these units in the district is shown in figure 15.

The Quaternary alluvium covering 7622.75 sq. km forms the principal and potential aquifer. It is composed of clay, kankar, silt, sand, gravel and pebbles. Gravel and pebbles are found in local patches near hilly catchments and in buried river channels. The exploratory drilling data has revealed that maximum thickness of 103 m. has been encountered in the exploratory bore hole at Risani located in the north of Jaipur. In the north of Jaipur, thickness of alluvium around Jairampura, Chomu, Nangal Bharra and Risani ranges between 90 and 103 m. within Jaipur urban agglomerate, the alluvium thickness at Ambabari, Jhotwara, Vidhyadharnagar and Bajaj Nagar is more than 85 m. In the northern part of the district, maximum thickness of 77 m alluvium has been encountered at Kotputli. The thickness of alluvium is very less in western, south-western, southern and north-eastern part of the district. This is mainly seen in southern and south western parts of the district in Dudu, Phagi and Chaksu blocks. Similarly, quartzite, schist and phyllite of Delhi Super Group form aquifers in Jamwa Ramgarh, Viratnagar, Kotputli, Shahpura, Amer and Bassi blocks. The hard rocks (covering 2711.98 sq. km) viz. quartzites, schist limestone of Delhi Supergroup and granitic gneiss of Bhilwara Super Group do not form the good aquifer except where they are highly jointed, fractured and weathered. Ground water that occurred under unconfined, semi-confined to confined conditions

has now become unconfined only due to higher rates of extractions and under water table condition in hard rock.



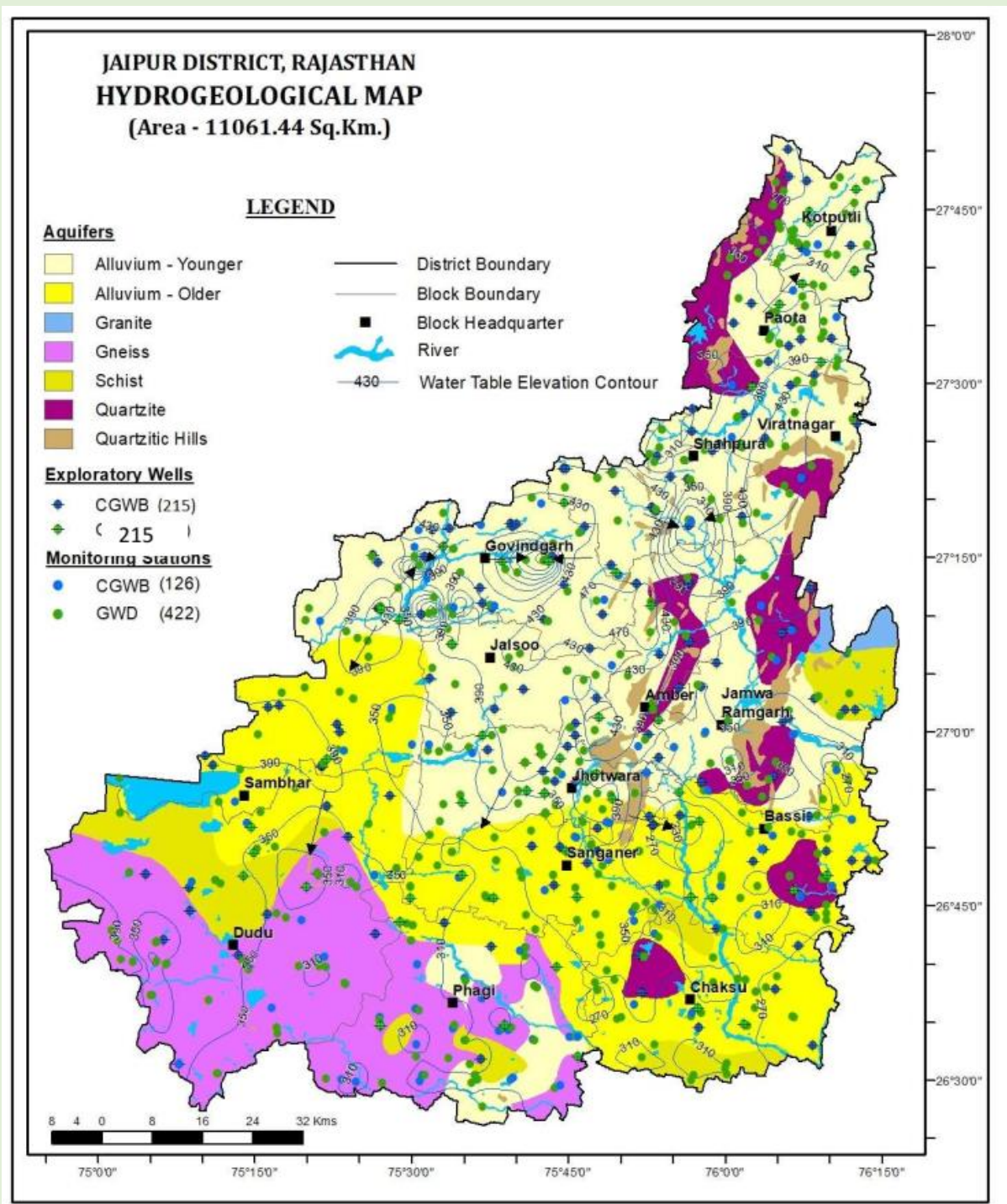
Aquifer Map, Jaipur District
Ground Water Exploration

Under groundwater exploration activities, Central Ground Water Board and State Ground Water Departments have drilled as many as 215 and 66 wells respectively to study the aquifer dispositions and their characteristics in the district. Drilled depth of these wells ranges from 50 to 100 m in alluvium and 50 to 200 m in combination/consolidated formation areas. Specific capacity of wells varies from 58 to 500 lpm/m. Transmissivity value and storage coefficient varies from 10 to 850 m²/d and 4.70 x 10⁻⁵ to 1.05x 10⁻³ respectively

Details of Ground Water Exploration in Jaipur District

Block Name	No. of Total Wells	CGWB	GWD	Depth Range s	< or =50	50-100	100-150	>= 200	SWL m bgl	T m ² /day	Aquifer
Paota	9	8	1	29.20-200	1	5	2	1	7.25-41.34	1.44-431	Alluvium/Quartzite
Jaipur District	281	215	66	24.24-207	40	156	36	51	0.59-78.41	0.23-660	Alluvium/Schist/Gneiss/Quartzite

The hydrogeological map showing locations of exploratory wells, ground water monitoring wells, water table elevation contours is shown in figure 16.



Ground Water Dynamics

The groundwater regime scenario of the district is generated by monitoring of water levels periodically through 554 observation wells which includes dugwells, piezometers and some exploratory wells too. The Rajasthan state ground water department monitors 428 wells during

pre-monsoon and post-monsoon seasons whereas Central Ground Water Board monitors its 126 National Hydrograph Network Stations (NHNS) four times a year i.e. in January, May (Premonsoon), August and November (Post-monsoon).

Water Level Behaviour

During pre-monsoon period (May 2021), depth to water levels varied from 0.79 mbgl at Chandalai of Chaksu Block to 97.15 mbgl at Anatpura of Shahpura Block. Deeper water levels of more than 40 mbgl were recorded in the most of the part of district except the southern Dudu, Phagi and Chaksu blocks where shallow water level less than 10 mbgl has been recorded. The depth to water level scenario of the district during pre-monsoon season 2021 is shown in figure 17.

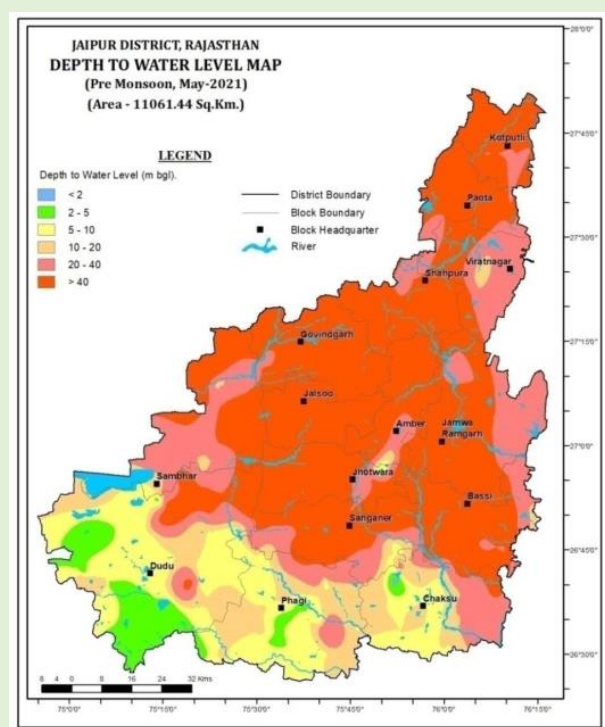


Figure 17: Depth to Water Level (May 2021)

During post-monsoon period (November 2021), depth to water level varied from -0.2 mbgl at Chandalai of Chaksu Block to 99.9 mbgl at Anatpura of Shahpura Block. Water levels follows the same pattern of pre-monsoon season and mostly deep viz. > 20 m bgl except for Dudu, Phagi

and Chaksu Blocks. These blocks have water levels between 2 and 20 m bgl. The depth to water level scenario of the district during post-monsoon season 2021 is shown in figure 18.

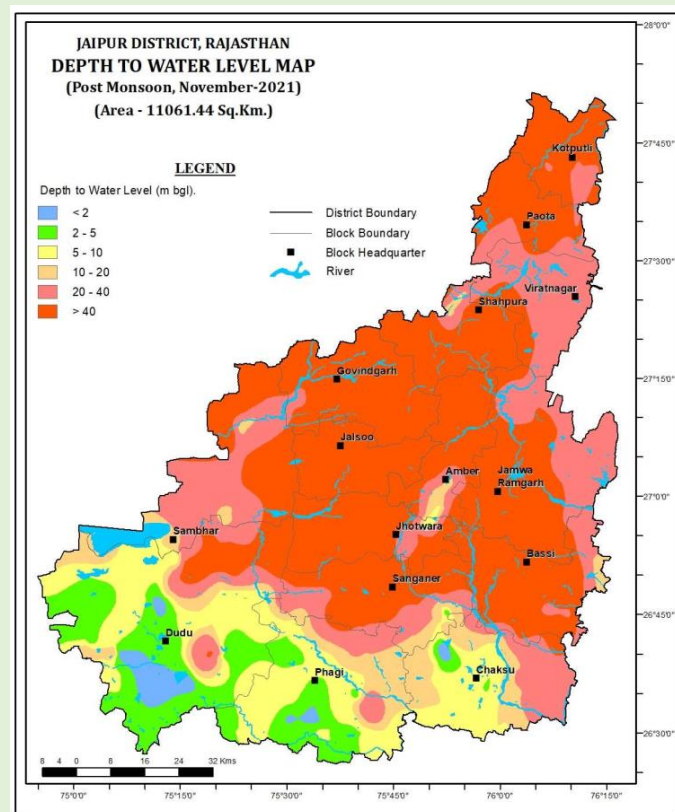


Figure 18: Depth to Water Level (November 2021)

The analysis of water table depth during the pre-monsoon and post-monsoon periods of 2021, in terms of spatial distribution, highlights the impact of rainfall on the shallow aquifer zones (Figure 19). In May 2021 only 2.48 sq.km areas had water level between 0 and 2 m below ground level and 485 sq.km area has water levels between 2 and 5 m bgl. There is an improvement in the scenario and about 160 sq.km and 940 sq.km had water levels in these ranges. This improvement was seen in Dudu and Phagi blocks.

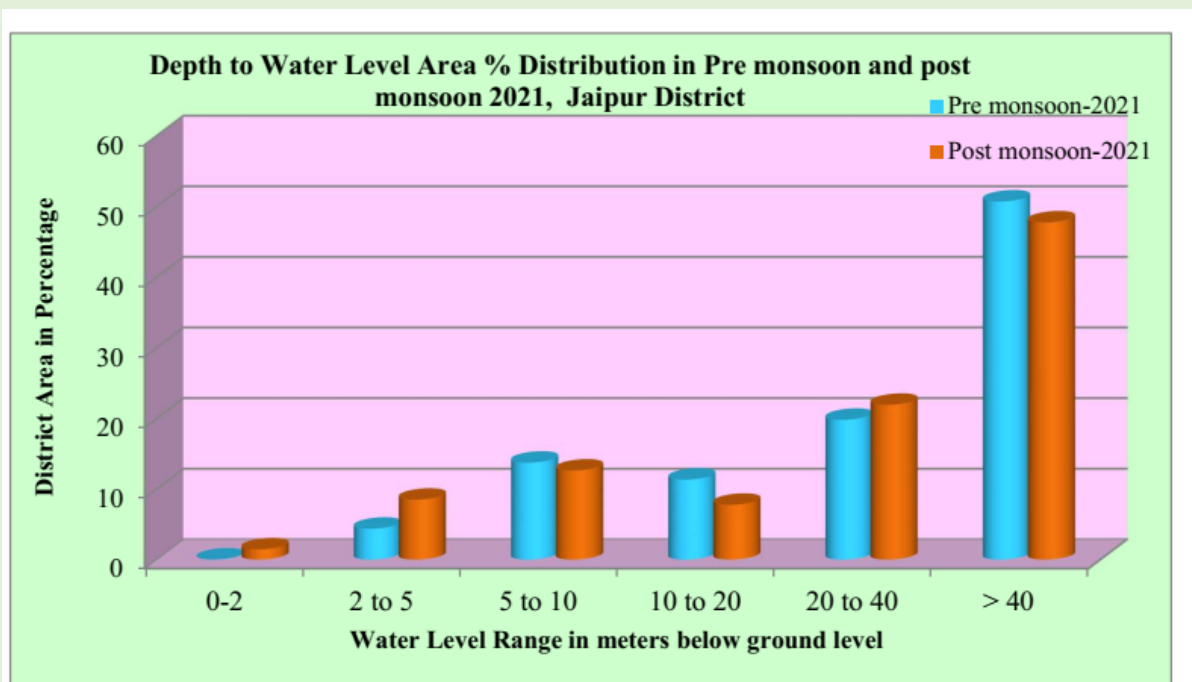


Figure 19: Depth to water Level Ranges V/s % Area in Pre and Post Monsoon 2021 in Jaipur District

Decadal Water Level Trend (2011-2020)

Water level trend analysis for pre and post monsoon seasons during the past decade (2011 – 2020) was done to know the long-term scenario of ground water regime in the district. Long term data of about 193 wells was used for trend analysis. The average groundwater trend of the district is declining at an average rate of 0.52 m/year in the pre-monsoon and in post-monsoon season rate of decline is 0.48 m/year.

Pre-Monsoon Trend (2011-2020)

The pre-monsoon water level data indicate a declining trend in groundwater levels across most parts of the district, with the northern, central, and eastern regions experiencing particularly pronounced reductions. This pattern underscores the growing pressure on groundwater resources and highlights the need for targeted water management and recharge interventions in these areas. Declining trend is observed in near about 75% area of the district covering all the blocks except Chaksu and Dudu Blocks and parts of Sambhar, Phagi and Jhotwara Blocks where there is a rise in decadal water level trend. The decadal water level trend map of the district is shown in figure 20.

Rising trend is observed in 25% area of the district between -0.11 m/year in Chaksu and -0.41 m/year at Dudu Block.

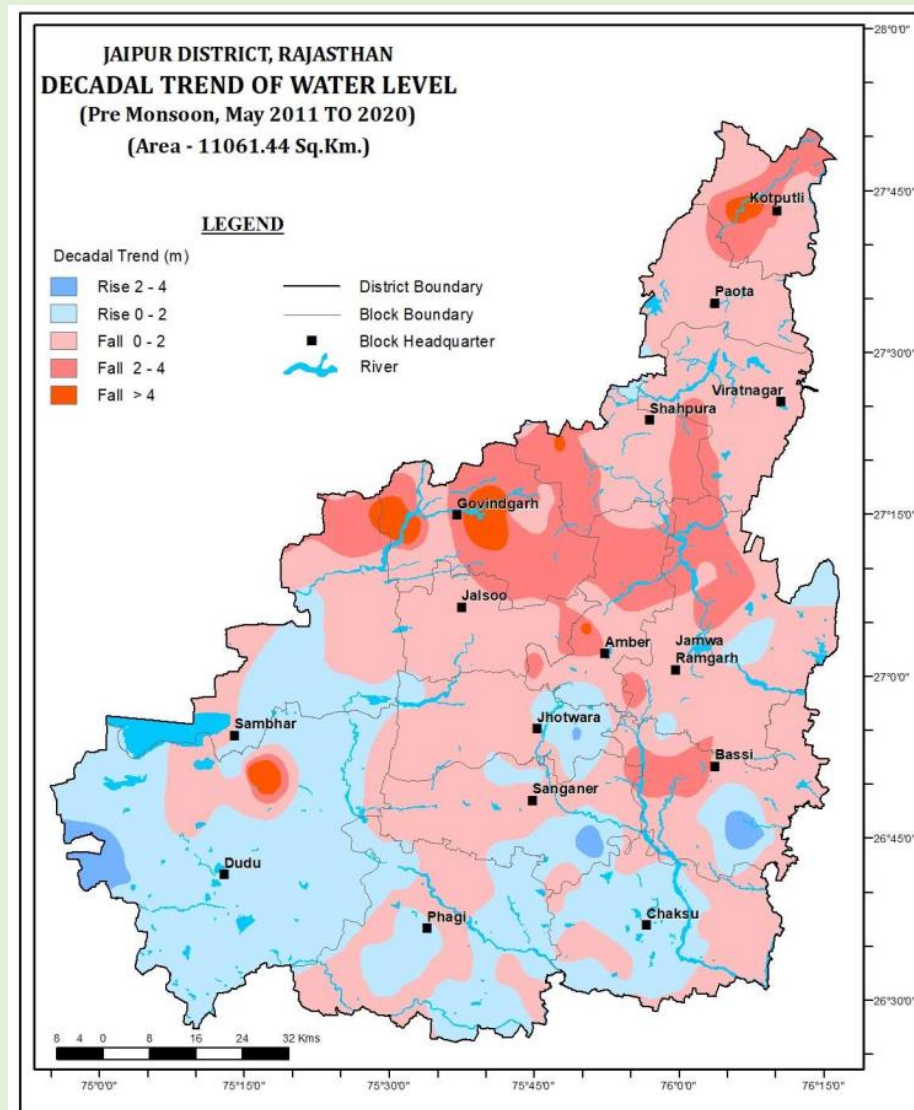


Figure 20: Decadal Trend Map (Pre Monsoon 2011-2020)

Post-Monsoon Trend (2011-2020)

The post-monsoon water level trend indicates declining trend of ground water levels in most parts of the district especially in the northern, central and eastern. Average rate of decline varies from 0.37 m/year in Kotputli Block to 2.52 m/year in Govindgarh Block. Declining trend is observed in near about 75% area of the district covering all the blocks except Chaksu and Dudu Blocks and parts of Sambhar, Phagi and Jhotwara Blocks where there is a rise in decadal water level trend. The decadal water level trend map of the district is shown in figure 20. Rising trend is

observed in 25% area of the district between -0.11 m/year in Phagi and -0.67 m/year in Dudu Block (figure 21).

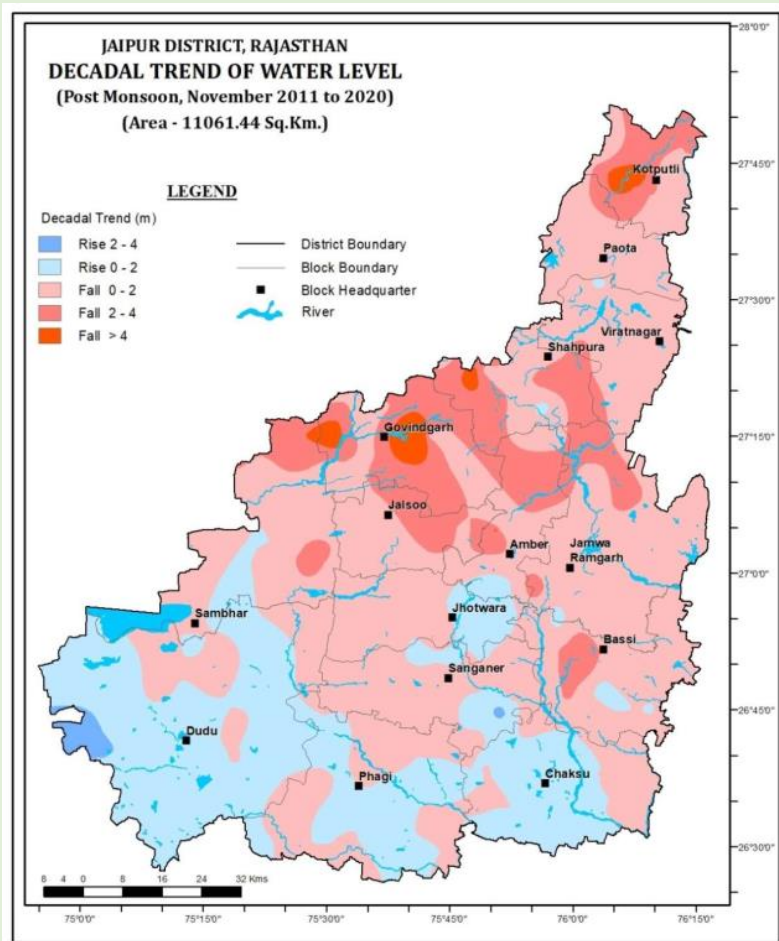


Figure 21: Decadal Trend Map (Post Monsoon 2011-2020)

The decadal water level trend when analysed for pre-monsoon and post monsoon seasons in terms of area (figure 22), depicts the rising trend in pre-monsoon as well as post monsoon seasons in 0 to 2 m and also 2 to 4 m ranges. In premonsoon season the area showing rising trends is 132.48 sq.km and 3552.83 sq.km respectively whereas in post monsoon rising trends in these ranges is observed only in 73.4 and 3041.5 sq.km.

Similarly, a trend analysis was conducted to identify areas exhibiting declining patterns. The analysis revealed that the decline occurred over comparatively large areas in both seasons, totaling 7,376 km² during the pre-monsoon and 7,946 km² during the post-monsoon period. The falling trend in the range of 0 to 2 m was observed in 5662 and 6265 sq.km areas respectively in pre and

post monsoon seasons, whereas within the range of 2 to 4 m it lies in 1539 sq.km. Fall below 4 m was observed in 175 and 142 sq.km in pre and post monsoon seasons respectively.

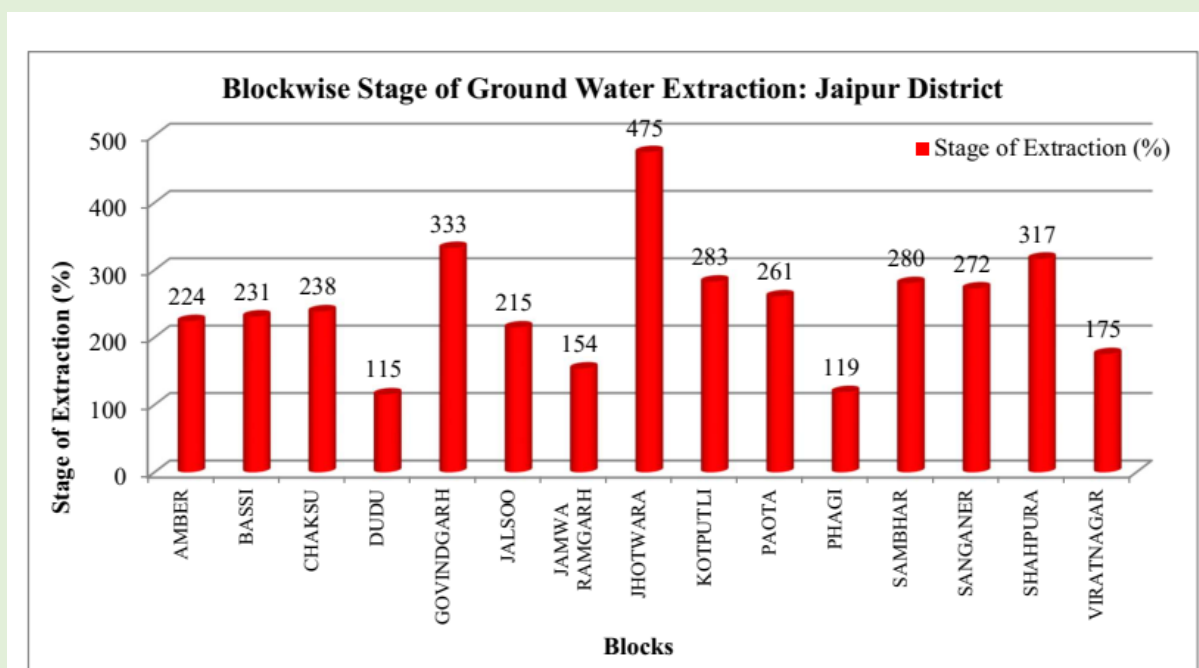
GROUND WATER RESOURCES

In 2020, Central Ground Water Board and Rajasthan Ground Water Department (RGWD) have jointly estimated the ground water resources of Jaipur district through INDIA GEC Software introduced with the aim of “Automation of Estimation of Dynamic Ground Water Resources using GEC2015 methodology and Related Research work to improve GEC Assessment”. The groundwater resources are calculated on the basis of recharge to groundwater from various sources viz. rainfall, inflow from various surface water bodies, return flow from irrigation etc. Similarly draft of groundwater for different uses viz. domestic water supply, industrial and irrigation requirement forms the basis of resource estimation. In 2020, Dynamic Ground Water Resource estimation was carried out for 10334.73 sq. km. area of the district. The total annual groundwater recharge of the district has been assessed to be 77.71 mcm and total extractable ground water has been estimated to be 699.43 mcm. Gross annual ground water draft for all uses has been estimated to be 1617.21 mcm with stage of ground water development at 231.21%. All 15 blocks in the district are categorized as overexploited and block wise graph is presented in figure 41 and map is presented in figure 42.

Table 16: Status of Ground Water resources as on 31.03.2020

Assessment Unit Name	Total Annual GWRecharge	Annual Extractable GW Resource	GW Extraction for Irrigation Use	GW Extraction for Industrial Use	GW Extraction for Domestic Use	Total Extraction	Stage of GW Extraction	Block Categorization
Ham	Ham	Ham	Ham	Ham	Ham	%		
Paota	3268.73	2941.86	7021.30	0	646.67	7667.98	260.65	OE

District	77715.1 7	69943.64	109676.8	3851.72	48192.87	161721.4	231.21	OE
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Categorization Map, Jaipur District

2.5 Forest Types, and cover attributes

2.5.1 Structure and Condition of the Forest

The forests in this region vary due to several factors, including site conditions, soil composition, water table depth, elevation, and geological variations in the Aravalli Hills. Other influences include biological pressure, micro-environmental changes, and human intervention. The region primarily consists of dry and mixed forests, with no distinct boundary separating them. The transition between these forest types occurs gradually. Additionally, human activities have significantly altered the natural vegetation.

2.5.2 Forest Classification

According to Revised Survey of Indian Forest Types (1968) by Champion and Seth, the forests in this region fall under the “Dry Forest Types” category. Specifically, they belong to Group 5 – Tropical Dry Deciduous Forests and Subgroup 5B – Northern Tropical Dry Deciduous Forests (Chhattisgarhi Tropical Dry Deciduous Forests).

The dominant tree species in these forests is Dhaunk. Other associated species include Salar, Gurjan, Kaday, Khirni, Dudhi, Dhak, Churel, Amaltas, Khair, Ronj, Kumtha, Siras, Badaber, Sainjana, Kalam, and Peepal.

The undergrowth consists of plants such as Kair, Gageran, Thaparaman, Jhadber, Adusa, Bajradanti, *Dipteracanthus patulus*, Danceren, *Sarcostemma acidum*, and *Saccharinja Leucopyrus*.

Common grasses found in the region include Pollardi, Lapla, Doob, Rusia, Karad, *Digitaris* species, Garmeno, and *Sporobolus*. The forests also host various creepers like Kalidudhi, Jeetimarabel, Badh, Shatavari, Kalihari, and Koch. Additionally, the parasite Banda commonly grows on Salar trees.

2.5.3 Ecological Conditions

In dry mixed deciduous forests, certain tree species have the ability to form pure stands. These forest types thrive under harsh environmental conditions, including poor soil, extreme atmospheric conditions, and biological stressors. Dhaunk is a species known for growing in high-quality soil.

Historically, Katha trees were found alongside Dhaunk in the Digota block, but their numbers have significantly declined due to illegal logging and overgrazing. In some areas, Dhaunk trees have almost vanished. Dhonk and Kumtha grow together on dry slopes, while Kumtha is commonly found on flat land between mountain ranges. In certain areas with settled sand, Kumtha coexists with thorny vegetation.

2.5.4 Flora of Rajasthan:

The vegetation of Rajasthan exhibits remarkable diversity due to its wide range of natural habitats, which include deserts, wetlands, mountains, plains, arid zones, and semi-humid regions. The first botanical exploration of this region was conducted by Jaquemont in 1832. Subsequent studies were carried out by Dr. George King (1868), Duthie (1886), Blatter & Hallberg (1918-21), Parker (1921), Bhandari (1967), B. Tyagi & Shiv Sharma (1979), and Shetty & Singh (1993). Other researchers have also conducted surveys of specific districts or limited regions. Additionally, the Forest Department maintains detailed records of major tree species and forest classifications in its management plans.

2.5.5 Diversity of Flowering Plants

According to Shetty (1983), Rajasthan is home to approximately 1,280 species of flowering plants. The classification of these species is as follows:

Classification(as per Bentham & Hooker)	Dicotyledons	Monocotyledons	Total
Families	122	31	159
Genera	602	177	779
Species	1,395	515	1,920

2.5.6 Largest Plant Families in Rajasthan

The following are the top 10 plant families in Rajasthan based on the number of species and genera:

Plant Family (Key Species)	Species Count	Genera Count
Poaceae (Grasses)	296	102

Leguminosae-Fabaceae(Acacia family)	230	67
Compositae-Asteraceae (Sunflower family)	128	62
Cyperaceae (Sedge family - Nagarmotha)	100	15
Acanthaceae (Adusa family)	85	30
Euphorbiaceae (Spurge family - Thor)	59	17
Convolvulaceae (Shankhpushpi family)	58	12
Scrophulariaceae (Dogflower family)	54	26
Malvaceae-Bombacaceae (Silk Cotton family - Semal)	53	11
Lamiaceae (Tulsi family)	43	15

This classification highlights the richness of Rajasthan's flora, ranging from grasses and legumes to medicinal and flowering plants.

2.5.7 Overall view of Rajasthan State Flora:

Despite a large portion of its total area being desert and having minimal forest cover, Rajasthan boasts a rich and diverse flora. The state's natural vegetation falls under the Northern Desert Thorn Forest category (Champion, 1936). These forests appear in small, scattered clumps, with density and patch size increasing from west to east in correlation with rising rainfall levels.

The Northwestern Thorn Scrub Forests form a band around the Thar Desert, bridging the desert and the Aravalli range. The Aravalli hills and southeastern Rajasthan are home to dry deciduous forests, which include tropical dry broadleaf species such as teak and Acacia. In the southernmost part of the state, the 'Vagad' region, bordering Gujarat, receives the highest rainfall (except for Mount Abu) and is the most heavily forested. North of Vagad lies the Mewar region, encompassing the cities of Udaipur and Chittaurgarh, while the Hadoti region is situated to the southeast, along the Madhya Pradesh border. Further north, the Dhundhar region includes Jaipur, the state capital, and the easternmost region, Mewat, borders Haryana and Uttar Pradesh. Each of these regions hosts distinct and diverse flora.

2.5.8 Floral composition of jaipur district:

Areas like Jodhpur and Mt. Ahu in Rajasthan attracted the attention of pioneer workers like Brandis (1874) and King (1878). Ajmer-Mei-wara was explored by Duthie (1886), and the Rajputana desert regions, including Jodhpur and Jaisalmer, were documented in a series of papers by Blatter and Hallberg (1918–1921). However, Jaipur district was not specifically studied by any of these early workers. Aside from its limited inclusion in Flora of the Upper Gangetic Plains (Duthie, 1903–1920), brief mentions of some plant species by Parker (1918), and the enumeration of forest species in the forest report of the erstwhile Jaipur State by George (1937), the area has remained largely unexplored from a botanical perspective. Even after 1950, when studies on the flora of Rajasthan region were promoted, Jaipur escaped the attention of botanists once again, except the ecological studies by Joshi (1957) and Verma (1967). The only publication on flora of this district is a list of common grasses of Jaipur by Gandhi et al (1961) which needs a thorough revision.

The first report on the taxonomy and flora of Jaipur district by Shiv Sharama in 1974, which published in January, 1978 in Indian Forester. According to Jain (1970) the total angiospermic flora of the state of Rajasthan comprises of about 1280 species, belonging to about 600 genera and 110 families. The flora of Jaipur district excluding the cultigens, comprises of 612 species, grouped into 343 genera, assigned to 05 families (Sherma, 1974).

The study (Sherma, 1974) was in accordance with the findings of Maheshwari (1963) for the Delhi area; Blatter and Hallberg (loc. cit.) for the Rajputana desert, and Jain (loc. cit.) for the entire Rajasthan. These, however, do not conform to those for the Indian continent (Hooker, loc. cit.) and Saurashtra (Santapau, 1953). Families occupying sixth to tenth positions in these areas, with slight variations are as follows: Euphorbiaceae, Convolvulaceae, Boraginaceae, Amaranthaceae, Malvaceae, Scrophulariaceae and Utriculariaceae (t..2).

The primary difference in floristic composition is observed when comparing this region with the Upper Gangetic Plains (Hooker, loc. cit.) and Saurashtra (Santapsu, loc. cit.). Compared to these areas, Leguminosae exchange position with Poaceae in Saurashtra area; Cyperaceae and Asteraceae exchange positions in the Upper-gangetic plains; Scrophulariaceae which occupy fifth

position in the list of Uppcr—gangetic plains are the last for Jaipur district; similarly Euphorbiaceae listed at sixth rank for the present area are the last but one in the neighbouring area of Rajputana desert (Blatter and Hallberg, loc. cit.).

The family Urticaceae, ranked tenth in terms of representation for the Indian subcontinent (Hooker, loc. cit.), does not feature among the ten most dominant families in the area surveyed or in the surrounding regions. The larger genera in the flora are *Cyperus* (17 spp.), *Indigofera* (12 spp.), *Ipomoea* (10 spp.), *Euphorbia*, *Emgrosris*, *Tephrosia*, *Heliolropium*, *Alysicarpus* (8 spp. each), *Cassia*, *Acacia* and *Rosellularia* (6 spp. each). Inclusion of *Orotalaria* and *Grewia* (fide Jain, loc. cit.) makes the list complete for Rajasthan state. Two-third of the total number of genera (i.e. 229) are represented by single species.

Considering the number of genera, the families can be arranged in the following sequence: Poaceae (54); Asparagaceae (32); Leguminosae (28); Acanthaceae (11); Euphorbiaceae, Amaranthaceae, Cucurbitaceae (9 each); Boraginaceae (8); Scrophulariaceae (7); Convolvulaceae and Malvaceae (6 each); and Cyperaceae (5). The first four positions are true for Rajasthan state (Jain, loc. cit.).

The ratio between monocots and dicots comes to 1:3 at the level of species and genera, and 1:5 at the family level. Except for the ratio at the generic level, which is 1:4, these figures also hold true for Rajasthan state.

2.5.9 The habit forms:

Families exhibiting all habit forms, including trees, shrubs, climbers, and herbs, are not many. Only Capparidaceae, Papilionaceae, and Apocynaceae complete the list.

About seven families—Sterculiaceae, Tiliaceae, Sapindaceae, Caesalpiniaceae, Rubiaceae, Boraginaceae, and Verbenaceae—are represented by herbs, shrubs, and trees. The largest group (29 families) consists of those represented solely by herbs. Except for Malvaceae, Leguminosae, Boraginaceae, and Euphorbiaceae, even the rest of the dominant families lack trees.

Among the 28 families that include tree species, 17 have trees exclusively. Trees are mostly found near moist areas or on hills and are rarely present in sandy regions. The total number of tree

species is 64; of these, 28 are meso-phanerophytes, while the rest are micro-phanerophytes. There is not a single tall tree (mega-phanerophyte) in this area.

Twenty-two species belonging to 10 families occur as perennial climbers. These include three parasitic species of *Cuscuta* and the woody, partial parasite *Dendrophthoe falcata*. Some climbers are lianas.

Sixteen hydrophytic species are distributed across 10 families, with *Lentibulariaceae* being the sole representative of insectivorous families. Helophytes, which have not been included above, number more than 30. Geophytes comprise 20 species spread across 10 families. These persist by means of modified roots, corms, tuberous roots, rhizomes, and bulbs. The largest percentage (46.21%) consists of therophytes.

2.5.10 the Floral Elements

Bharucha and Meher-Homji (1965) consider geographical elements fundamental to understanding flora, and they suggest that floral analysis should begin with these elements. In their study of the floral elements of semi-arid zones in India, they adopted the classification used by Blatter, McCann, and Sabnis (1929). The present study follows the pattern used by Bharucha and Meher-Homji (loc. cit.).

A comparison of the data (Table) with neighbouring areas—such as Delhi (Maheshwari, loc. cit.), the Indus Delta (Blatter, McCann, and Sabnis, op. cit.), and the Northern Zone of the semi-arid regions of the Indian subcontinent (Bharucha and Meher-Homji, 1963)—leads to the following conclusions:

The endemic element (restricted to the semi-arid zone) is relatively low in the surveyed area. The Indian element is also insignificant.

There is a considerable increase in the number of Eastern (Indo-Malayan) elements, which represent the floral element with the highest number of species. This is an interesting observation,

as the general climatic conditions do not favor it. However, the plants find refuge in moist, shady niches in the area.

The next significant group consists of species from the tropical regions of the Old World.

Plants from the warm regions of the Old World, as well as from tropical and subtropical countries, are almost unrepresented.

The number of elements from the North African–Indian desert is considerably lower when compared to Sindh or the northern semi-arid zones of the Indian subcontinent.

The floristic composition of the studied area is a mixture of Eastern (Indo-Malayan) elements (35%) and floral elements from the tropics of the Old World and pantropical regions (31%). Aside from these two deviations, the remaining data largely align with the floristic composition of the northern semi-arid zones, as described by Bharucha and Meher-Homji (*loc. cit.*) and neighboring areas such as Delhi (Maheshwari, *loc. cit.*). Interestingly, the present findings support Hooker's view, as expressed in Hooker & Thomson (1855).

Floral Elements in Northern Semi-Arid Zones of the Indian Subcontinent (Jaipur District)

(Sources: Blatt & Ann, 1929; Bharucha (*present*); Meher-Homji, 1965; Deb, 1963)

Floral Elements	Sind(Blatt & Ann, 1929)	Northern Semi-Arid Zones in Indian Subcontinent	Jaipur District	Delhi (Maheshwari 1963)
Endemic Elements (restricted to semi-arid regions)	6	23	1	22
Indian Elements	29	227	11	81
Eastern Elements (Indo-Malayan)	16	109	190	33
Western Elements				
(a) North African-Indian Desert	60	89	24	23
(b) North African Steppe	37	33	1	17
(c) Tropical African-Indian	13	48	40	33
(d) Mediterranean	2	37	4	10
Oriental Elements	5	18	11	-
European Elements	1	14	13	-
General Elements				
(a) Tropical				
- Tropics of Old World and Pantropical	39	198	171	37
- Tropical America	19	11	12	14
(b) Warm-Country Elements				
- Warm Countries	22	71	12	-
- Tropical & Subtropical Countries	6	14	1	-
- Warm Parts of Old World	3	6	2	-
(c) Temperate Elements	1	30	34	8

Floral Elements	Sind(Blatt & Ann, 1929)	Northern Semi-Arid Zones in Indian Subcontinent	Jaipur District	Delhi (Maheshwari 1963)
(d) Cosmopolitan Elements	6	21	80	200

2.5.11 Structure and Condition of Forests

The forests falling within the working plan area of Jaipur district show variations due to different circumstances such as site, nature, soil, depth of water level, altitude, changes in the Aravalli hills and rocks, biotic pressure, changes in micro-environment, etc. Mainly Dhauk forests and Mixed forests are found here. The dividing line between them is not distinct, and the transition occurs gradually. Due to human interference, there have also been floral changes in the natural forests.

2.1.2 General Description of Forest Wealth: The density of vegetation in valleys and other areas far from human habitations in the district is comparatively quite good

2(A).2 Classification of Forests

According to the edition of the book "Revised Survey of Forest Types of India 1968" written by Champion and Seth, the forests of this division fall under the category of "Dry Forest Types (Tropical Forests)". As per Champion and Seth, the following Groups, Sub-Groups, Types, and Sub-Types of forests have been classified in this district:

Group 5: Tropical dry deciduous forest

- 2.2.1 Sub-Group 5B - Northern tropical dry deciduous forests
 - Type 5B/C2 - Northern dry mixed deciduous forests

The sequence of forests in Edaphic Climax Formation is as follows:

- 5B/E1 Dhauk Forest (*Anogeissus pendula* Forest)
- 5B/E2 Salar Forest (*Boswellia* Forests)
- 5B/E3 Babul Forest (*Babul* Forests)
- 5B/E5 Dhak Forest (*Butea* Forests)

2.2.2 The degraded stages of Tropical Dry Deciduous Forests are as follows:

- DS1 Dry deciduous scrub
- E+1+/DS1 *Anogeissus pendula* Scrub
- DS3 Euphorbia scrub
- DS4 Dry Grass land Forest

2.2.3 The types of General seral types of dry deciduous forests are as follows:

- 1S1- Dry tropical riverain forests
- 2S1- Secondary dry deciduous forests

2.2.4 Group -6 Tropical thorn forests

- 2.2.5 Sub-Group-6B - Northern tropical thorn forests
 - Type 6B/C1 - Desert thorn forests
 - Type 6B/C2 - Ravine thorn forest

The degraded stages of Tropical thorn forests are as follows:

- DS1 - *Zizyphus* Scrub
- DS2 - Tropical Euphorbia scrub

2.2.6 Northern Dry Mixed Deciduous Forests

These types of forests are generally found in the forest blocks of Digota, Jamwa Mata, Badi Line Amer, Talwa-Bihajar, Bamanwati, Kanikhor, and Ramgarh. Species like Dhauk, Salar, Kumtha, and Dhak also belong to this category.

- These groups thrive well in valleys where soil and moisture are found.
- On plateaus and slopes with good drainage, Salar tends to replace these types of forests.
- On other dry slopes, Dhauk trees replace them.
- A characteristic of these forests is that they remain leafless from March to June, during which time they bear fruits and flowers.
- Upper Canopy Trees: Dhauk, Dhavda, Kumtha, Salar, Kaday, Senjana, Kalam, Gular, Kala Siris, Sahjana, Gurjan, Dhak, Papdi (Churel), Khair, Tendu, etc.
- Small Trees: Khirni, Dudhi, Amaltas, Badaber, Ronjh, Kachnar, etc.
- Lower Canopy Plants (Undergrowth): Adusa, Gageran, Thaparaman, Dasran, Jhadber, etc.
- Ground Surface Plants (Herbs/Shrubs): Pawad, Satyanashi, Neel (*Indigofera* species), *Amaranthus* species, *Acanthospermum hispidum*, *Hibiscus lobatus*, *Salvia aegyptia*, *Mimosa pudica*, *Polygonum*, etc.
- Main Grasses: Gagan, Lapla, Dhaman species, Gandhel, Karad, Surwal, Dab, *Panicum* species, *Sporobolus*, etc.
- Bamboo is found sparsely in the Digota forest block, in areas with moist deep soil

2.2.7 Dhauk Forest (*Anogeissus pendula* forests) (Type 5-B/E1)

- Forests of this type mainly consist of the Dhauk species, which are found over 80 percent of the area.
- The main accessory species, such as Salar, Gurjan, Kaday, Khirni, Dudhi, Dhak, Churel, Amaltas, Tendu, Khair, Ronjh, Kumtha, Siris, Badaber, Senjana, Safed Dhauk, Kalam, and Peepal, are limited to the Digota block.

- Dhauk is an edaphic climax species. In moist areas like Digota, Dhauk and Bamboo are found together.
- The height of Dhauk is 3.0 to 15.0 meters.
- Ecological Status: Over the last 4 decades, 75-80 percent of the trees have been destroyed due to uncontrolled grazing, illegal cutting, and lopping. Due to excessive cutting and lopping, Dhauk trees have taken a shrub-like form.

2.2.11 Salar Forest (*Boswellia* forest - 5/E2)

- This is a type of Open Forest where Salar trees form the top canopy over small-statured trees⁵⁰.
- Good quality trees are found in the Digota forest block. In other blocks, trees are stunted and have thick, crooked trunks.
- The trees remain leafless from February to June.
- Ecological Status: These forests are more stable in specific areas and the trees are fire-resistant. Local people often do not cut Salar for fodder or fuel, which is why good trees are seen near habitation areas. According to Champion and Seth, this tree does not have the capacity to coppice.

Other Forest Types

Section	Forest Type (English)	Key Characteristics & Species
2.2.12	Babul Forest (Type 5/E3)	Desi Babul is the dominant species , found with Rohida and Khejri. Grows in sandy or sandy loam soil. Wood is used for tools and furniture; bark is used for dyeing leather.
2.2.13	Dhak Forest (<i>Butea</i> Forest) (Type 5/E5)	Found mostly on flat land. Trunks are crooked. Flowers (red) are collected for making dye.
2.2.14	Date Palm Forest (<i>Phoenix</i> <i>Savannah</i>) (Type 5/Esa)	<i>Phoenix sylvestris</i> (Indian Date Palm) found on riverbanks and in areas with swampy and alluvial loam soil.
2.2.15	Dry bamboo brakes (Type E/E9)	Only <i>Dendrocalamus strictus</i> is found. Found near nullahs in moist areas (Digota block). Becoming nearly extinct due to biotic pressure.
2.2.17	Desert Thorn Forest (Type 6B/c ₁)	Found in areas with small hills and consolidated sandy soil. Kumtha and Khejri are the prominent species. Regeneration of Khejri mostly occurs from root sprouts.
2.2.18	Ravine Thorn Forests (Type 6B/C2)	Found in sandy soil with small ravines at foothills. Seen on the banks of the Moral and Banganga rivers. Tree density is very low (height approx. 5-6m). Classified as a Climatic Climax species ⁷³ , but now almost destroyed due to excessive biotic pressure and soil erosion.

Section	Forest Type (English)	Key Characteristics & Species
2.2.22	Pilu Forest (<i>Salvadora</i> Scrub-Type 6/E4)	Found in areas with dry, saline, or alkaline soil, such as around Sambhar Lake. Main species include Pilu species and <i>Tamarix aphylla</i> (Tamarisk).
2.2.23	Desert Dune Scrub (Type 6/E4/DSI/IS1)	Consists of thorny plants found in sandy areas (Jaipur, Amer, Virat Nagar, Ramgarh). Main species: Khejri, Ronjh, Desi Babul, Baonli, Ber species, Desi Aak, Kheemp, Kumtha, etc..

2.2.24 Blanks and Depleted Areas

This includes areas of forest land in an extremely degraded condition, where hardly any tree species or plants are found. The vegetation density is always less than 0.02.

- 5/DS4 type forests (Dry Grassland Forest) are found on the flat upper plateau and gentle slopes of the hills where grass easily grows. The main grass species in these areas are Karad, Ratarda, Surwal, Buhari, Doob, etc..
- There are also areas with excessive cutting, which are rocky and stony with less soil and more boulders. Due to long-term uncontrolled cutting, lopping, and grazing, these areas have become incapable of generating and sustaining any kind of vegetation.

General Description

During the princely era, the forests of Jaipur and its adjoining regions were managed by the rulers and feudal lords as hunting grounds. At that time, forests were rich in wildlife diversity and abundance. In the years following India's independence, the relatively rapid growth in

population, expansion of agriculture through large-scale clearing of forests, increased grazing pressure in forest areas, construction of dams and roads, and growing industrialisation resulted in depletion of natural wildlife habitats and food sources.

Additionally, in a democratic setup, fear of the State and legal enforcement gradually reduced among the public, affecting forests and wildlife the most. However, along with the development process, from the 1980s onward, large-scale plantation activities helped revive wildlife habitats again.

Within the Jamwa Ramgarh Range, the Ramgarh Sanctuary covers an area of 23.367 sq. km. Similarly, in the hill ranges of Jaipur, the Nahargarh Sanctuary has also been established, spanning more than 52.40 sq. km.

A zoological park is located at the Jaipur headquarters, where both mammals and birds are systematically maintained within the premises of Ram Niwas Garden. Additionally, a Biological Park has been established inside the Nahargarh forest block, which also houses a Rescue Centre. Injured tigers, leopards, lions, and other wild animals are brought here for treatment and rehabilitation. Animals rescued from circuses are also rehabilitated here.

An officer of the rank of Deputy Conservator of Forests (State Forest Service) is posted as the Deputy Wildlife Warden of this zoological establishment.

The major wildlife species found in this region include leopard, striped hyena, jackal, nilgai (blue bull), porcupine, hare, fox, monkey, etc. Common reptiles include monitor lizard, mongoose, spiny-tailed lizard, rat snake, cobra, and other snake species. Among birds, peafowl, pigeon, partridge, quail, dove, lapwing, bustard, various herons, parrots, mynas, small passerines, eagles, and owls are frequently observed.

2.6 Flora and Fauna

A detailed list of wildlife species occurring in the district has already been presented at the beginning of the Working Plan. Broadly, the mammalian, avifaunal, reptilian, amphibian, and fish fauna found in the district is as follows:

Mammals

The forested as well as non-forested landscapes of the district do not support very large populations of mammalian wildlife. During peak summers, due to shortage of water, shade, and food within the forests, mammals are often sighted near settlements or agricultural fields.

Common mammals found in the district include:

- Monkey, Langur, Leopard, Wild Cat
- Mongoose, Jackal, Fox, Striped Hyena
- Wolf, Porcupine, Squirrel, Rat
- Hare, Bat, Otter, Civet
- Desert Cat, Chinkara, Blackbuck
- Nilgai, Wild Boar, Sambar
- Chital, Four-horned Antelope (Chousingha)
- Jungle Cat, Golden Cat, Rusty-spotted Cat, etc.

Avifauna (Birds)

Due to a large number of ponds and water bodies, the district provides favourable habitat for both migratory and resident birds. During winter months, the following species of migratory birds are commonly observed around these wetlands.

Bird class:

The most commonly spotted bird species of this area were Cattle Egret, Intermediate Egret, Red-wattled Lapwing, Rock Pigeon, Eurasian Collared-Dove, Spotted Dove, Chestnut-headed Bee-eater, Bank Myna and Common Myna. The Indian Peafowl was observed which is listed as schedule –I as per WPA, 1972 and others listed as schedule IV as per WPA, 1972.

Due to the presence of ponds and anicuts, a suitable environment is available for migratory and non-migratory birds. During winter months, some of the following migratory birds can be frequently seen at the numerous ponds and anicuts spread across the region:-

Some of the local migratory birds frequently visiting the region during summer season are:-

* Some Quails * Some Bee-eaters

Some of the main birds locally found in the region are:-

Green Bee-eaters

* Shikra * House Sparrow

* Various types of parrots * various types of Munias

* Various Sandgrouse * various types of Mynas

* Various types of Owls

Birds of water sources are found around ponds, check dams, anicuts, mining areas etc. Trees of different species like Banyan, Peepal, Mango, Babul etc. are found on the Paal which provide a suitable shelter for birds. Snails, frogs and many types of animals suitable for birds are found in these water sources. Due to the high temperature at water sources in winter, insect eating birds get enough food even in winter. For this reason, migratory and non-migratory birds can be seen at all water sources in the district in winter.

The following bird species are on the verge of extinction:-

Spotted Creeper

Scaly Breasted Munia

Spanish Sparrow

Peacock are in good numbers.

Birds Frequently Seen in Summer (Migratory Arrivals)

Some species of quails, Jacobin cuckoo, Common hawk cuckoo, Grey-bellied cuckoo, bee-eaters, Indian pitta, and coppersmith barbet.

Common Resident Birds

Quails, Grey Francolin, Painted Spurfowl, Ducks, Storks (including Painted Stork), Ibises, Spoonbills, Herons, Bitterns, Egrets, Cormorants, Falcons, Kites, Honey Buzzards, Vultures, Eagles, Shikra, Eurasian Sparrowhawk, Lapwings, Sandgrouse, Kingfishers, Hoopoe, Hornbills, Barbets, Woodpeckers, Drongos, Bulbuls, Babblers, Mynas, Robins, Prinia, Larks, Warblers, Terns, Doves, Owls, Nightjars, Sunbirds, Weaver birds, Munias, etc.

Birds on the Verge of Local Extinction

- **Rain Quail**
- **Lesser Flamingo**
- **Black Bittern**
- **Lesser Kestrel**
- **Indian White-backed Vulture**
- **Broad-billed Sandpiper**
- **Black-bellied Tern**
- **Alexandrine Parakeet**
- **Grey-bellied Cuckoo**

- **Brown Fish Owl**
- **Plaintive Cuckoo**
- **Spotted Creeper**
- **Spanish Sparrow**
- **Scaly-breasted Munia**
- **Streaked Weaver**
- **Grey-necked Bunting**
- **Brown Hawk-Owl**
- **Brown-headed Barbet**
- **White-naped Tit**
- **Barn Swallow**

Reptiles

The district has abundant water sources, providing suitable habitat for a rich reptilian population.

Common species include:

- **Crocodile, Turtle**
- **Lizard, Chameleon**
- **Spiny-tailed Lizard, Monitor Lizard**
- **Python, Cobra**
- **Krait, Viper, Rat Snake, etc.**

Amphibians

Due to adequate water availability, the district offers favourable breeding conditions for amphibians. Frogs and toads are commonly found in and around these water bodies, where food and shelter are readily available.

Fish

Common fish species found include:

- Catla
- Rohu
- Bata
- Singhi
- Laachi
- Singara

2.7 Corridor linkages (Natural, Anthropogenic and Functionality)

Corridor linkages are connected areas that can be used as pathways or habitats to improve connectivity between different areas of land. They can be an important part of wildlife conservation strategies, as they can help with habitat loss and fragmentation.

It is no secret that habitat destruction and fragmentation are the leading causes of biodiversity loss worldwide, and climate change is only making it worse.

Species blinking out, shrinking populations, and significant range contractions caused by human activities have negative impacts on biodiversity as well as ecosystem functions and services. Extinction events have happened before in our Earth's history, but this time, they are happening much faster.

Here are some benefits of corridor linkages:

Habitat

Corridors can provide habitat for resting and feeding, and can help species continue their migration.

Connectivity

Corridors can help increase gene flow and population viability, and allow species to recolonize areas.

Human-made linkages

Human-made linkages, such as wildlife overpasses and underpasses, can help mitigate habitat loss.

However, corridor linkages can also have some negative effects:

Edge effects: Corridors can be dominated by edge effects, which can increase the risk of disease and parasitism.

Invasive species: Corridors can facilitate the spread of invasive species.

Dispersal barriers: Linear corridors can create new barriers when they intersect other habitats.

Some alternatives to linear corridors include semi-open corridors, which can connect both open habitats and woodlands.

The Importance of Corridors for Biodiversity

Yet, the bulk of data demonstrates that more than ever, maintaining ecological connectivity through corridors is key to the conservation of our natural world. Connected, protected, and conserved areas are stronger, and corridors are a major component in successfully fighting fragmentation and strengthening biodiversity. These physical links are one of the most important ways to ensure species are able to move between protected areas and maintain genetic strength.

Wildlife has many reasons to travel across landscapes and between large protected havens. Daily movements, seasonal migrations, shifting habitats, escaping natural ecosystem disturbances, or the need to adapt to climate change are all possible.

What they face as barriers to their movement can vary as well. Fencing, highways, towns, and other development often stand in the way of finding mates, food, or new places to thrive. Connectivity conservation is therefore needed at local, regional, and global levels and across landscapes with various degrees of influence from people.

Connectivity management ranges from smaller scales, such as between streams or berry patches, to regional and even continental scales, such as major rivers or mountain ranges. Increasingly, looking at landscapes at the scale at which wildlife uses it has become a focus in the conservation world.

2.8. Socio-Economic & Socio-Cultural Profile: Paota–Pragpura / Kotputli Area

Spatial Focus: Villages adjacent to Buchara Main Forest Block (Buchara, Tuscola, Bhonawas, Fatepura, Rooppura, Jugalpura, Torda)

The socio-economic and socio-cultural profile of the villages adjacent to the Buchara Main Forest Block in the Paota-Kotputli area is a tapestry woven from tradition, topography, and evolving economic opportunities. While the agrarian foundation, strong caste-based social structure, and distinct Rajasthani culture define the socio-cultural life, the economy is increasingly diversified by mining and its strategic location near a major national highway. Future development hinges on effectively managing water resources, bridging the gender gap in education, and ensuring that industrial growth is environmentally and socially sustainable for the forest-dependent communities.

2.8.1: Introduction and Geographical Context

2.8.1.1 Introduction to the Study Area

The region under study is situated in the Kotputli-Behror district of Rajasthan, with the twin municipalities of Paota and Pragpura serving as key urban and administrative centers. The analysis focuses specifically on the cluster of villages nestled against the Buchara Main Forest Block, which is part of the Aravalli range—the geological backbone of the region. This geographical interface between the fertile plains and the rocky, forested hills dictates the unique blend of economic activities and social life.

2.8.1.2 Geographical and Spatial Reference

The villages—Buchara, Tuscola, Bhonawas, Fatehpura, Rooppura, Jugalpura, and Torda—are spatially defined by their adjacency to the protected/reserved forest area of Buchara.

Topography: The landscape is characterized by the rugged Aravalli foothills, which transition into flatter agricultural land. This topography influences water availability, soil quality, and the nature of economic dependence on both agriculture and natural resources.

Administrative Hubs: The major towns, Kotputli and Paota, are essential for all major economic, educational, and administrative functions, with Buchara village itself being approximately 32 km from the Kotputli tehsil headquarters. The National Highway (NH-48) connecting Delhi and Jaipur runs close to the area, providing crucial connectivity.¹

2.8.1.3 Baseline Demographics (Focus on Buchara and Surrounding Clusters)

Based on the 2011 Census data, which provides the most recent comprehensive village-level statistics, the area exhibits distinct rural demographic features:

Particulars (Buchara Village)	Total	Male	Female
Total Population	2,782	1,486	1,296
Households	460	-	-
Sex Ratio (Females per 1000 Males)	872	-	-
Child Sex Ratio (0-6 yrs)	848	-	-
Literacy Rate	63.66%	77.64%	47.73%

The generally low Sex Ratio and the significant gender gap in literacy are major socio-demographic indicators reflective of rural Rajasthan.

2.8. 2: Socio-Economic Profile – Livelihood and Economy

2.8.2.1 Occupational Structure and Workforce

The economy of the adjacent villages is fundamentally agrarian, though diversified by non-agricultural pursuits, especially those linked to the local geology and regional trade routes.

Primary Sector (Agriculture): A vast majority of the main working population are engaged as cultivators (owners or co-owners) and agricultural laborers. The cultivation is heavily dependent on the monsoon, with typical crops including coarse grains (like Bajra), pulses, and oilseeds. Farming practices are often subsistence-oriented, supplemented by livestock rearing (cattle, goats, and camels), which serves as a crucial economic buffer against crop failure.²

Secondary Sector (Mining and Industry): The Aravalli terrain is rich in minerals.³ The presence of Quartz and Feldspar mining projects near Buchara (e.g., Kaliba ki Dhani) is a significant economic reality. These projects provide direct employment to the local populace, often recruiting workers from surrounding villages to minimize migration. This creates a dual economy where agrarian workers shift to mining or construction labor during lean agricultural seasons.

Tertiary Sector (Services and Trade): A smaller but important segment of the workforce is engaged in services. This includes government employees (teaching, police, army services, particularly noted in the Paota area), and small-scale trade. The proximity to NH-48 and the large mandi (market) in Paota facilitates trade and transport-related income for the residents.

2.8.2.2 Income and Poverty Indicators

While specific household income data for all seven villages is scarce, the socio-economic status can be inferred:

Poverty: The reliance on rain-fed agriculture and manual labor in mining/construction suggests vulnerability to economic shocks (drought, mineral price volatility).

Development Impact: Industrial and mining investments, as noted in various environmental clearance reports for the area, are officially projected to improve the average income level and overall standard of living through job creation. However, this is often balanced against the potential negative impacts on agricultural land and forest resources.

2.8.2.3 Economic Connectivity and Infrastructure

The economic viability of the region is strongly influenced by its connectivity. The road network, supported by both private and public bus services, links local villages to the tehsil headquarters at Kotputli and the regional market hub at Paota. Robust road connectivity is essential for the efficient transport of agricultural produce and mined minerals, facilitating local trade and economic development. **Water and Power:** While electricity is generally available in the main villages, water scarcity remains a perennial challenge, especially for agriculture and daily consumption, typical of semi-arid Rajasthan.

2.8.3: Socio-Cultural Profile – Social Structure and Life

2.8.3.1 Social Stratification: Caste and Community

The social structure is vertically stratified, dominated by the traditional caste system, with a significant presence of historically marginalized groups.

Scheduled Castes (SC) and Scheduled Tribes (ST): These groups form a substantial and integral part of the villages' social fabric. In Buchara, over 47% of the population belongs to the SC and ST categories. Their socio-economic condition is closely tied to the availability of land and non-land-based labor opportunities.

Social life within the village is generally cohesive and revolves around the Gram Panchayat, which serves as the focal point of local governance and community interaction. The Sarpanch, an elected representative, functions as the primary administrative and social authority in accordance with the provisions of the Panchayati Raj Act. Social gatherings, religious events, and ceremonies bind the communities.

2.8.3.2 Education and Human Development

Education is a key area of development, with progress noted but significant disparities remaining.

Literacy Gap: The most striking feature is the large gender disparity in literacy. While male literacy in Buchara approaches 78%, female literacy lags significantly at about 48%. This gap influences women's participation in the formal workforce and decision-making processes.

Educational Infrastructure: The villages have primary and sometimes secondary schools, but for higher education, residents rely on the institutions in Paota and Kotputli. The literacy rate for the Paota-Pragpura region (around 76.33% total literacy for Paota town) is a major reference point for the aspiration and impact of education on rural communities nearby.

2.8.3.3 Culture, Tradition, and Lifestyle

The culture is a vibrant reflection of the Rajasthani heritage, with a strong focus on community, tradition, and reverence for local deities and the natural environment.

Dress and Customs: Traditional attire is still widely prevalent, especially among older residents, signifying cultural identity. Festivals, such as Holi, Diwali, and Teej, are celebrated with traditional fervor, involving community singing (folklore), folk dances, and traditional feasts.

Food Habits: The staple diet primarily consists of millet (Bajra or Jowar), pulses, and local vegetables. Dairy products from livestock are also an important part of the daily diet.

2.8. 4: Spatial Influence of the Buchara Forest and Development Challenges

2.8.4.1 The Role of the Buchara Main Forest Block

The forest block is the defining spatial and ecological feature for this cluster of villages, influencing life beyond mere geography.

Resource Dependency: Historically and in some cases currently, villagers rely on the forest for essential resources like fuelwood, fodder for livestock, and potentially Minor Forest Produce (MFP). This dependency often leads to human-wildlife conflicts and grazing pressures within the Protected Forest boundaries.

The Aravalli Hills and surrounding forest areas are closely associated with local shrines and natural temples, reflecting the integration of the natural environment into the religious and cultural practices of nearby communities. These landscapes serve not only as ecological habitats but also as important centers of cultural and spiritual life, underscoring the intertwined nature of biodiversity and human traditions. **Environmental Concerns:** The proximity to the forest makes these villages highly vulnerable to the environmental impacts of the nearby mining and stone-crushing activities, which can result in air and water pollution, affecting both human health and agricultural output.

2.8.4.2 Key Development Challenges

The villages face a set of interconnected challenges typical of a region undergoing partial industrialization while retaining a strong agrarian base.

Water Scarcity: Groundwater depletion and the reliance on erratic monsoon rains for both domestic use and agriculture pose the single biggest threat to sustained socio-economic growth.

Gender Disparity: The low female literacy rate and sex ratio indicate a need for targeted social programs to empower women and improve gender equality.

Sustainable Livelihoods: Balancing the need for industrial jobs (mining) with the long-term sustainability of agriculture and the environment (forest protection) is a critical planning challenge for local governance.

Healthcare and Social Infrastructure: Basic facilities like schools, hospitals, and access to clean water need continuous upgrading to meet the needs of the growing population.

2.8.4.3 Conclusion

The study area and its surrounding landscapes demonstrate significant ecological value and biodiversity potential. Habitats within and around the conservation reserve support a diverse assemblage of small mammals, reptiles, and shrubland

bird species, many of which are dryland specialists. Adjacent grassland tracts and seasonal waterbodies enhance habitat heterogeneity, supporting amphibians, reptiles, and insectivorous and granivorous passerines.

The structural complexity of the area, including natural ponds, rocky outcrops, and thorny vegetation, contributes to the creation of multiple ecological niches, thereby increasing species richness and overall habitat functionality. These habitats are not only vital for resident species but also serve as corridors and refuges for wide-ranging fauna.

Furthermore, the site holds substantial conservation relevance for large carnivores. While resident populations require systematic field verification, the area's habitat quality and connectivity underscore its role as a key biodiversity asset within the regional landscape.

In conclusion, the conservation reserve and surrounding areas exhibit high ecological integrity and species diversity, highlighting their importance for both regional biodiversity conservation and sustainable management initiatives. Maintaining and enhancing habitat connectivity, protecting water resources, and mitigating anthropogenic pressures will be essential to safeguard the ecological values identified in this study.

2.9.1 Traditional Uses of Plant Resources in and around Bucharā Main Conservation Reserve

The fringe villages surrounding the Bucharā Main Conservation Reserve form part of the eastern fringe of the Shekhawati–Aravalli ecotone, where local communities have historically depended on native vegetation for house construction, agricultural implements, household articles and minor forest produce. The use of locally available plant species reflects a deep understanding of ecological suitability, resilience to arid climate, ease of processing and durability.

Indigenous Dwellings

The traditional huts (locally called Jhumpa or Kachcha Obra) in villages near Bucharā are largely circular or oval with thatched conical roofs. These structures are well adapted to hot-dry winds, frequent duststorms and seasonal temperature fluctuations. The framework is constructed from strong and termite-resistant wood of species such as *Prosopis cineraria* (Khejri), *Acacia nilotica* (Babul), *Tecomella undulata* (Rohida), *Ziziphus nummularia* (Bera), *Crotalaria burhia* (Saniyo) and *Leptadenia pyrotechnica* (Khip). The thatching material generally consists of *Saccharum munja* and other local grasses. Walls are plastered with a mixture of clay, cow-dung and hay which provides natural insulation and acts as an antibacterial and anti-termite layer.

Separate mud-thatched huts (Obra) are traditionally used for grain and seed storage, while partially open shelters (Chhan) are constructed for livestock. This architectural knowledge represents climate-adaptive rural engineering that requires minimal external material inputs.

Indigenous Agricultural Implements

Pastoral and agro-pastoral communities of Bucharā still rely on traditional tools for ploughing, levelling and irrigation, particularly in rain-fed fields. Wood from *Acacia nilotica*, *Acacia leucophloea*, *Dalbergia sissoo*, and *Prosopis cineraria* is preferred for ploughs, levellers (Pata), seed sowers (Orna) and pullies (Bhunn)(घिरनी) because of their tensile strength and resistance to decay. Hollowed bamboo or *Dendrocalamus* culms are used for the traditional seed-sowing tube.

Thorny branches of *Zizyphus nummularia*, *Acacia nilotica*, *Acacia catechu*, *Capparis decidua* and *Maytenus emarginata* form the primary fencing (Baras) around farms and homesteads, protecting crops against stray cattle and wild herbivores.

Household Articles, Daily Utilities and Crafts

Several daily-use articles continue to be fashioned from native plants—grain grinders (Chakki) with wooden handles of *Tecomella undulata*, butter churn stands from *Prosopis cineraria*, pestles from *Acacia catechu* and *Azadirachta indica*, and woven trays (Chhajelo) from *Saccharum munja*. Ropes and cords are traditionally manufactured from *Leptadenia pyrotechnica*, while stems of *Zizyphus mauritiana*, *Dalbergia sissoo* and *Azadirachta indica* are used in charpoy (cot) frames.

Protection of Crops and Traditional ‘Machans’

Raised platforms (Machan) for watching fields are built using *Prosopis cineraria*, *Acacia nilotica* and *Zizyphus nummularia*. Simple scarecrows (Rakhwala / Bijuka) made of local wooden branches emulate human posture and serve as bird deterrents.

2.9.2 Household Articles

Household utility items in the villages surrounding Buchara Main Conservation Reserve (BMCR) largely reflect the cultural continuity of resource-efficient living. Most articles are hand-crafted using locally available plant species that are durable, lightweight, and suited to arid conditions.

Traditional Grinding Devices (Chakki / Ghatt)

The traditional household flour mill (Chakki) continues to be a common feature in pastoral settlements. Although the grinding stones are of rock origin, the handle and supporting frame are made from the wood of *Tecomella undulata* (Rohida) or *Dalbergia sissoo* (Shisham) due to their strength and smooth finish.

Wooden Mortar and Pestle (Okhli–Musal)

Wood from *Acacia catechu* (Khair), *Azadirachta indica* (Neem), and *Dalbergia sissoo* is fashioned into pestles (Musal), while mortars (Okhli) are generally carved from *Acacia nilotica* and *Albizia lebbbeck*, as these species withstand recurrent impact.

Butter Churn (Bilona–Jherna)

The traditional butter-making setup involves a clay pot supported by a stand made from *Prosopis cineraria* (Khejri) wood. The churning stick is often prepared from the dense roots of *Zizyphus nummularia* (Bera). This design enhances rotational stability and resilience.

Winnowing Baskets (Chhajlo / Supra)

Women weave winnowing trays using the flowering stalks of *Saccharum munja* and *Desmostachya bipinnata*. These grasses are lightweight, flexible, and resistant to fungal decay, making them ideal for utensils used in food cleaning and drying.

Brooms

A variety of brooms (Jharoo) are made from the culms of *Saccharum spontaneum*, *Desmostachya bipinnata*, and *Saccharum munja*. Stems of *Leptadenia pyrotechnica* (Khim) and *Sida ovata* are also utilized, especially for outdoor sweeping.

Cots and Ropes

The iconic rural cot (Charpai) is still in daily use. Its legs and frame are constructed from *Dalbergia sissoo*, *Acacia nilotica*, *Azadirachta indica* and *Tecomella undulata*, while the weaving base is formed from hand-twisted ropes of *Leptadenia pyrotechnica* or fibre from *Saccharum benghalense*.

These natural fibres provide a cooling surface and are more durable in arid climates as compared to synthetic ropes.

2.9.3 Miscellaneous Articles and Cultural Uses (Music, Toys & Ritual Plants)

The villages adjoining Buchara Main CR preserve a vibrant tradition of using plant species not only for domestic utilities but also for cultural expression, entertainment, musical heritage, and ritual practices.

Crop Protection Devices (Bijuka / Rakhwala)

Effigies resembling human forms are installed in fields to deter birds and ungulates. These are crafted using crossed sticks of *Prosopis cineraria* or *Acacia nilotica*, dressed with old garments and grass bundles.

Indigenous Musical Instruments

Instrument	Key Plant Species Used	Cultural Role
Chang / Dhap	Wooden frame from <i>Acacia nilotica</i> or Rohida with leather covering	Played during Holi, fairs, community dances
Dhol / Dholak	Body from <i>Azadirachta indica</i> , <i>Dalbergia sissoo</i> , <i>Mangifera indica</i> ; binding with <i>Dendrocalamus strictus</i>	Ceremonial and festive folk rhythm
Flutes (Bansuri)	Hollow culms of <i>Dendrocalamus strictus</i>	Traditional melodies; pastoral recreation
Algoza	Hollow stems of <i>Calotropis procera</i> or bamboo	Dual-pipe rhythms for tribal/folk music
Tambura	Body from <i>Acacia catechu</i> , <i>Moringa oleifera</i> , <i>Mangifera indica</i>	Drone instrument for devotional/folk singing
Ravanhatha	<i>Dendrocalamus</i> bow with coconut-shell resonator	One of Rajasthan's oldest string instruments

These instruments highlight the continuity of plant-based craftsmanship and intangible cultural heritage within the Reserve landscape.

Folk Toys and Pastoral Play Items

- Rural children construct simple yet creative play objects from natural materials:
- Toy tricycle (Gadula) – made of *Prosopis cineraria* or *Acacia nilotica* wood
- Slingshot (Gulel) – made from the forked branches of *Maytenus emarginata*
- Leaf whistles (Pupadi) – fashioned from leaves of *Ficus benghalensis* and *Ficus religiosa*
- Wooden wheels (Gadi) – prepared from *Prosopis cineraria* or *Acacia nilotica*

These reflect close nature-based learning traditions in village childhood.

Ritual and Socio-Religious Uses of Plants

Many local species hold cultural, spiritual or ceremonial significance in households near Buchara CR:

- *Ficus religiosa* (Peepal) and *Ficus benghalensis* (Banyan) are used in worship and village shrines.
- *Prosopis cineraria* (Khejri) is revered in agrarian rituals of prosperity and is central to the Bishnoi traditions.
- *Azadirachta indica* (Neem) leaves are used for purification rites.
- *Calotropis procera* flowers are offered in local deities' worship.

Such ethnobotanical knowledge enhances local stewardship and underscores the cultural dependence on biodiversity within the Buchara landscape.

2.9.4 Conservation Relevance of Indigenous Knowledge

The indigenous knowledge systems prevailing among local communities inhabiting the eco-sensitive zone of Buchara Main Conservation Reserve (BMCR) represent an age-old symbiotic relationship between people and their landscape. These cultural practices are based on sustainable

harvesting principles, climate adaptability and minimal ecological footprint, making them highly relevant for modern conservation approaches. Their integration into management strategies can substantially contribute to community participation, livelihood security, and long-term habitat stability.

(a) Ecological Sustainability and Low Resource Footprint

Traditional hut-making, household utilities and farming tools utilise naturally available dead wood, coppiced shoots, and hardy drought-resistant plant species such as *Prosopis cineraria*, *Acacia nilotica*, *Tecomella undulata* and *Zizyphus nummularia*, which regenerate quickly in arid zones. This ensures minimal disturbance to standing forests, reinforcing principles of circular use of biomass.

(b) Conservation through Cultural Reverence

Culturally protected tree species like Peepal (*Ficus religiosa*), Banyan (*Ficus benghalensis*) and Khejri (*Prosopis cineraria*) act as traditional keystone species. Communities often protect them for spiritual and ritual reasons, indirectly supporting local microclimates, seed-dispersing avifauna, and shade-dependent herbs and creepers. This cultural conservation ethic significantly strengthens in-situ biodiversity protection.

(c) Adaptive Knowledge for Arid Landscapes

The choice of plant species used for rope, fencing, cots, fodder and craft materials is finely tuned to soil type, moisture availability, seasonal regeneration cycles and termite resistance. These ecological insights, passed down orally, serve as a living reference for climate-resilient resource use, directly supporting landscape-level conservation in BMCR.

(d) Support for Participatory Management

The continuation of traditional harvesting practices creates a sense of ownership and emotional connection with the Reserve landscape. Engaging local artisans, pastoralists and women self-help

groups in sustainable plant-resource management helps integrate community co-stewardship into the conservation plan. This reduces conflict, enhances compliance and encourages collective custodianship.

(e) Livelihood-Support Functions

Handcrafted items, musical instruments, fibre products and pastoral toys not only sustain cultural identity but also serve as low-cost livelihood options, particularly under eco-tourism and conservation-linked entrepreneurship models. The revival of traditional crafts can complement sustainable village-based economies around the Reserve without exerting pressure on core wildlife habitats.

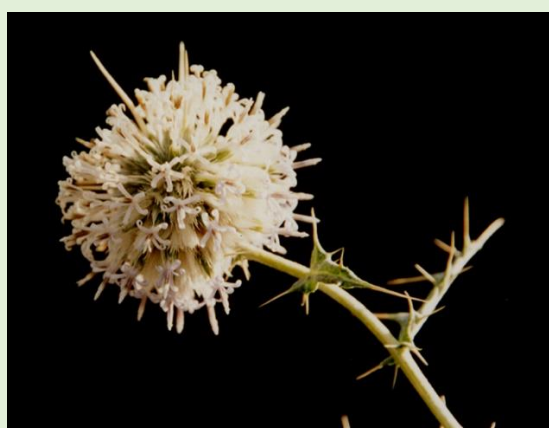
2.9.4.2 Wild Edible Plants

BMCR supports a rich diversity of wild edible plants, providing fruits, leaves, roots, and flowers for local communities. These plants are integral to tribal diets, particularly in lean seasons. Data on their usage was collected through field observation, semi-structured interviews, and group discussions with knowledgeable elders. Key species include:

Botanical Name	Local Name	Family	Part Used	Usage
Ficus racemosa	Gular	Moraceae	Fruits	Eaten raw or processed into jam
Ziziphus mauritiana	Jhari	Rhamnaceae	Fruits	Fresh consumption
Bauhinia racemosa	Jhinjho	Fabaceae	Leaves	Used as leafy vegetable in curries

Amaranthus spinosus	Cholai	Amaranthaceae	Leaves & soft stem	Cooked as vegetable
Flacourtia indica	Kankun	Salicaceae	Fruits	Eaten raw or made into chutney
Capparis decidua	Kair	Combretaceae	Buds & young shoots	Pickled or cooked

These wild edibles contribute to food security, nutritional diversity, and cultural practices, reflecting the continued dependence of rural communities on BMCR's biodiversity.





Chapter- 3

Present Management and Practices

3.1. General History of Forests

3.1.1 Early History of Forests

The history of forests in the Jaipur district is mentioned in texts dating back to the Mahabharata period. The current town of Virat Nagar was established by Raja Virat. After 12 years of exile, the Pandavas spent their one year of incognito living in the palaces and forests of Virat Nagar. The source of the Banganga river is near the village of Maidh, close to Virat Nagar. It is said that Arjuna shot an arrow into the ground of this village to quench the thirst of Bhishma Pitamah, causing water to emerge, thus giving birth to the Banganga river. A religious fair is held here every year. Some historical sites near Virat Nagar bear witness to the presence of the Pandavas. Scriptural evidences from the eleventh century also attest to the dense forests and presence of wildlife in the hilly regions and advanced plateau areas of the Jaipur Forest Division.

For many years, the Raja-Maharajas ruled in Jaipur. The forests were their personal property. At that time, the forests served as their recreational grounds and places of luxury, and they were managed accordingly. At the same time, the needs of the public were also given importance in management. In the Jaipur State, forests were damaged due to exemptions on felling and grazing. Dr. Brandis, the first Inspector General of Forests, drew the attention of the state rulers to this damage in 1868.

In 1868, when Dr. Brandis was travelling to Ajmer, his attention was first drawn to the conservation of forests in the Jaipur State. He inspected the forests of this area and considered the stabilisation of sand dunes found in the areas around Jaipur city. Based on Dr. Brandis' opinion, Colonel Jacob, Executive Engineer, undertook afforestation in 1831 over an area of 200 hectares near the Chandpol Gate.

I. Appointments and Early Recommendations

In 1885, the Jaipur Durbar first appointed Shri E. McMoire as Deputy Conservator of Forests, North-West Circle. Shri Moire conducted an intensive inspection of the state forests and submitted his remarks to the State Government on March 16, 1886.

II. Forest Classification and Management

Shri Moire divided the entire 1,33,040 acres of forest area into 4 divisions: Northern, Southern, Eastern, and Western divisions. He further divided the forests into 3 classes:

- (a) First Class Forest: Grazing was completely prohibited in these areas.

- (b) Second Class Forest: Areas opened for free or fee-based grazing by a limited number of animals.
- (c) Third Class Forest: Illegal felling was prohibited in this area, but grazing was permitted. He laid special emphasis on fire protection and demarcation of forests. He suggested implementing the "Coppice with Standard" system for forest management. He also mentioned cultural operations and afforestation work on a limited scale. For plantation, he recommended the sowing of species like Mango, Jamun, Sheesham, Bamboo, and local species such as Babul, Khejri, Kheri, Siris, Ronjh, etc. He gave special suggestions for the stabilisation of sandy areas like Amanishah and Moti Doongri, and also suggested establishing nurseries for these works.

III. Establishment of the Forest Department

On November 1, 1885, the Forest Department was established, and Shri Bhai Sadhu Singh of Punjab was appointed as the Regional Forest Officer. He attempted to implement Shri Moire's recommendations but could not do so due to several reasons. He prepared a directory named "Code of Instructions for Cash Accounts" for the Forest Department and got it approved by the State Government, which was implemented from September 1, 1889. At that time, control over grazing was not possible due to the lack of demarcation of forest areas. Four Regional Forest Officers were put in charge of the four divisions.

IV. Stagnation and Lack of Progress

For many years, there was no significant progress in forest management. Shri Shivbansh, Choga Lal, and Ram Narayan served as Forest Superintendents between 1892 and 1925. This indicates that the capacity of the Forest Department was almost negligible during this period due to the lack of trained staff. Except for the prohibition of felling in some forests, no regular treatment was suggested for the management of the forests of the Khetri Thikanas.

V. Need for a Forest Policy

In 1923, Shri G.A. Karola, Forest Superintendent, emphasised the need for a Forest Policy, which was the first attempt at forest conservation. He appointed some forest staff and established afforestation and nurseries in the Ajitgarh area. Grass was harvested through annual contracts, where bids were placed in terms of man-days instead of money, and the grass was given free to the Thikanas. The lease was given to the highest bidder. This was a local system of sharing. Grazing was allowed after the grass cutting.

In 1936, Shri McDonald inspected the forests of Ajitgarh, Gadrata, and Bombay. He also inspected old plantation areas, where a count found 50% Cheela and 40% Babul

surviving. He stressed the need for plantation in the areas around Ajitgarh. He also recommended sowing Babul seeds at 4'x4' spacing and proposed their annual pruning and thinning every five years. He also suggested effectively closing the plantation area to grazing for 5 years.

VI. Management Challenges (1925-1933)

In 1925, Thakur Shivrath Singh took charge as Forest Superintendent from Shri Ram Narayan and served until 1933. He undertook the work of demarcating forest areas and included some fallow land in the forest area. Unfortunately, frequent re-demarcation of forest boundaries led to dissatisfaction. Local people and the Forest Department suffered heavy revenue losses, and they faced a double blow regarding grazing. In 1926, he prepared a forest management working scheme and started exploitation by creating some coupes.

Since the order of forest exploitation was not determined in the working scheme, good forest areas were exploited. Additionally, unscientific felling resulted in high stumps being left, and ineffective fencing led to the destruction of new shoots by illegal grazing. This had an extremely devastating impact on regeneration.

VII. Administrative Changes

In 1933, the control of the Forest Department was handed over to Thakur Bhairu Singh. The Shikarkhana (Hunting) and Grass Farm Departments were also merged into the Forest Department. Although Thakur Bhairu Singh was not trained in forestry subjects, he received the cooperation of Shri N.S. Verma, a retired Ranger from the Central Province, who was appointed as Assistant Superintendent (Forest) in 1933.

VIII. Inspection and Recommendations by H.S. George

During November 1936, Shri H.S. George, I.F.S., Deputy Conservator of Forests, Central Circle, was appointed to the Jaipur State by the Government of India. He held this post from November 1936 to January 1933. He conducted a thorough inspection of the forests of the Jaipur State with Shri N.S. Verma. Thereafter, on January 13, 1933, he submitted his report to the government regarding the forests of the Jaipur State. He suggested adding some other areas to the forest boundary, increasing the total area to 336 square miles.

IX. Forest Categorization and Management Suggestions

Shri George divided the forests into 3 classes, similar to M.C.A. Moire, and also determined grazing fees for different categories of forests. He suggested conducting a survey of the forest areas by the Survey of India Department on a 4-inch map and determining the forest boundaries.

He specifically identified and marked areas that could be exploited by the Ordinary Coppice System with a rotation period of 30 years. George suggested a felling girth of 12 inches at breast height (B.H.) for Kala Khair and proposed including the sandy areas of Jaipur like Jhalana, Moti Doongri, Galta, Jagrampura, Baswa Bani's ravine area, etc., in the Plantation Working Circle. For plain areas, he suggested species like Babul, Khejra, Neem, and Sheesham, and for sandy areas, Khejra, Moonj, Koot, and Pani Grass. For ravine areas, he suggested making soil bunds to prevent soil erosion at gullied, eroded mouths. He gave special suggestions for the development and upliftment of range lands like Jhalana, Moti Doongri, Ghat, Galta, Parakh, Mugana, Bhavsagar, Dausa Bani, Liwali Bani, etc. He also formulated various rules regarding the extraction of dry wood and thorny bushes, the cultivation of lac, and the extraction of gum from Kadaya.

3.1.2 Subsequent Developments and Post-Independence Era

I. Forest Manual and Administrative Structure

In 1933, a Forest Manual was prepared, which included various instructions such as the structural framework of the Forest Department, duties and standards for staff of all cadres, the constitution of the State Forest, and its determination. According to this Manual, the general administration of the Forest Department was under the Forest Superintendent, assisted by an Assistant Forest Superintendent. The forest areas were divided into Jaipur, Bairath, Lalsot, Toda Raisingh, and Sawai Madhopur Ranges.

II. Focus on Game Reserves

In 1940, the control of the Forest Department remained with Colonel Kesari Singh, which continued until 1943, except for a short break of only 6 months in 1942. Colonel Kesari Singh developed Shikargahs (Hunting Grounds) and proposed that some selected areas be managed solely for wildlife.

III. Lac Production Potential

In 1942, Shri P.S. Negi, an entomologist at the Indian Lac Research Institute, Ranchi, was invited by the State Government. After inspecting the forest areas, he submitted his report to the government in 1942. Based on his suggestions, the possibilities of lac production on various local species of plants like Peepal, Ber, Ghatbor, Cheela, Barbra, Khair, Babul, etc., and departmental lac production in the state were established.

IV. Separation of Departments and New Appointments

On January 5, 1943, the Forest Department was separated from the Shikarkhana Department. Colonel Kesari Singh remained in charge of the Shikarkhana Department, while the post of Forest Superintendent was abolished and the post of

Conservator of Forests was created. Shri Hira Singh (Retired Forest Officer, Central Circle) was appointed as the First Conservator of Forests of the Jaipur State.

V. Historically, the forests of Jaipur State were reorganized into two primary administrative circles: (1) Jaipur Forest Division and (2) Sawai Madhopur Forest Division. Within these circles, eight forest ranges were established, namely: Jaipur, Ramgarh, Toda Raisingh, Bairath, Lalsot, Toda Bhim, Sawai Madhopur, and Khandar. The forests of the Sikar and Khetri Thikanas, however, continued to be managed by their respective private forest departments, receiving only occasional technical guidance from the Conservator of Forests, Jaipur.

VI. This division and management structure reflects the administrative practices of the period, where state-controlled forests were systematically organized while certain princely or privately managed estates retained autonomous control under limited oversight (reference: past management records). Recommendations by Sir Howard In January 1944, Sir Howard (I.F.S.), Inspector General of Forests, inspected the forest areas of Jaipur State and the forests of Khetri, Pilani, and Jhunjhunu areas. In April 1944, he suggested the following points:

- A Forest Policy should be formulated for the Jaipur State.
- The Jaipur Forest Act should be amended in line with the Indian Forest Act.
- A Private Forest Act should be enacted for the successful control of private and non-Khalsa forest areas.
- Measures should be taken to prevent soil erosion and stabilise sandy dunes.
- Large areas of uncultivable land should be included in the Forest Department.

VII. Personnel Changes and Forest Area

After Shri Hira Singh resigned from the post of Conservator of Forests, Jaipur State, at the beginning of 1945, Shri M.B. Bahuguna took over the post. Shri Bahuguna was relieved by Colonel Kesari Singh in May 1945, and Colonel Kesari Singh remained in this position until 1943.

Shri N.K. Gerila and J.S. Mathur were posted as Divisional Forest Officers for Jaipur and Sawai Madhopur, respectively. The area of Khalsa Forest remained limited to 350 square miles. In addition, there were many other forest areas under various Thikanas, Jagirdars, Tankhadars, and Subedaris. All these were merged into the State Forest. Banis and Johads were found near almost every village in Shekhawati and the Thikanas of Sikar and Khetri. A Tanka (water tank) was built in every Johad where rainwater was collected for drinking by animals.

VIII. Preparation of Working Plans

In 1943, Shri Gopishankar (Retired Deputy Conservator of Forests, U.P.) took charge as the Conservator of Forests of Jaipur State. Shri P.N. Saklani was appointed as the Working Plan Officer, authorised to undertake forest boundary demarcation, forest settlement, and prepare the working plan. However, little work was accomplished beyond initial demarcation, surveying, and marking of estimated boundary pillars.

IX. Post-Independence Interim Management

After completing training as the State Representative in England, Shri Mahendra Prakash was posted as Assistant Conservator of Forests, Jaipur, on August 20, 1943. From November 10, 1943, to March 31, 1950, Shri Mahendra Prakash served as the Acting Conservator of Forests of Jaipur State after Gopikrishnaji. During this period, some progress was recorded in forest settlement and boundary demarcation work, and some soil conservation work was carried out in Ramgarh and Nahri ka Naka. Silvicultural operations were carried out in the Dhonk forests, and work related to forest nurseries was done in Jaipur and Sawai Madhopur. The work of making leaf compost was started. Collection of grass for the state and the public, education on forest protection, and publicity work were initiated. Necessary technical guidelines were also provided to the Forest Officers of Sikar and Khetri.

X. Merger with Rajasthan

Following the merger of the Jaipur State into the State of Rajasthan, the Jaipur State Forest was placed under the Jaipur Forest Division, controlled by a Divisional Forest Officer with headquarters in Jaipur. In 1960, the Sawai Madhopur and Khandar Ranges were merged into the Tonk Forest Division.

3.1.3 Past Management Systems

3.1.3.1 Management Systems in the Past

I. Exploitation and Degradation

Although there was no formal working plan earlier, the forest area was managed by the Ordinary Coppice System with a fixed rotation period of 30 years. There were no regular annual coupes determined in the felling series. In the 1940s, a few coupes were felled by Coppice with Standards at scattered locations. Except for some forests protected for hunting purposes, no provision was made for the protection of the remaining forests. Most areas became degraded due to excessive grazing and lopping. Subsequently, most areas were destroyed by the extraction of small timber and fuelwood through the Ijara (lease) system.

II. Utilization and Revenue

Forest produce was utilised and exploited by traders who obtained short-term leases. Subsequently, private contractors extracted forest produce on an annual basis through open auction or by depositing a fixed fee. Earlier, the management of large grass Bids (grass reserves) was done to supply grass to state permit holders. Grazing in forest areas was done on an annual permit basis, for which a fee was determined from time to time. The duration of the year was considered valid from June 1 to May 31. Grazing passes were considered valid only for the forest block for which they were issued. Licenses were also issued in the name of the animal owner, and their transfer was illegal. In 1933, permits were issued to professional graziers like Banjaras, etc., at the following fees:

Cattle (per cow unit/per year): 25 paisa for Jaipur Range, 6 paisa outside Jaipur.
 Buffalo (per cow unit/per year): 50 paisa for Jaipur, 12 paisa elsewhere.
 Camel (per cow unit/per year): 50 paisa.
 Goat (per cow unit/per year): 12 paisa.

The forest area was divided into the following 3 blocks:

Class-I: This class included all areas where strict control management was to be implemented to allow for scientific exploitation and regeneration. Grazing was prohibited in these areas.

Class-II: This class included all areas in a transitional state that were proposed to be converted from the Second Class to the First Class after soil conservation work. Controlled grazing was permitted in these areas.

Class-III: This class included all remaining areas where the possibilities of improvement were slim, where work was not feasible, nor was it possible to stop grazing.

At the time of the abolition of Jagirs, good forest areas were leased to contractors for a nominal fee. Some areas were completely cleared in the beginning, but later, felling work was started after a working plan was prepared.

III. Special Works for Forest Improvement

- a. Plantation at Chandpol: In 1881, plantation work was carried out in the Bani (forest) near Chandpol Gate, which later became known as Banipark. After a few years, 400 acres of land were added to this plantation. The entire area was closed by fencing and prohibited from grazing. Moonj grass was first planted in this area, which helped in the stabilisation of the sand dunes. In this area, 4,000 saplings of species like Mango, Jamun, Peepal, Ber, Ardu, etc., were planted. The total expenditure on plantation and establishment from 1881 to 1885 was recorded as only ₹10,000.
- b. Post-1945 Plantations: During 1945-46, direct sowing of species like Dhonk, Babul, Neem, *Prosopis juliflora* (Juli Flora), etc., was done in the areas of

Jhalana, Galta, and Amer. Nurseries were established in Amer, Sawai Madhopur, and Khandar. 30-foot-wide belts were cut on the slopes of Dhonk forest areas. Many forest checkpoints were also constructed at various places during the time of Colonel Bhairu Singh.

- c. Khetri Thikana: In the Khetri Thikana, plantation work was first started in 1924 in an area of 100 acres in Gadrata. 80 kg of Babul seeds, 150 kg of Dhak, and 30 kg of Ber seeds were sown. In 1925, this plantation area was expanded, and 40 kg of seeds of species like Teak, Tendu, etc., were sown in this area. This work was also completed under the supervision of McDonald.
- d. Desertification and Shekhawati Plan: In 1943, Sir V.T. Krishnamachari, the Dewan of the Jaipur State, mentioned that the desert was slowly expanding onto the cultivable land of the farmers. A committee was formed in 1948 to study this problem. Subsequently, Shri Lalsingh, Director of Agriculture Development, and Shri Gopishankar, Conservator of Forests, Jaipur, prepared a plan for the development of sandy dunes in the Shekhawati region. This plan was eventually modified by Shri Mahendra Prakash Ji and approved by the Indian Council of Agricultural Research (ICAR), New Delhi, in 1949. Thereafter, in 1949, nurseries were established in the arid parts of Shekhawati and Jhunjhunu, and various development works were started. Research plots were laid out in this area for species like Vilayati Babul (*Prosopis juliflora*), Churail, Mulberry, Faras, and grasses like Antropogon, Sevan, Dhaman, Karad, *Panicum antidotale*, etc. Shelterbelt plantations of species like Siris, Neem, Vilayati Babul, etc., were carried out near the Jaipur Collectorate office. Shri J.M. Banerjee, Deputy Inspector General, inspected these plantations, appreciated the work, and suggested extending similar work elsewhere.
- e. Post-Formation of Rajasthan: After the formation of Rajasthan in 1950, various reforms were initiated, such as afforestation work in areas affected by wind erosion, reforestation of old Jagir forest areas, creation of paddocks, soil conservation work in various areas, and commercial plantation work. During the implementation of various Five-Year Plans, old nurseries were expanded and new nurseries were created to prepare a good quantity of saplings.

3.1.3.2 Management Period: 1966-63 to 1936-33 (V.S. Verma's Working Plan)

Management System in the Period 1966-63 to 1936-33

I. Scientific Management Attempt

For the first time in the history of forest management in the Jaipur district, a plan for the scientific management of forests was prepared by Shri Verma Ji. Forest blocks and compartments were marked on G.T. Sheets. Their boundaries were determined in the designated area, and the history of the compartments was recorded.

II. General Objectives of Shri Verma Ji's Working Plan:

- To ensure, as far as possible, the supply of grass, fuelwood, timber, and forest produce demanded by the local population.
- To secure and conserve the forest wealth of all forest areas, especially those prone to landslides and erosion.
- To improve the quality and density of degraded forests through reforestation and silvicultural measures.
- To improve the condition of grass/grazing lands by incorporating good quality grass species and rotational grazing.
- To emphasise the protection and conservation of wildlife as a national heritage for economic prosperity and recreation.
- To ensure the maximum and sustainable retrieval of revenue and produce from the forests in accordance with the scientific principles of forest policy.

Ultimately, to achieve the general form of the forests.

Formation of Working Circles

To achieve these objectives, the following forest management working circles were structured:

- a. Coppice with Standard Working Circle
- b. Rehabilitation Working Circle
- c. Improvement (Overlapping) Working Circle
- d. Plantation Working Circle
- e. Grass and Grazing Working Circle
- f. Protection Working Circle
- g. Wildlife Working Circle
- h. Coppice with Standard Working Circle:
 - (i) Scope: This working circle included all Dhonk and mixed species forest areas with very good forest wealth and density, considered suitable for commercial exploitation. The total area included in this circle was 11,888.00 hectares. It was divided into 2 felling series: Digota Felling Series and Bairath Felling Series.

(ii) Main Objectives:

- i. To ensure the continuous and maximum supply of fuelwood and charcoal locally demanded by urban/rural areas.
- j. To fell mature and over-mature trees and regenerate with new saplings.
- k. To achieve maximum yield in accordance with silvicultural measures.
- l. A rotation period of 40 years for Dhonk and an annual coupe of 60 hectares for felling were suggested. Standard trees were to be left at a rotation period of 50 years, with a proposed number of 50-65 standard trees per hectare. It was suggested that the felled coupes be closed to grazing for 10 years and that no intermediate yield be taken in subsequent years. Additionally, silvicultural work, such as cutting climbers, removing crooked trees, cleaning rotten trunks, and clearing debris, was proposed.
- m. (iii) Analysis of Implementation: Coupe felling was carried out by the departmental work unit. Although a definite felling table was provided, the proposed felling recommendations were largely violated:
- n. Areas with the best density were selected for felling first, disregarding the working plan proposals.
- o. Coupe felling was carried out in a very haphazard manner. Some coupes were felled continuously for years, or there was an interval of many years between felling in many coupes, resulting in unevenly sized regenerated saplings.
- p. Marking was done incorrectly and by unskilled laborers.
- q. No special attention was paid to fencing after coupe felling. Fencing of some coupes was not completed in the same year. As a result of ineffective protection, regeneration was affected.
- r. Felling rules were not followed as per the proposed plan.
- s. The cutting of trunks was not technically correct.
- t. The selection of standard trees was not done properly, and contractors illegally felled standard trees left on drains and steep slopes to obtain more produce.
- u. Subsequent silvicultural activities were also not carried out as per the proposed treatments because budget provisions were not made available for the implementation of these works.
- v. Right/concession holders were not prevented from entering these areas, nor was the annual lopping of species controlled.
- w. Improvement works, such as sowing/planting in vacant spaces, were not carried out, due to which small treeless spots gradually turned into large vacant treeless areas.

- x. Due to the above reasons, the areas that had very good density gradually became degraded, and the forest areas eventually became empty.

III. Rehabilitation Working Circle:

(1) Main Objectives:

- b. To protect the forests from the adverse effects of local biotic factors and prevent them from further degradation by checking soil erosion.
- c. To re-establish Dhonk forests.
- d. This working circle included all degraded Dhonk forests, Khair forests, and desert dunes/bushes, with a total area of 54895.6 hectares.
- e. (2) Treatment Method:
- f. Creating closures to protect the areas.
- g. Suspending grazing, lopping, and other felling activities in the closed area for 5 years.
- h. The treated area would be opened for grazing after five years.

IV. Improvement Working Circle (Overlapping):

- (1) Scope: This working circle included areas found as sandy dune areas accumulated at the base of the hills. Thus, this working circle would overlap with all other working circles. Its total area was approximately 31263.6 hectares.

(2) Main Objectives:

- b. To undertake conservation, protection, and improvement work by dune stabilization with priority in areas severely affected by soil and water erosion.
- c. To prepare areas to meet the local population's demand for grass and fuelwood.
- d. (3) Treatment Method:
- e. The area taken up for treatment would be closed to grazing, lopping, and other activities for a minimum of 3 years.
- f. Moonj grass tufts would be planted at a distance of 1.5 x 1.5 m during the rainy season.
- g. Sheesham, Ardu, and Mulberry saplings would be planted in the drain beds and moist sites.
- h. (4) Analysis: There was no implementation of the working plan proposals area-wise. The planting of Moonj and proposed species was also not done properly as per the proposal.

V. Plantation Working Circle:

- (1) Formation: This working circle was formed with the objective of re-establishing degraded, vacant forest areas by planting

valuable species. The total area included in this circle was 8318.0 hectares.

(2) Objectives:

- b. To meet the growing local demand for timber, fuelwood, and fodder.
- c. To promote the planting of effective and useful species in appropriate areas according to land use classification.
- d. To prohibit grazing for 10 years in the plantation areas and always provide fire protection to the area.
- e. To prohibit the use of any rights and concessions in the plantation area.
- f. (3) Analysis:
- g. Plantation work was not executed on time.
- h. The plantation areas were not effectively closed to grazing for the proposed next 10 years.
- i. The maintenance of these areas was not done properly, leading to the failure of most plantation areas.

VI. Grass and Grazing Working Circle:

(1) Formation: This working circle was formed to provide facilities for grass production and livestock grazing. The total area in this circle was 9636 hectares, including almost all grass Bids in the Jaipur Range.

(2) Main Objectives:

- b. To meet the local population's demand for grass/grazing.
- c. To increase the production capacity of grass Bids by planting good quality grass species, bushes, and tree species.
- d. (3) Treatment Method:
- e. Grass cutting to be prohibited between February and September.
- f. Grazing to be prohibited every year from July 1 to September 30.
- g. Lopping of species like Khejri, Ronjh, Cheela, Ber, Babul, etc., to be carried out under the proposed rules.
- h. Removal of dead and dying plants.
- i. Undertaking suitable soil work and planting higher-yielding grass species and more valuable tree species.
- j. Maintaining the capacity of grass Bids by promoting rotational grazing.

VII. Protection Working Circle:

(1) Scope: 146,882 hectares of degraded forest area were included in this working circle. This circle included the empty hills of degraded and treeless forest areas.

(2) Main Objective: To provide effective protection to these areas and give them sufficient time to regenerate by keeping them free from grazing, lopping, etc.

(3) Treatment Method:

- b. Rotational grazing was proposed in 300 hectares of area every year to control the situation of overgrazing.
- c. These areas would be fenced and closed.
- d. Grazing would continue in the remaining areas. After 5 years, the closed areas would be opened for grazing, and grazing would be opened/closed in alternate years.
- e. (4) Analysis: Even these provisions were not complied with. Closures were certainly made in some years, but they were not maintained regularly.

VIII. Wildlife Management:

- a. The description of wildlife in the Jaipur district was elaborated in Verma Ji's working plan, and the importance of wildlife protection was accepted, with emphasis on its preservation. Emphasis was placed on imposing strict restrictions on the trade of horns, skins, and trophies of wildlife. Hunting of undesirable wildlife was proposed to be done only by licensed hunters. Proposals were made for the development/improvement of the Zoo. The maintenance of wildlife was carried out by the Wildlife Wing of the State Forest Department, subject to the availability of budget provisions. To effectively protect the wildlife available in the Forest Division, the Wildlife Protection Act, 1932, was implemented later in 1932.

IX. Miscellaneous Regulations:

- a. Provisions were made regarding the regulation of minor felling and minor forest produce. Arrangements were made for regular testing at the Grass Farm Nursery for the elimination of saline and alkaline soil and the selection of suitable species for plantation. Sufficient emphasis was placed on the maintenance of fire lines, buildings, and roads built for forest boundaries and forest protection. It was proposed that the plates of forest block names and compartment numbers be regularly inspected by the staff of the territorial forest division, and that missing plates be replaced.

X. Results of Verma's Working Plan:

(1) Failure of Implementation: Since most of the treatments proposed in Shri Verma's working plan were not complied with, the first working plan written in the history of the Jaipur Forest Division remained merely an academic exercise. It did not receive approval

even during its entire period, and its revision could not take place on time. Hence, this working plan did not receive any legal recognition. The main obstacle to implementing the provisions of the working plan was the inadequate budget allocation. Furthermore, the annual deviation and control forms were neither prepared nor sent. The coupes felled by the Coppice with Standard system were not adequately protected from grazing and other damaging factors. There was a gross violation of marking and felling trees. Improvement was not carried out in compartments with low density, leading to an increase in vacant spaces in compartments with good density. Khair trees were felled in the Digona forest block for catechu production, after which the Khair trees could not regenerate, and there was a shortage of these trees in the Digota forest block. The standard trees and advance growth left in the felling coupe were also illegally felled in subsequent years. Consequently, the density of trees decreased in many areas due to a lack of regeneration.

(2) Continuous Degradation: It is generally observed that the tradition of continuous destruction of forests has led the forest blocks in the area to a state of ecological degradation. Even the works carried out for improvement did not yield good results. If the ongoing destruction spree of continuous degradation is not stopped in time, nothing will be able to prevent a heavy shortage of wood and ecological destruction. Managers of natural resources should take this as a challenge and execute the work in a timely manner.

Management Period: 1982 to 1992 (Brijlal Meena's Working Plan)

3.1.3.3 Management System in the Period 1982 to 1992

i. General Objectives

The working plan of Shri S.K. Verma (I.F.S.), Jaipur, was revised by Shri Brijlal Meena (I.F.S.), which was effective from 1982 to 1992. The general objectives of the management of this working plan were:

- Efforts to conserve biological diversity and prevent it from ecological destruction.
- Rehabilitation of degraded Dhonk forests.
- Energy plantation on bare hills, treeless areas, and ravine areas to solve the problem of fuelwood.
- Development of good quality grass and fodder tree species in grazing areas to increase grass yield.
- Conservation of national heritage like wildlife to promote tourism and develop educational and recreational facilities.
- Treatment of catchment areas to prevent the devastation of floods and stop the sediment carried by rainwater in the catchment areas of the Banganga, Morel, and Sahibi rivers.
- Conservation of valuable fertile soil on hills, slopes, dunes, and ravines.

- Development of forest wealth through scientific methods and management.
- Afforestation of areas in accordance with the National Forest Policy.
- Ensuring the continuous retrieval of the maximum amount of fuelwood, small timber, fodder, and forest produce from the forests, keeping in mind the demands of the local population.
- Providing employment opportunities to villagers below the poverty line in rural areas.

ii. Structure of Working Circles

To achieve the above objectives, the following management working circles were structured:

1. Coppice with Reserve Management Working Circle
2. Rehabilitation of Degraded (Dhok) Forests Management Working Circle
3. Energy Reserve Management Working Circle
4. Catchment Improvement Management Working Circle
5. Soil Conservation Management Working Circle

Recreation and Wildlife Management Working Circle

iii. Coppice with Reserve Management Working Circle:

(i) Scope: This working circle included good, dense Dhok species forests that were most suitable for commercial exploitation. The damage from illegal felling and illegal grazing was minimal in these forest areas. Consequently, a good amount of timber, fuelwood, and charcoal was produced from these areas.

3.1.3.4 Management Methodology for the Period 2000-01 to 2009-10:

i. The second revision of the Jaipur District's Working Plan was conducted by Smt. Namita Priyadarshi (IFS), which was effective from the year 2000-01 to 2009-10.

ii. The general objectives of the management under this Working Plan were as follows:

- To conserve the cover of existing forests, increase their density, and expand them for environmental, water, and soil conservation.
- To restore the degraded forests (Dhok - *Anogeissus pendula*) and increase vegetation density.
- To establish ecological balance by improving local conditions and thereby conserve wildlife in the area and ensure their proliferation.
- To redevelop suitable barren hills, ravine areas, and vacant land.
- To increase the productivity of grazing land and produce improved, nutritious fodder.
- To maintain the capacity of dams and reservoirs by making appropriate improvements in catchment areas.

- To prevent soil erosion.
- To fully realize the new concept of public participation/Joint Forest Management in forest development and protection.
- To beautify forest areas near cities and develop them for recreational and amusement purposes. (Page 193)
- To meet the demands of local residents for firewood and fodder as much as possible, and to provide fodder during times of drought by creating safe fodder areas.
- To increase natural regeneration and improve the quality and density of forests by increasing the proportion of important species through afforestation.
- To conserve forests by managing them using a scientific system.

iii. The following management circles were structured to achieve the above objectives:

1. Soil Conservation and Rehabilitation Management Circle.
2. Grass and Grazing (Overlapping) Management Circle.
3. Afforestation Management Circle.
4. Jaipur Beautification Management Circle.
5. Forest Protection (Overlapping) Management Circle.

iv. Soil Conservation and Rehabilitation Management Circle:

- The main objective of forming this management circle was the rehabilitation of areas with Dhok stock and to prevent the deposition of soil in fields and reservoirs due to floods.
- This management circle included all degraded and deteriorated forest areas with a density ranging from 0.1 to 0.4. The total area covered was 29534.80 hectares.
- These forest areas mainly have original shoots of Dhok, which have a strong possibility of rehabilitation through cutback and cultural operations. (Page 194)
- Suitable sites for soil conservation and rehabilitation in old reservoirs and catchment areas were also included in this management circle.

v. Grass and Grazing (Overlapping) Management Circle:

1. This management circle proposed including current grass areas and all areas devoid of vegetation with a density less than 0.1.
2. Rocky land with shallow soil, where only grass is likely to grow, was also included in this circle.
3. Afforestation areas with a very low probability of success were also included in this management circle.

4. To reduce the excessive grazing pressure on forest areas and resolve the local livestock grazing problem, it was proposed to ensure stall feeding and rotational grazing through public cooperation and the local Village Forest Protection and Management Committee.

vi. Afforestation Management Circle:

1. The main objective of forming this management circle was to provide local supply of fodder, fuel, minor timber, and timber by undertaking afforestation in available potential areas.
2. This management circle included suitable barren hills, treeless flat land, ravine areas, and dune areas for afforestation. (Page 195)
3. In addition to new afforestation areas and potential areas, all afforestation areas less than 5 years old were also included in this management circle.
4. This management circle included an area of 11155.30 hectares, which was proposed to be variable during the Working Plan period.

vii. Jaipur Beautification Management Circle:

- This management circle was formed with the objective of restoring the greenery and charm of the Pink City, and for the development of barren hills, areas on both sides of highways within the Jaipur Development Authority (JDA) limits, hills, and sites of religious, tourism, and historical importance near the city for recreational purposes in adjacent forests.
- This management circle included 3744 hectares of forest area.

viii. Forest Protection (Overlapping) Management Circle:

- The main objective of forming this management circle is to preserve the natural forest wealth and provide protection to forest areas developed through afforestation after a 5-year period from illegal cutting, lopping, and other damages, so that the density of forest wealth can be increased.
- In addition to dense natural forests (0.4 density), afforestation areas older than 5 years were also included in this management circle.

3.2 Habitat Management and Protection

The Present Management of Bucharra Main Conservation Reserve represents a comprehensive, adaptive, and participatory model of conservation. It integrates ecological restoration, biodiversity protection, and livelihood enhancement within a policy-backed and globally aligned framework.

Through continuous soil and water conservation, restoration of degraded areas, regulated resource use, and community empowerment, BMCR stands as a replicable example of sustainable forest governance in semi-arid Rajasthan, ensuring the long-term ecological stability and socio-economic well-being of the region.

1. Introduction

The management of Buchara Main Conservation Reserve (BMCR) is guided by the principles outlined in the Working Plan of Jaipur Forest Division, integrating sustainable forest management, biodiversity conservation, and participatory governance. The Reserve forms part of the Northern Aravalli landscape, serving as a vital ecological linkage between Sariska Tiger Reserve, Shakambhari and Baleshwar Conservation Reserves. Its management seeks to balance ecological integrity with local livelihood needs through scientifically planned interventions and community participation.

2. Management Objectives

The primary objectives of BMCR management are aligned with both national policy directives and international environmental commitments:

- **Forest Protection and Regeneration:** Control of deforestation, promotion of natural regeneration, and afforestation in degraded and open forest areas.
- **Soil and Water Conservation:** Maintenance of hydrological stability through watershed-based interventions like contour trenching, check dams, and vegetative bunds.
- **Biodiversity Conservation:** Protection of native flora and fauna, including threatened and migratory species, and restoration of habitat connectivity.
- **Community Participation:** Active involvement of local communities through Joint Forest Management (JFM), Eco-Development Committees (EDCs), and Biodiversity Management Committees (BPMCs).
- **Sustainable Resource Use:** Regulation of forest produce extraction and promotion of non-timber forest products (NTFPs) for livelihood support.

- Climate Change Mitigation: Enhancing forest carbon sequestration through afforestation and eco-restoration.
- Monitoring and Research: GIS-based monitoring of forest health, vegetation cover, and wildlife movement, supported by field-level observations and participatory evaluation.

3. Ecological and Policy Framework

BMCR management aligns with key national and international environmental policies:

- National Forest Policy (1988) and Rajasthan Forest Policy (2010) emphasizing ecological stability, people's participation, and sustainable forest use.
- Forest Conservation Act (1980) and Wildlife (Protection) Act (1972) ensuring regulated use and species protection.
- Biodiversity Act (2002) safeguarding genetic and species diversity.
- UNFCCC (1992), CBD (1992), UNCCD (1994), and Kyoto Protocol (1997)—integrating forest-based carbon mitigation and desertification control.
- These frameworks collectively guide the Reserve's management towards climate resilience, biodiversity enhancement, and socio-ecological balance.

4. Strategic Framework and Management Approach

Management of BMCR follows a dynamic, practical, and synergistic approach—linking short-term and long-term objectives:

- Synergy and Mutual Reinforcement: Each intervention complements others to yield cumulative ecological benefits.
- Continuous Monitoring: Regular assessment ensures timely mid-course corrections.
- Practical Implementation: All strategies are field-adaptable, cost-effective, and locally relevant.
- Adaptive Management: Integration of traditional knowledge with modern forestry science.

5. Existing Challenges and Ground Realities

The Working Plan identifies several on-ground challenges affecting BMCR management:

- High livestock pressure, open grazing, and encroachment.
- Excessive dependence on forests for fuelwood and fodder.
- Frequent droughts leading to soil erosion and poor productivity.
- Limited manpower, infrastructure, and modern equipment.
- Inadequate technical training and institutional capacity.
- These issues are being systematically addressed through community collaboration, improved patrolling, soil-water conservation, and alternative livelihood support.

6. Treatment and Management Methods

To achieve ecological restoration and sustainable use, BMCR applies a multi-layered treatment strategy:

Protection and Enforcement: Prevention of illegal felling, poaching, and uncontrolled grazing.

Soil and Moisture Conservation: Implementation of contour bunds, vegetative barriers, and watershed-based check dams.

Restocking and Afforestation: Plantation of indigenous species such as *Anogeissus pendula*, *Acacia senegal*, *Boswellia serrata*, and *Butea monosperma*.

Regulated Grazing: Adoption of rotational grazing and creation of fodder reserves.

Medicinal and NTFP Development: Promotion of sustainable collection and value addition of forest produce.

Ecotourism Development: Establishment of nature trails and interpretation centres for awareness and local income generation.

Capacity Building: Training programs for forest staff and local youth in sustainable forestry practices.

7. Functional and Management Circles

As per the Jaipur Working Plan, BMCR operations are organized into primary and essential management circles:

Work Circle	Focus Area and Objective
Soil & Water Conservation and Rehabilitation (SWRM)	Treatment of degraded catchments, erosion-prone slopes, and low-density forests.
Grassland & Grazing Management	Development of grass cover on open areas to reduce grazing pressure and ensure fodder security.
Ecotourism & Awareness	Development of low-impact ecotourism sites and environmental education activities.
Forest Protection	Strengthening of patrolling, boundary demarcation, and fire management.
Plantation Development	Enrichment planting and silvi-pastoral models in deforested areas.
Wildlife Management	Habitat improvement, corridor strengthening, and waterhole creation.
Joint Forest Management (JFM)	Local community involvement in protection and benefit-sharing.
NTFP & Medicinal Plant Management	Sustainable harvesting and commercial utilization of non-timber forest products.

8. Wildlife and Habitat Conservation

BMCR supports a variety of faunal species including Nilgai, Chital, Wild Boar, Hare, Peafowl, and Grey Francolin. The management plan emphasizes:

Habitat improvement through waterhole creation and grassland restoration.

Removal of invasive species and enrichment of native flora.

Strengthening of ecological corridors to facilitate safe movement of wildlife between adjoining reserves.

9. Community Participation and Livelihood Integration

Consistent with the National Forest Policy (1988), BMCR management promotes people-centered conservation through:

Joint Forest Management (JFM) and Eco-Development Committees (EDCs).

Promotion of NTFPs, medicinal plants, and eco-tourism for income diversification.

Awareness, skill development, and renewable energy programs (solar, biogas) to reduce dependence on forests.

10. Monitoring, Evaluation, and Research

Monitoring and evaluation are carried out through a Criteria & Indicators (C&I) framework developed by the Indian Institute of Forest Management (IIFM), Bhopal.

Key indicators include:

- Forest cover density and regeneration status.
- Soil and water retention capacity.
- Biodiversity richness and wildlife sighting frequency.
- Community participation level and benefit-sharing records.
- GIS-based monitoring, participatory data collection, and collaboration with universities and NGOs support adaptive management and evidence-based decision-making.

3.3 Forest Resource Dependency of Local Communities / Major Land Use in the Larger Landscape

The dependency of local communities on forest resources around Buchara Main Conservation Reserve (BMCR), Jaipur plays a significant role in the sustainable management of forest ecosystems. Forest-based livelihoods contribute both directly and indirectly to the socio-economic fabric of adjoining rural settlements. Understanding the extent and pattern of this dependency is essential for formulating effective participatory management and conservation strategies.

3.3.1 Forest Resource Dependency Assessment

A socio-economic assessment was conducted through household surveys, key informant interviews, and focus group discussions with villagers and government field staff in the surrounding villages. The study revealed that education level, livestock size, and distance from forest boundaries were negatively and significantly correlated with forest dependency. In contrast, landholding size exhibited a negative association in certain areas, while family size and age were found to be statistically insignificant.

The analysis also indicated that forest-derived income constitutes the second-largest component of total household income after agriculture, demonstrating continued reliance on forest products for livelihood security. Among forest products, fuelwood emerged as the most commonly extracted resource, followed by fodder, non-timber forest produce (NTFPs), and minor forest products. Strengthening local participation in biodiversity conservation and forest management is therefore critical to ensure sustainability and equitable benefit-sharing.

3.3.2 General Trends in Forest Dependence

While the rural communities of Rajasthan are relatively less dependent on forests compared to other Indian states, their reliance remains substantial for meeting daily needs such as fuelwood, timber, fodder, fruits, gum, and bark, which also serve as sources of supplementary income. Within the BMCR landscape, important forest produce such as Pani Poola (Munja), Gum, Dhak leaves (Paan-Chhila), Honey and Wax, Lunganpatari (Khejri pods), Grass, Fruits, and Flowers are commonly utilized by local communities.

3.3.3 Key Non-Timber Forest Products (NTFPs) and Their Management

1. Pani Poola (Munja – *Saccharum munja*)

Munja grass is naturally found in open forest patches, community lands, grazing fields, and along agricultural boundaries. It thrives best in deep, open soils with minimal canopy cover. The species has significant ecological and economic value in the rural landscape.

In forest areas, Munja yields are high during the first 3–4 years after plantation establishment, declining gradually as tree cover increases. The grass is auctioned annually (July–August) at the division or range level and harvested during October–November. Regular and rotational harvesting enhances productivity and maintains quality.

Major Uses:

- Construction of huts, cattle sheds, and fodder enclosures.
- Rope-making, handicrafts, and furniture (Mudda industry).
- Used as temporary thatching material in tourist and rural housing.

To promote community participation and transparency, 50% of the net income from Munja auctions is allocated to the Forest Department and Gramya Van Suraksha evam Prabandhan Samiti (GVSPC) for joint forest management and to curb illegal extraction.

2. Laganpatari (Khejri – *Prosopis cineraria*)

Khejri is the state tree of Rajasthan and an ecologically vital species in arid and semi-arid landscapes. The tree produces two fruit crops annually. The raw pods, locally known as “Sangri”, are highly valued and consumed as a traditional vegetable. Dried Sangri fetches high market value and forms a crucial part of the rural economy.

Additionally, Khejri leaves (Loom Patadi) serve as nutritious fodder, especially during drought and famine conditions, acting as a “life-saver” tree for livestock. The smaller branches are utilized as fuelwood and for religious ceremonies (Havan samagri).

Sustainable harvesting and participatory management through village forest committees are necessary to maintain productivity and conserve Khejri populations.

3. Paan-Chhila (Dhaak Leaves – *Butea monosperma*)

Historically abundant in the hilly tracts and foothills of BMCR, *Butea monosperma* populations have declined due to illegal mining, deforestation, and human encroachment.

Earlier, auction of Dhaak leaves (Paan-Chhila) was conducted annually up to 2005–06 to supply the leaf-plate (patravali) industry, primarily managed by local artisan families (e.g., barber communities).

Conservation of remaining stands and revival of this sustainable livelihood option should be pursued through community-based forest management committees.

4. Honey and Wax

Apiculture products such as honey and beeswax are seasonally available in forested areas of BMCR. These products are economically valuable and used in pharmaceuticals, cosmetics, beverages, and traditional rituals.

Revenue from honey and wax contracts amounts to approximately ₹35,000–₹40,000 annually. Enhancing village-level beekeeping initiatives under participatory forest management can further augment rural income and biodiversity conservation.

5. Gum, Tannin, and Lac (Minor Forest Produce)

The region supports gum-yielding species like *Acacia nilotica* and *Anogeissus latifolia*, which were historically tapped for commercial gum and oleoresin production. However, over-extraction has led to tree mortality in past years. Consequently, the State Government has imposed a ban on gum extraction from Salar and related species for an indefinite period.

The sustainable production of lac on *Ziziphus* species, along with the regulated collection of fruits from Amla (*Phyllanthus emblica*), Bel (*Aegle marmelos*), and Ber (*Ziziphus mauritiana*), can be promoted through controlled and participatory community management practices. Such approaches ensure both the conservation of these species and the livelihood benefits for local communities. Incentive schemes may be introduced, such as a 10% reward for informants aiding in the prevention of illegal harvesting.

3.3.4 Promotion of Medicinal and Aromatic Plant Resources

The BMCR area harbors numerous medicinally important plants. However, systematic baseline data on their abundance and spatial distribution remain limited. It is essential to undertake comprehensive ethnobotanical and ecological surveys to map and manage these species sustainably.

3.3.5 Prominent medicinal plants suitable for conservation and propagation include:

The study area hosts several medicinally and economically important plant species, including Guggul (*Commiphora wightii*), Karanj (*Pongamia pinnata*), Safed Musli (*Chlorophytum borivilianum*), Konch (*Mucuna pruriens*), Chirmi (*Abrus precatorius*), Amaltas (*Cassia fistula*), Shatavari (*Asparagus racemosus*), Amla (*Phyllanthus emblica*), Brahmi (*Bacopa monnieri*), Adhatoda (*Justicia adhatoda*), Kadaya (*Sterculia urens*), Bel (*Aegle marmelos*), Ashwagandha (*Withania somnifera*), and Shankhpushpi (*Convolvulus pluricaulis*).

Among these, Guggul (*Commiphora wightii*) occurs abundantly in the Dokan forest block, highlighting the need for targeted conservation measures and species-specific propagation programs to ensure its sustainable management and long-term survival.

3.3.6 Management Recommendations

- Strengthen participatory forest management through GVSPCs for equitable resource sharing and protection.
- Conduct regular socio-economic monitoring to assess trends in forest dependency.
- Develop value addition and marketing linkages for NTFPs to enhance local income.
- Promote sustainable harvesting protocols for Munja, Khejri, and honey.
- Establish medicinal plant conservation zones within BMCR to protect native flora.
- Implement awareness and capacity-building programmes to reduce unsustainable extraction and enhance conservation ethics.

3.4 Eco-Tourism and Interpretation in Buchara Main Conservation Reserve (BMCR)

3.4.1 Concept and Definition

Ecotourism in Buchara Main Conservation Reserve (BMCR) is conceived as a sustainable and community-based form of tourism aimed at promoting conservation of natural and cultural

heritage while providing socio-economic benefits to local communities. It integrates community participation, protection and management of natural resources, environmental education, cultural heritage, and traditional knowledge systems.

According to the United Nations World Tourism Organization (UNWTO), ecotourism comprises all nature-based forms of tourism where the primary motivation of visitors is the appreciation and conservation of natural and cultural assets. Ecotourism activities are typically organized for small groups and are characterized by educational, interpretative, and low-impact practices, ensuring minimal disturbance to ecosystems and local communities.

3.4.2 Key characteristics of ecotourism, as applicable to BMCR, include:

- Promotion of conservation-oriented tourism based on appreciation of nature and local culture.
- Incorporation of interpretative and educational components to enhance visitor understanding.
- Involvement of small-scale, locally owned enterprises for tourism-related services.
- Minimization of negative environmental and socio-cultural impacts.
- Contribution towards maintenance and management of natural areas through:
- Generation of employment and alternative income sources for local residents.
- Financial benefits for communities and institutions engaged in conservation.
- Enhanced awareness among both visitors and locals regarding conservation and sustainability.

3.4.3 Ecotourism Potential in BMCR

Buchara Main Conservation Reserve, situated in the northern Aravalli landscape of Jaipur, possesses immense potential for ecotourism owing to its unique topography, rich biodiversity, cultural heritage, and proximity to urban centres. The region supports dense native forests, religious groves ('Dev Van'), historical sites, and sacred water bodies, which collectively form a strong base for eco-cultural tourism.

Encouraging local participation, particularly in the conservation and management of sacred groves near religious sites, will help revitalize traditional conservation ethics while promoting nature-based tourism that aligns with the ecological carrying capacity of the area.

3.4.4 Objectives of Ecotourism Development

3.4.4.1 Community-led Forest Protection:

Strengthen protection of natural forests conserved by local communities near sacred and heritage sites ('Gods' Forests') by promoting ecotourism as a livelihood-supportive and conservation-friendly activity.

3.4.4.2 Conservation of Cultural and Architectural Heritage:

Promote conservation of forts, temples, palaces, and other historical monuments located within or adjacent to forest areas, integrating them into educational and interpretative tourism circuits.

3.4.4.3 Capacity Building and Local Empowerment:

Train and engage local residents as eco-guides, interpreters, and service providers, thereby enhancing livelihood opportunities and deepening community attachment to conservation.

3.4.4.4 Environmental Education and Awareness

Organize nature education camps, biodiversity trails, and eco-awareness programs for students and visitors to enhance understanding of forest ecosystems, wildlife, and the principles of conservation. These initiatives aim to foster an informed and responsible attitude towards natural resources and biodiversity, promoting long-term stewardship.

3.4.4.5 Enhancing Visitor Experience:

Inspire visitors to appreciate and experience the ecological, aesthetic, and cultural richness of the conservation reserve through responsible and interpretative tourism initiatives.

3.4.5 Recommendations and Future Strategies

i. Sustainable Balance:

Maintain equilibrium between environmental integrity, visitor satisfaction, and administrative management for sustainable ecotourism development.

ii. Infrastructure and Connectivity:

Improve access and connectivity to key eco-tourism sites while ensuring minimal ecological footprint.

iii. Carrying Capacity and Regulation:

Tourism activities must be regulated as per eco-fragility and carrying capacity assessments to prevent environmental degradation.

vi. Habitat Restoration:

Implement habitat rejuvenation and soil-water conservation measures in degraded forest areas; restrict visitor entry into ecologically sensitive zones.

v. Community Awareness and Employment:

Promote eco-entrepreneurship and skill development among local youth through training in hospitality, guiding, and eco-crafts.

vi. Cultural Promotion:

Integrate Rajasthani folk culture, music, and handicrafts into ecotourism circuits, creating opportunities for cultural preservation and income generation.

vii. Institutional Collaboration:

Encourage partnerships with Eco-Development Committees (EDCs), NGOs, cooperative societies, and local self-governments for eco-friendly enterprise development (canteens, handicraft outlets, homestays, etc.).

viii. Sustainable Transportation:

Promote use of non-motorized or electric eco-vehicles within eco-tourism zones to minimize air and noise pollution.

ix. Publicity and Outreach:

Develop eco-tourism maps, interpretative signage, and digital outreach platforms for information dissemination and visitor engagement.

x. Visitor Feedback System:

Introduce GIS-linked digital feedback mechanisms to monitor visitor satisfaction and improve site management.

3.4.6 Potential Eco-Tourism Attractions

BMCR offers a variety of natural and cultural features that can be developed for eco-tourism interpretation:

- **Wildlife Viewing:** The Reserve supports species such as Grey Francolin, Indian Peafowl, Blue Bull, and a diversity of avifauna, making it ideal for birdwatching and wildlife photography.
- **Nature Trails and Trekking Routes:** The undulating terrain, rocky outcrops, and dry deciduous forests provide opportunities for nature trails, interpretive walks, and trekking routes along eco-sensitive zones.
- **Scenic and Cultural Spots:** Old temples, stepwells, and traditional settlements around BMCR offer cultural experiences that can be integrated with eco-tourism circuits.
- **Water Bodies and Grasslands:** Wetland habitats within BMCR attract migratory birds and offer potential sites for controlled eco-tourism activities such as bird hides and observation towers.
- **The Vidsor Mahadev Temple,** located atop ancient rock formations, providing panoramic views of the landscape.

- The Buchara Pond, constructed in 1889, which attracts migratory and resident birds throughout the year.
- The presence of Leopard (*Panthera pardus fusca*), Striped Hyena, and other wildlife species, which symbolize the ecological richness of the reserve.
- Distinct vegetation patterns dominated by *Sterculia urens*, *Commiphora wightii*, *Boswellia serrata*, and *Phoenix sylvestris*, representing the dry deciduous forest ecosystem of the Aravallis.
- These elements together provide an ideal setting for low-impact eco-tourism, focusing on education, recreation, and nature appreciation.

3.4.7 Interpretation Facilities and Infrastructure

For effective visitor management and education, the following interpretation facilities can be developed:

Nature Interpretation Centre: To serve as a hub for orientation, awareness materials, and exhibitions on flora, fauna, and conservation practices of BMCR.

Interpretive Signage and Trail Markers: Strategically placed along nature trails to inform visitors about vegetation, wildlife, and ecological processes.

Observation Towers and Bird Hides: To facilitate unobtrusive wildlife viewing and birdwatching.

Eco-friendly Amenities: Use of solar lighting, biodegradable waste management systems, and water harvesting structures to reinforce the sustainability message.

3.4.8 Community Participation

Local communities play a central role in eco-tourism success. Community members can be trained as nature guides, local interpreters, and hospitality providers. Their involvement ensures economic benefits and fosters a sense of ownership in protecting the Reserve's natural resources. Promotion of local handicrafts, traditional food, and cultural programs can further strengthen the eco-tourism value chain.

3.4.9. Sustainability and Visitor Management

Sustainable eco-tourism in BMCR requires strict adherence to carrying capacity norms, zoning regulations, and codes of conduct for tourists. Regular monitoring of visitor impacts on wildlife, vegetation, and local livelihoods should guide adaptive management practices. Eco-tourism development must align with the principles of minimal environmental disturbance and maximum conservation awareness.

3.4.10 . Future Prospects and Integration

BMCR can be integrated into a broader eco-tourism circuit encompassing nearby protected areas and cultural sites such as Sariska Tiger Reserve, Baleshwar CR, and Shakambhari CR. This regional linkage will enhance visitor experience, promote conservation connectivity, and support local economies. The development of digital interpretation tools such as QR-coded trails, virtual guided tours, and mobile-based learning apps can further modernize the eco-tourism experience.

3.5 Monitoring, Research and Capacity Building

3.5.1 Research and Monitoring

BMCR offers significant scope for research on flora, fauna, habitat ecology, and community interactions. Research permissions are granted as per approved management plan and regulatory guidelines of the Chief Wildlife Warden (CWLW), Rajasthan.

Monitoring of ecological parameters and management interventions is carried out under the supervision of CWLW Rajasthan, CCF Jaipur, DCF Sikar, and their subordinate field staff. The focus is on tracking habitat improvement, species population trends, human-wildlife interactions, and tourism impacts.

3.5.2 Training and Capacity Building

3.5.2.1 On-the-Job Training

Regular training is provided to field staff and members of Eco-Development Committees (EDCs) to enhance professional competence and ensure effective communication between management and community.

Training topics include wildlife protection, legal procedures (IPC, CrPC, Evidence Act), handling wildlife offences, and modern tools for wildlife monitoring. Collaboration with Police, Judiciary, and specialized institutes (WII, BNHS, SACON, WWF) is recommended for expert-led modules.

3.5.2.2 Formal Training Courses

Structured courses will be conducted on:

- Wildlife protection and management
- Flora and fauna conservation
- Fire management and prevention
- Habitat improvement and soil-water conservation
- Forest and wildlife offence detection
- Eco-tourism operations and visitor management

3.5.2.3 Establishment of Learning Centre

A Learning and Training Centre will be established at the Range Office, Sikar, serving as a hub for education, training, and capacity development on biodiversity conservation and management practices.

3.5.2.4 Thematic Areas for Training

- Wildlife monitoring and census techniques
- Health indicators and field observation protocols
- Human-wildlife conflict mitigation
- Evidence collection and forensic procedures
- Herbarium preparation and botanical documentation
- Use and maintenance of equipment (wireless, tranquilizing guns, audiovisual tools)
- Fire drills and disaster preparedness
- First aid for humans and animals
- Basic computer and GIS applications
- Vehicle repair and field logistics

3.5.3 Ecosystem and Wildlife Conservation Strategies

Historically managed under working plans, the BMCR area had experienced biotic pressures such as grazing and fuelwood collection, which have since been substantially reduced post-notification. Active habitat management includes controlled grazing prohibition, habitat enrichment through grassland restoration, soil-moisture conservation (SMC) works, and native species plantation.

Plantation initiatives prioritize ecologically valuable species, including Rohida (*Tecomella undulata*), Khejri (*Prosopis cineraria*), *Acacia nilotica*, *Ailanthus excelsa*, *Ziziphus* spp., *Capparis decidua*, and *Cenchrus ciliaris*. These species play a crucial role in supporting local fauna, enhancing biodiversity, and stabilizing soil and habitat structure.

Water management interventions, including renovation of traditional talabs, installation of water guzzlers, and maintenance of natural water holes, ensure year-round water availability for wildlife.

Regular patrolling, fence maintenance, and enforcement measures are undertaken by Range Officers and subordinate staff to prevent illegal grazing, poaching, and encroachment. Continuous field monitoring and adaptive management strategies are adopted to maintain the ecological integrity of the reserve.

3.6 Administration and Organisation – Structure and Responsibilities

3.6.1 Administrative Hierarchy

The BMCR is managed under the jurisdiction of the Forest Department of Rajasthan, with coordination from local district authorities. The administrative structure is designed to ensure accountability and operational efficiency from headquarters to field staff.

Key Levels of Administration:

Deputy Conservator of Forests (Dy.C.F.), Jaipur (North)/ ACF Kotputli:

- Overall in-charge of BMCR management.
- Responsible for strategic planning, policy implementation, budget allocation, and reporting to the Conservator of Forests.
- Liaises with local administration, NGOs, and research institutions for collaborative projects.

Range Officer (RO) Kotputli – Field Unit Level:

- Manages individual ranges or zones within BMCR.
- Responsible for day-to-day field operations including patrolling, habitat management, and community engagement.
- Supervises Foresters, Beat Officers, and field staff.

Beat Officer / Forester:

- Operates at the beat or micro-zone level within a range.
- Conducts field monitoring of wildlife, vegetation, water sources, and human activities.
- Maintains records of species sightings, incidences of poaching, and forest resources.
- Implements habitat improvement measures such as plantation, invasive species control, and erosion prevention.

Support Staff (Forest Guards, Watchers, Volunteers):

- Assist in field surveillance, eco-tourism facilitation, fire control, and awareness programs.
- Engage in patrolling, reporting of illegal activities, and maintaining boundary demarcations.

3.6.2 Roles and Responsibilities

Position	Key Responsibilities
Deputy Conservator of Forests (Dy.C.F.), Jaipur (North)/ ACF Kotputli	Strategic management, policy implementation, coordination with higher authorities, approval of projects, budget oversight, annual reporting, liaison with NGOs/research bodies.
Range Officer (RO)	Supervise range staff, implement conservation programs, monitor biodiversity, oversee anti-poaching and human-wildlife conflict mitigation, facilitate community participation, report to DCF.
Beat Officer / Forester	Conduct field surveys, habitat improvement activities, wildlife monitoring, enforce regulations at ground level, maintain detailed records, report to RO.
Forest Guard / Watcher / Volunteer	Patrol and surveillance, support eco-tourism, assist in firefighting, boundary maintenance, report unusual observations, community awareness programs.

3.6.3 Field Units and Operational Zones

BMCR is divided into operational zones for effective monitoring and management:

- Zone A –Rich in natural fodder grasses and key wildlife habitats.
- Zone B –High biodiversity zone with sensitive species.

- Zone C –Community interaction areas, buffer zone, and eco-tourism activities.

Each zone is supervised by a designated Range Officer who coordinates directly with the DFO. Beat Officers and field staff are allocated specific sub-zones to ensure thorough surveillance and management coverage.

3.6.4 Coordination and Communication

- Internal Coordination: Regular meetings between DFO, ROs, and field staff to review progress, update field reports, and plan interventions.
- External Coordination: Engagement with local communities, Panchayati Raj institutions, law enforcement, NGOs, and research organizations to ensure integrated conservation efforts.
- Reporting Mechanism: Field data, wildlife census reports, and management activities are recorded digitally and submitted periodically to the divisional office for analysis and decision-making.

3.6.5 Key Functions of BMCR Administration

- Biodiversity Conservation: Protection of flora and fauna through habitat management and anti-poaching measures.
- Resource Management: Sustainable management of forest resources, water bodies, and grazing areas.
- Community Engagement: Awareness programs, alternative livelihood initiatives, and conflict mitigation.
- Monitoring and Research: Wildlife census, vegetation assessment, and ecological research coordination.
- Eco-tourism Management: Facilitating controlled visitation, maintaining trails, and promoting environmental education.





Chapter 4

Corridor status and functionality

4.1 Types of corridor

“In Buchara Main Conservation Reserve (BMCR), Jaipur, the ecological significance of the landscape is enhanced by its connectivity with neighbouring conservation reserves such as Sariska Tiger Reserve, Baleshwar Conservation Reserve and Shakambhari Conservation Reserve through functional wildlife corridors. This connectivity strengthens a broader ecological network, which is essential for facilitating wildlife movement, maintaining genetic exchange between populations, and enabling species to adapt to increasing anthropogenic and climatic pressures.”

The types of wildlife corridors present or potentially functioning in and around BMCR are as follows:

1. Natural Corridors

These are naturally occurring landscape linkages that support movement of wildlife without major human intervention.

- **Forest Corridors:** Patches and strips of Aravalli hill forests that link BMCR with adjoining forested tracts towards Shakambhari and Baleshwar provide safe passage for ungulates, carnivores and small mammals.
- **Riverine / Drainage Line Corridors:** Seasonal nalas, natural drainage depressions and associated riparian vegetation act as movement routes, particularly for herbivores, small mammals and avifauna.

2. Anthropogenic / Man-modified Corridors

- These include landscape features altered by humans but still functioning as movement facilitators.

- Village commons, revenue wastelands and fallow agricultural edges are often used by wildlife as connecting strips.
- Unlike major wildlife landscapes (e.g., highways in tiger reserves), engineered structures such as eco-bridges or underpasses are presently not required in BMCR, as the corridor is not fragmented by large linear infrastructures.

3. Linear Corridors

These consist of elongated habitats that guide movement directionally.

- Grassland and Shrubland Strips: Natural scrub–thorn landscapes of Aravalli foothills serve as conducive pathways for species like nilgai, jackal, hare, and ground birds.
- Hedgerow-like Shrub Barriers: Shrubby boundaries along agricultural margins also support avian and small mammal dispersal.

4. Stepping-stone Corridors

These are discontinuous habitat patches that act as “stepping points” for species.

Scattered woodland patches, hillocks, waterholes, and community groves (oran/sacred groves) within and around BMCR enable species to pause, feed, and shelter during movement between larger forest blocks.

5. Functional Corridors

These are multi-use landscapes used dynamically by wildlife for movement.

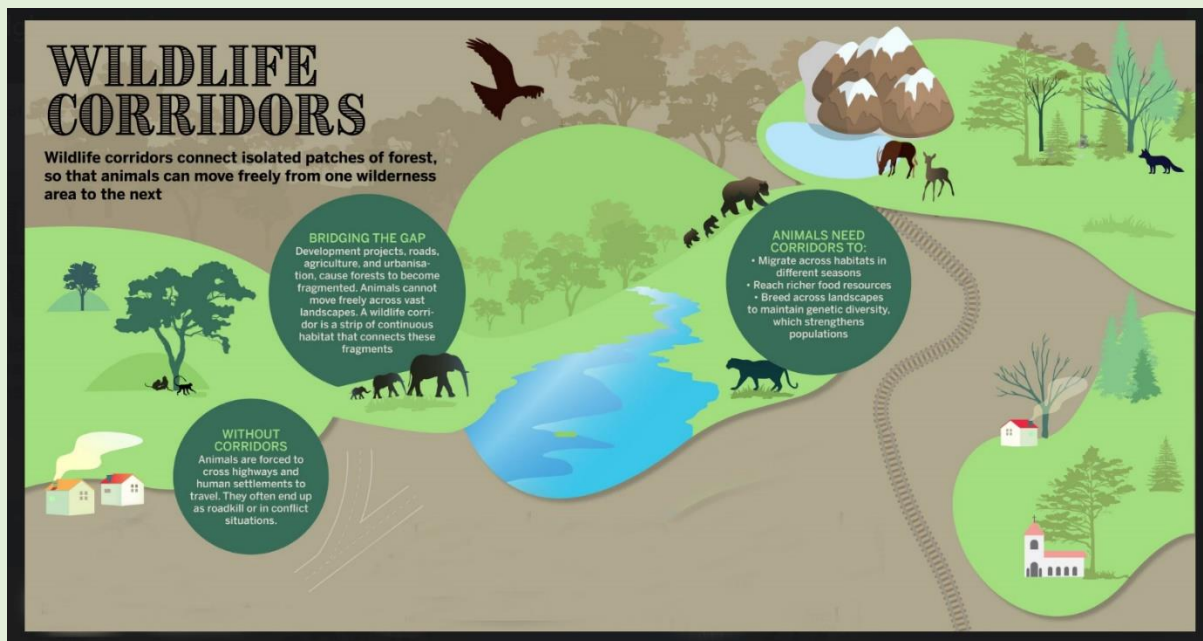
Agri-forest mosaics, degraded scrublands under regeneration, and community grazing lands function as transitional zones that allow safe dispersal between the Aravalli slopes and neighbouring protected habitats.

Benefits of Connecting Conservation Reserves (in the context of BMCR)

- Biodiversity Conservation: Ecological connectivity between Buchara Main Conservation Reserve and adjacent Conservation Reserves (such as Sariska, Baleshwar

and Shakambhari) helps prevent genetic isolation of wildlife populations, thereby reducing inbreeding depression and enhancing long-term species viability.

- **Climate Change Adaptation:** Connected landscapes act as climate-resilient pathways, allowing wildlife to shift their distribution in response to rising temperatures, erratic rainfall patterns, and changes in vegetation composition.
- **Mitigation of Human–Wildlife Conflict:** A functionally connected corridor system channels animal movement through natural pathways instead of human-dominated landscapes, thereby reducing incidents of crop depredation, livestock predation, and accidental territorial ingress into settlements.
- **Strengthening Ecosystem Services:** Connectivity facilitates natural processes such as seed dispersal, pollination, gene flow, and predator–prey dynamics across the wider landscape, sustaining ecological balance and watershed health around BMCR.



4.1.1 Fragmentation Analysis

Habitat Fragmentation in the BMCR Landscape

Habitat loss and fragmentation in the Aravalli foothill systems around Bucharra Main Conservation Reserve disrupt natural ecological processes—such as seasonal wildlife migration, seed and pollen dispersal, and nutrient cycling—leading to reduced ecosystem functionality. As habitat patches become smaller and more isolated, species richness declines and local extinctions of sensitive taxa become more likely.

Fragmentation occurs due to both natural drivers (e.g., drought-induced vegetation shifts, occasional fires, topographic barriers) and anthropogenic pressures (e.g., road expansion, mining, agriculture, urban encroachment). However, unlike natural disturbances—after which ecosystems can self-recover—human-induced fragmentation is extensive, persistent, and often irreversible without restoration intervention.

In the BMCR context, scattered patches of scrub forests, open woodlands, and foothill grasslands are increasingly separated by infrastructure development and livestock grazing pressure, reducing landscape connectivity for key faunal species such as ungulates, small carnivores, and avifauna.

Consequences of Fragmentation

1. Reduced Total Habitat Area:

The overall area available for wildlife shrinks, causing habitat compression.

2. Increased Edge Effect / Reduced Interior Habitat:

As patches become more linear and irregular, edge habitats dominate, increasing exposure to disturbance, invasive species, predation risk, and microclimatic stress.

3. Restricted Wildlife Movement:

Fragmented patches act as ecological “islands,” limiting dispersal, migration, and access to foraging or breeding grounds.

4. Reduced Climate Resilience:

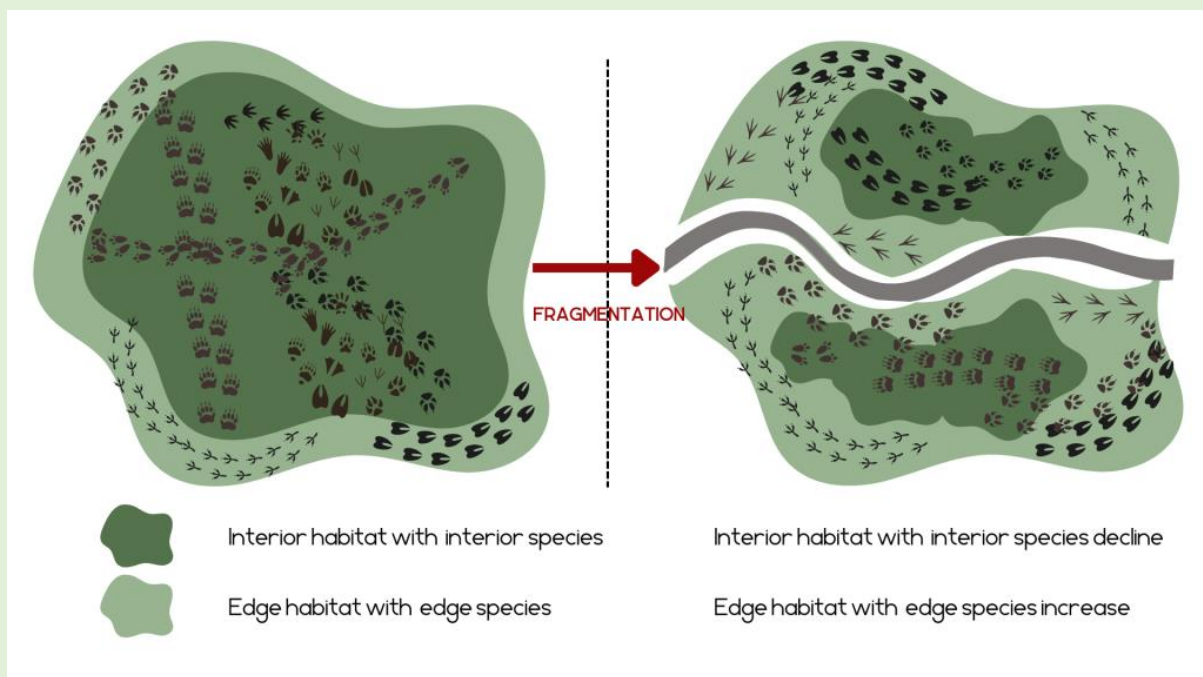
Fragmented landscapes impede species’ ability to naturally shift ranges in response to climate variability, making them more vulnerable to extinction pressures.

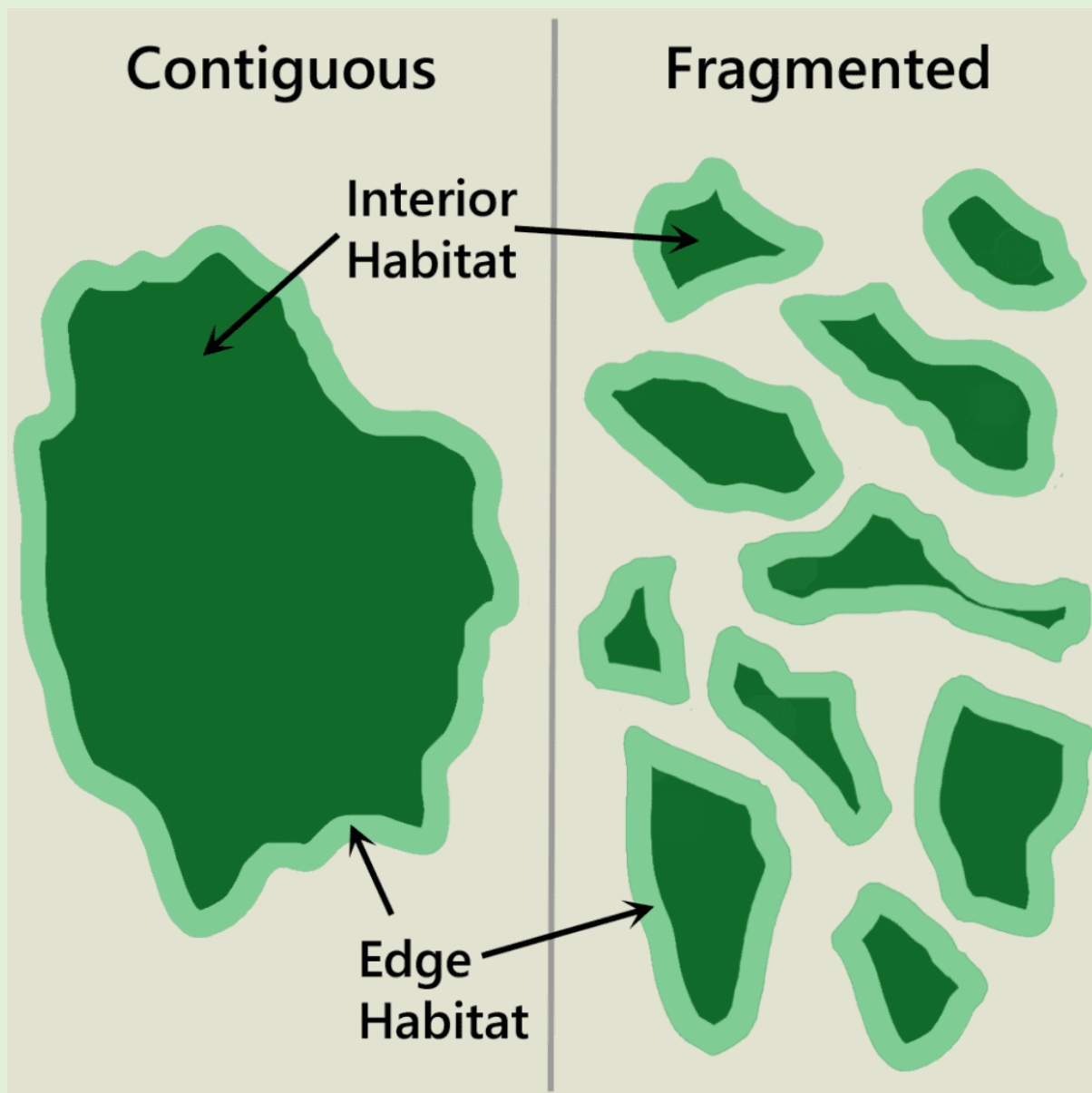
Habitat fragmentation can occur in several ways, including:

- Decreased total area: The overall size of the habitat is reduced.
- Decreased interior: Edge Effect: The ratio of the interior to the edge of the habitat is decreased.
- Isolation: One habitat fragment is isolated from other areas of habitat.
- Breaking up: A single habitat patch is broken up into multiple smaller patches.
- Decreased average patch size: The average size of each habitat patch is reduced.
- Fragmentation of movement routes: Potential routes for movement between habitat patches are fragmented, such as by a road cutting through a woodland

Corridor Restoration as a Solution

Establishing and securing ecological corridors—through habitat continuity, canopy connectivity, wildlife underpasses/overpasses at critical crossings, riparian buffer restoration, and reduction of barriers—can significantly restore landscape functionality. In the case of BMCR, ecological linkages with the Northern Aravalli range help re-establish natural movement pathways, improve habitat permeability, and strengthen climate resilience of species assemblages.





4.1.2 Functional Status (Context of Buchara Main Conservation Reserve)

The "functional status of wildlife corridors" refers to how effectively these corridors support the movement, health, and survival of wildlife populations. Wildlife corridors are natural or constructed pathways that connect separate habitats, allowing animals to move between them safely for food, mating, and migration. The functional status of these corridors considers several factors:

Connectivity: How well the corridor links different habitat areas, allowing for safe passage and genetic flow between animal populations.

Habitat Quality: The richness of resources within the corridor (e.g., food, water, shelter) that can sustain wildlife.

Barrier Reduction: The corridor's effectiveness in minimizing human-made obstacles like roads, fences, or developments that could hinder animal movement.

Biodiversity Support: The extent to which the corridor supports diverse species, including endangered or at-risk species.

Assessing the functional status of wildlife corridors helps conservationists understand how well these pathways fulfill their purpose and what improvements may be needed to ensure the survival and well-being of wildlife populations.

1. Habitat fragmentation in and around Bucharra Main Conservation Reserve (BMCR), Jaipur is evident in multiple forms, primarily due to anthropogenic pressures and discontinuities in the natural landscape. The fragmentation can be described as follows:
2. Isolation: Some habitat fragments within the BMCR landscape are isolated from adjoining forest patches, especially towards agricultural fields, mining-disturbed areas, and village settlements. This isolation reduces functional movement across the broader Aravalli corridor network.
3. Breaking up of continuous habitat: Larger habitat blocks that were once continuous have become sub-divided into smaller discontinuous patches due to linear intrusions such as village roads, livestock trails, and boundary fencing.
4. Decreased average patch size: The overall size of intact woodland and scrubland patches has decreased, especially near human-use edges, reducing the effective habitat available for wildlife species.
5. Fragmentation of movement routes: Natural animal movement routes between BMCR and adjoining forested stretches (such as towards Sariska–Baleshwar–Shakambhari landscape connectivity) are interrupted by roads, agricultural expansion, quarrying scars, and human settlements, affecting free movement and dispersal.

As a result, habitat within BMCR presents a gradient between contiguous interior habitat (toward the core woodland patches) and fragmented edge habitat (toward anthropogenic boundaries).

4.1.3.1 Functional Status of Corridor Connectivity

The “functional status of wildlife corridors” in the context of BMCR refers to how effectively the reserve still supports ecological movement and genetic exchange among wildlife populations across the northern Aravalli landscape. The assessment primarily considers:

Connectivity:

How well BMCR acts as a linkage between neighbouring Protected and Conservation Reserves, enabling safe passage for species such as ungulates, small carnivores, and avifauna. Functional connectivity ensures genetic flow and reduces the risk of isolated populations.

Habitat Quality:

The availability of natural resources within the reserve, including forage, cover, resting points, water sources, and refuge from disturbance. High-quality habitat enhances the role of BMCR as both a movement corridor and a short-stay microhabitat for species moving across the landscape.

Functional Status of the Corridor (Buchara Main Conservation Reserve, Jaipur)

Barrier Reduction:

The functional effectiveness of the BMCR corridor lies in its ability to minimise anthropogenic barriers such as rural roads, boundary fencing, agricultural expansions, and built-up areas that may obstruct wildlife movement. In stretches where human-made disturbances are fewer, the

corridor provides relatively unhindered movement for faunal species between adjoining forest patches.

Biodiversity Support:

The corridor plays a crucial role in sustaining biodiversity by facilitating the movement and gene flow of resident as well as transient species. It supports a range of wildlife, including Schedule-I species and other ecologically sensitive fauna that rely on connectivity between habitat patches for seasonal dispersal, foraging, and breeding.

Assessing the corridor's functional status is thus essential to understand how effectively it maintains ecological continuity, reduces habitat fragmentation, and supports long-term species survival. The insights derived help identify priority areas for habitat improvement and targeted mitigation interventions.

4.1.3.2 Analysis of Functional Status of the BMCR Wildlife Corridor

Analysis of Functional Status of Wildlife Corridors in Buchara Main Conservation Reserve (BMCR), Jaipur

1. Connectivity and Landscape Integration

Assessment:

The Buchara Main Conservation Reserve (BMCR) occupies a strategic position within the northern Aravalli landscape, acting as a critical ecological linkage between Sariska Tiger Reserve, Baleshwar Conservation Reserve, and Shakambhari Conservation Reserve. Assessment of corridor connectivity involves determining whether BMCR effectively links fragmented habitats to facilitate wildlife movement and gene flow.

Approach:

Advanced GIS (Geographic Information System) mapping, remote sensing, and landscape modeling are used to analyze habitat continuity and identify potential bottlenecks or gaps.

Metrics:

Connectivity indices (structural and functional) are computed to quantify the permeability of the landscape and ease of movement for faunal species.

Evaluation of Isolation:

Distance and fragmentation analyses are undertaken to evaluate the isolation level of BMCR from adjoining core habitats, identifying zones requiring restoration or enhancement for corridor continuity.

2. Habitat Quality within the Corridor

Assessment:

Habitat quality is analyzed based on vegetation composition, canopy structure, availability of water sources, shelter sites, and other ecological resources that sustain wildlife.

Metrics:

Biodiversity indices—including species richness, abundance, and vegetation cover—are calculated to assess habitat heterogeneity and ecological viability.

Suitability:

Field-based habitat suitability modeling helps determine whether the corridor meets the ecological needs of targeted species such as ungulates, small carnivores, and avifauna for movement, resting, and foraging within BMCR.

3. Wildlife Movement and Utilization Patterns

Assessment:

Camera traps, transect surveys, and indirect evidence (tracks, pellets, calls) are used to document species utilizing the corridor. For larger mammals, GPS collar data (if available) aids in understanding spatial usage.

Metrics:

Movement frequency, seasonal activity patterns, and the extent of corridor utilization are analyzed for focal species, especially those of conservation concern such as the Indian Gazelle (*Gazella bennettii*) and Indian Peafowl (*Pavo cristatus*).

Seasonal Variability:

Patterns of use across dry and wet seasons are examined to evaluate how BMCR accommodates wildlife movements during resource fluctuations.

4. Barrier and Risk Analysis

Assessment:

Potential anthropogenic barriers such as roads, agricultural fields, livestock grazing, and settlements around BMCR are identified through GIS mapping and ground validation.

Metrics:

Crossing frequency at barrier points, wildlife mortality records, and vehicle collision data are used to evaluate risk levels.

Human-Wildlife Conflict:

Incidences of crop depredation, livestock predation, and other forms of conflict are mapped and analyzed to determine pressure zones requiring mitigation interventions.

5. Biodiversity and Species Health Monitoring

Assessment:

Monitoring of resident and migratory species populations provides key insights into the biological health of the corridor.

Metrics:

Population density, reproductive success, and genetic diversity indicators are used to assess the corridor's role in maintaining viable populations and preventing inbreeding.

Survival and Reproduction:

Long-term monitoring of indicator species is emphasized to evaluate reproductive trends, mortality factors, and stress or disease prevalence within BMCR's ecosystem.

6. Long-Term Viability and Climate Resilience

Assessment:

The functional stability of BMCR under changing climatic scenarios is analyzed to understand potential impacts such as altered vegetation patterns and water scarcity.

Metrics:

Climate vulnerability models assess the corridor's adaptive capacity to variations in temperature, precipitation, and extreme weather events.

Future-Proofing:

Identification of climate-sensitive zones guides management interventions for habitat restoration, afforestation, and water retention to enhance resilience.

7. Management and Conservation Efforts

Assessment:

Current management strategies in BMCR are reviewed with respect to habitat protection, fire control, anti-poaching operations, invasive species management, and ecological restoration activities.

Metrics:

Effectiveness of enforcement mechanisms, allocation of conservation funds, and local community engagement programs are evaluated.

Stakeholder Collaboration:

Coordination between the Forest Department, conservation NGOs, and local communities is essential for maintaining corridor integrity and minimizing anthropogenic pressure.

1. Connectivity and Landscape Integration

Assessment:

Connectivity is evaluated to determine whether the BMCR corridor successfully links fragmented habitats within the northern Aravalli landscape, enabling natural movement between Buchara Main CR, Sariska TR, Shakambhari CR, and adjoining forest blocks. GIS-based spatial analysis, remote sensing layers, and ground-truthing are used to delineate present movement pathways and bottleneck zones.

Metrics:

Structural and functional connectivity indices are applied to examine the degree of landscape permeability. These include corridor width, vegetation continuity, presence of natural cover, and the frequency of disturbance patches. Higher connectivity values correspond to greater ease of movement for wildlife.

Evaluation of Isolation:

Distances between core habitat patches are mapped to identify potential isolation effects, particularly for species dependent on larger home ranges. Areas where isolation pressure is high indicate a greater requirement for habitat restoration, barrier removal, or protection from further fragmentation.

2. Habitat Quality within the Corridor

Assessment:

A detailed evaluation of vegetation structure, availability of water sources, shelter sites, and other ecological resources was undertaken to determine whether the habitat within the BMCR corridor supports wildlife movement. Special emphasis was placed on assessing native floral diversity, canopy cover, grassland patches, and microhabitats that facilitate forage and cover.

Metrics:

Habitat quality was measured through biodiversity indices such as species richness, abundance, and Shannon-Weiner diversity index, along with assessment of vegetation density and ground cover. The presence of critical habitat elements like natural waterholes, seasonal streams, shade-providing tree clusters, and bushland thickets was also recorded.

Suitability:

Based on these indicators, the corridor area was evaluated for its suitability to support the ecological requirements of the target faunal species (herbivores and associated carnivores). Suitability includes the corridor's ability to provide forage, resting cover, and temporary refuge during dispersal and movement.

3. Wildlife Movement and Usage Patterns

Assessment:

Wildlife usage of the BMCR corridor was assessed through camera trap data, spoor/sign surveys, and field observations. Where applicable, GPS telemetry records from adjoining Protected Areas were analyzed to correlate movement paths and dispersal trends.

Metrics:

Movement frequency, preferred routes, species-specific usage intensity, and resting/foraging stopovers were documented. Special attention was given to indicator and conservation priority species to understand their reliance on the corridor for seasonal or permanent connectivity.

Seasonal Variability:

Seasonal variation in wildlife movement was examined to determine how monsoon vegetation flush, summer water scarcity, and winter forage availability influence corridor usage. This also helped in identifying periods of peak movement and spatial shifts in dispersal routes.

4. Barrier and Risk Analysis

Assessment:

An inventory of physical and anthropogenic barriers within and around the BMCR corridor—such as village roads, boundary walls, agricultural fencing, livestock pressure, and other forms of disturbance—was compiled to evaluate their impact on movement continuity.

Metrics:

Crossing frequency at linear barriers (e.g., minor roads) and wildlife avoidance behavior near human-dominated patches were analyzed. Where available, records of wildlife mortality due to vehicle collisions or snare/entanglement incidents were also considered.

Human–Wildlife Conflict:

The intensity and spatial extent of human activity around the corridor was evaluated to assess potential conflict hotspots. Particular emphasis was given to edge areas adjoining agricultural lands and habitations, where disturbance, crop-raiding, and retaliatory responses are more likely.

5. Biodiversity and Species Health Monitoring

Assessment:

Regular monitoring of key faunal species using the corridor is required to track their population trends, habitat-use intensity, health indicators, and inter-reserve movement. Special focus must be given to herbivores (e.g., Nilgai, Chital, Sambar) and associated carnivores using the landscape mosaic between BMCR and adjoining conservation areas.

Metrics:

- Genetic diversity indicators and gene flow assessment to determine whether the corridor is effectively reducing isolation and preventing inbreeding.
- Population viability, movement frequency, and seasonal site fidelity.

Survival and Reproduction:

Continuous monitoring of reproductive success, mortality causes, disease prevalence, and stress physiology (where feasible), to ensure that the corridor is supporting sustainable wildlife populations.

6. Long-term Viability and Climate Resilience

Assessment:

Evaluate the potential impacts of climate variability and climate change on corridor functionality, particularly with respect to shifting vegetation types, altered forage availability, and changes in seasonal water distribution within BMCR and its adjoining linkages.

Metrics:

- Capacity of the corridor to retain ecological functionality under altered temperature and precipitation regimes.
- Sensitivity of key wildlife species to heat stress, drought cycles, and water scarcity.

Future-Proofing:

Identification of climate-related risks (e.g., drying of water bodies, invasive flora, or ecosystem degradation) and development of adaptive management strategies to safeguard long-term resilience and connectivity.

7. Management and Conservation Efforts

Assessment:

Periodic evaluation of ongoing management interventions within BMCR, including habitat restoration, regulation against encroachment, mitigation of disturbance, and anti-poaching or illegal grazing control.

Metrics:

- Effectiveness of enforcement and habitat protection measures.
- Scale and efficiency of conservation investments.
- Degree of community participation in corridor protection and co-management.

Stakeholder Collaboration:

Strengthening coordination among Forest Department, conservation agencies, research institutions, and local communities to support long-term corridor stewardship.

Conclusion

A comprehensive and scientifically structured assessment of the Bucharra Main Conservation Reserve corridor helps in understanding its functional effectiveness and identifying priority areas for improvement. Ensuring ecological connectivity, habitat quality, safe wildlife passage, and adaptive management will allow the corridor to continue supporting biodiversity conservation and ecosystem health. Regular public awareness programmes and participatory initiatives will be implemented from time to time to enhance local stewardship and long-term sustainability of the corridor.

4.1.3 Anthropogenic Status

The assessment of anthropogenic influences on the Buchara Main Conservation Reserve corridors highlights the importance of balancing human needs with wildlife conservation. By integrating safety, economic, cultural, and ecological considerations, BMCR can serve as a model for sustainable corridor management in semi-arid Rajasthan. Strengthening policy support, fostering community participation, and promoting eco-friendly development will ensure the long-term functionality and resilience of wildlife corridors in this human-dominated landscape.

1. Human Benefits and Ecosystem Services

Biodiversity and Ecosystem Health:

BMCR functions as a crucial linkage between Sariska Tiger Reserve, Baleshwar Conservation Reserve and Shakambhari Conservation Reserve, thereby sustaining wildlife movement and genetic exchange. By maintaining biodiversity, the corridor indirectly supports ecosystem services essential to local communities such as natural pest control, pollination, soil moisture retention, and microclimate regulation.

Carbon Sequestration and Climate Resilience:

The woodland patches, scrub forests, and native tree cover across BMCR act as a natural carbon sink, contributing to the sequestration of atmospheric carbon. This ecological service enhances local climate resilience and supports India's climate mitigation commitments.

Livelihood Support and Cultural-Recreational Value:

BMCR provides opportunities for eco-tourism, birdwatching, nature trails, and low-impact wildlife observation, which can benefit nearby rural communities through sustainable livelihood options. The landscape also holds cultural value for surrounding villages that traditionally associate local flora and fauna with community identity and heritage.

2. Human Safety and Conflict Mitigation

Reduction in Human–Wildlife Conflicts:

In the landscape of Bucharra Main Conservation Reserve (BMCR), strategically planned ecological corridors play a crucial role in minimizing human–wildlife interactions. By facilitating the safe movement of species such as nilgai (*Boselaphus tragocamelus*), chital (*Axis axis*), and wild boar (*Sus scrofa*), these corridors reduce incidences of crop depredation, livestock predation, and direct encounters with humans in adjoining agricultural or settlement zones.

Vehicle Collision Prevention:

The reserve is traversed by several local roads and rural tracks. Integrating wildlife underpasses, speed regulation measures, and reflective signage along these stretches can substantially mitigate the risk of wildlife–vehicle collisions, thereby ensuring safety for both animals and motorists.

Disease Management:

Well-connected wildlife habitats within BMCR promote genetic exchange and reduce population stress, consequently lowering the chances of disease outbreaks that may otherwise occur in isolated or overcrowded populations. Maintaining healthy animal populations also helps minimize the potential transmission of zoonotic diseases to nearby human communities and livestock.

3. Economic Impacts

Enhancement of Eco-Tourism and Employment:

Improved habitat connectivity and visible wildlife movement can enhance eco-tourism potential in and around BMCR. This, in turn, generates local employment opportunities in guiding, hospitality, patrolling, and habitat restoration sectors, supporting the local rural economy.

Reduction in Agricultural and Livestock Losses:

By directing wildlife movement through secure corridors away from farmlands, the management aims to reduce crop and livestock losses due to animal intrusion, thereby strengthening coexistence and local livelihood resilience.

Economic and Ecosystem Services:

Corridor-based habitat conservation contributes to ecosystem stability—supporting soil fertility, pollination, and groundwater recharge—providing indirect but long-term economic benefits to the local communities and the region.

4. Land Use and Development Considerations

Integrated Land Use Planning:

The management of BMCR necessitates coordination between the Forest Department, local governance bodies, and nearby community institutions to ensure that corridor networks are integrated into regional development plans. This approach balances conservation priorities with human infrastructure expansion.

Infrastructure Development and Maintenance Costs:

Establishing wildlife passages, fencing, solar-powered surveillance systems, and anti-poaching infrastructure involves financial investment. Careful planning and phased implementation are therefore required to ensure cost-effectiveness while achieving conservation objectives.

Resource Allocation and Land Pressure:

In the context of Jaipur district's semi-arid terrain and increasing human footprint, land designated for corridor connectivity may reduce availability for agriculture or settlement. Thus, participatory land-use negotiation and incentive-based conservation schemes are essential for local acceptance.

5. Community and Cultural Value

Cultural and Ecological Significance:

Local communities around BMCR traditionally value wildlife and forest ecosystems as part of their cultural and spiritual identity. Strengthening corridors aligns with this ethos of environmental stewardship and long-standing coexistence with nature.

Community Engagement and Education:

Awareness programs, eco-clubs, and participatory conservation initiatives within nearby villages promote understanding of corridor importance and encourage local ownership in protection efforts.

Indigenous Stewardship and Traditional Knowledge:

Traditional ecological knowledge—such as understanding animal movement routes, seasonal foraging zones, and natural water sources—can be effectively integrated into corridor planning, enhancing both conservation and cultural continuity.

6. Policy and Regulatory Implications

Policy Framework and Governance:

Effective corridor management for BMCR requires alignment with the Rajasthan Forest Policy (2010), National Wildlife Action Plan (2017–2031), and Eco-sensitive Zone (ESZ) guidelines. These policies emphasize habitat connectivity, biodiversity protection, and community participation.

Legal Protection and Monitoring:

Corridors adjoining BMCR should be recognized within regional land-use records and protected from encroachment, deforestation, and mining. Strengthening legal safeguards under the Wildlife (Protection) Act, 1972, and Forest (Conservation) Act, 1980, is essential to maintain ecological integrity.

Public Support and Institutional Collaboration:

Securing long-term funding and policy backing depends on demonstrating corridor benefits—such as reduced conflict, enhanced biodiversity, and sustainable livelihoods—to stakeholders, ensuring a collaborative conservation model.

4.1.3.1 Pressures / Threats & Human-Induced Disturbance

BMCR is exposed to a range of anthropogenic pressures that compromise its corridor functionality:

Habitat Fragmentation and Encroachment:

Expansion of agriculture, fencing of private farmlands, and scattered human settlements along the linkage zones restrict free movement of wildlife, especially ungulates.

Livestock Grazing Pressure:

Overgrazing in scrub and open woodland patches degrades ground vegetation, reduces grass regeneration, and triggers competition between wild herbivores and domestic cattle.

Linear Infrastructure Interference:

Village roads, utility lines, and informal cart-tracks fragment the corridor and increase animal-vehicle conflict risk, particularly during crepuscular wildlife movement.

Fuelwood and NTFP Extraction:

Seasonal collection of firewood, fodder, and minor forest produce leads to gradual degradation of native vegetation structure.

Human Presence and Disturbance:

Frequent movement of herders and villagers along wildlife trails alters animal movement behaviour and reduces corridor permeability during peak hours.

4.1.3.2 Management Interventions Required

To maintain corridor integrity and improve functionality, the following management strategies are necessary:

Habitat Restoration and Assisted Natural Regeneration:

Native species plantation along degraded stretches, coupled with soil-moisture conservation measures.

Regulated Grazing and Fodder Banks:

Introduction of rotational grazing systems, development of fodder plots outside core corridor patches to reduce pressure.

Mitigation of Linear Barriers:

Wildlife-friendly crossings, signage in high-movement zones, and control of speed on village roads.

Community Stewardship and Incentive-Based Conservation:

Engagement of local communities through eco-development schemes and eco-tourism-linked livelihood support.

Monitoring and Corridor-Watch Programme:

Participatory monitoring by Forest Department and community volunteers for early detection of disturbance hotspots.

4.1.3.3 Policy or Governance Implications

Corridor as a Legally Recognised Conservation Unit:

Continued protection under the Conservation Reserve category strengthens the legal framework for preventing land-use change.

Integration with Landscape-Level Planning:

Corridor management should be aligned with surrounding PA network plans (Sariska, Baleshwar, Shakambhari), ensuring continuity in wildlife movement.

Village-Level Resource Governance:

Involvement of Gram Panchayats in regulating fuelwood removal, grazing intensity, and land conversion enhances compliance and reduces forest-dependency.

Incentives for Conservation-Compatible Land Use:

Payment for Ecosystem Services (PES), eco-tourism-based benefit-sharing, and voluntary conservation agreements can support long-term stewardship.

4.1.3.4 Comparative Baseline (Pre-Notification vs. Present Status)

Parameter	Before CR Notification	Present Status
Legal Protection	No dedicated protection; open-access landscape	Declared Conservation Reserve; restricted diversion
Habitat Integrity	Fragmentation more pronounced; unregulated grazing	Gradual improvement through protection & regeneration
Community Interface	Primarily extraction-based use	Increasing shift toward conservation awareness
Wildlife Permeability	Seasonal and low-frequency movement	Higher wildlife use in specific patches during lean season
Governance	Dispersed village-level management	Forest Department-led stewardship with community participation

2. Human Safety and Conflict Mitigation

Reduction in Human-Wildlife Conflicts:

In the BMCR landscape, where wildlife movement occurs between adjacent forest patches and agricultural fields, scientifically planned corridors help channel animal movement through safer stretches of forested and scrub habitats. This minimizes the frequency of wildlife straying

into human settlements, agricultural lands, or livestock-grazing zones, thereby lowering conflict incidences.

Vehicle Collision Prevention:

The regional road network passing near or across wildlife movement routes poses risks for both animals (especially ungulates) and motorists. Properly designed mitigation structures such as signage, speed-calming measures, or future scope for wildlife underpasses/overpasses can significantly reduce wildlife-vehicle collisions and enhance overall road safety.

Disease Management:

Corridors maintain connectivity between wildlife populations and prevent local overcrowding within small or isolated habitat patches. This ecological balance helps lower stress-related disease susceptibility in wildlife populations and indirectly reduces zoonotic risk to livestock and humans living in fringe villages.

3. Economic Impacts

Positive Influence on Property and Land Value:

Well-managed natural corridors in and around BMCR enhance the environmental quality and scenic value of the surrounding area, which in turn can reflect positively on local land values due to improved ecological aesthetics and conservation recognition.

Local Employment and Eco-tourism Potential:

The BMCR corridor connectivity strengthens opportunities for nature-based tourism, bird-watching, ecological monitoring, and community participation in habitat restoration. These activities generate local livelihood options such as guided tours, nursery development, plantation work, ecological surveillance, and hospitality-linked services.

Reduced Agricultural and Livestock Losses:

Strategically maintained movement paths reduce chances of wildlife entering croplands or livestock enclosures. By keeping movement routes within natural habitat patches, corridor conservation indirectly safeguards farmers from losses due to crop damage or predation, thus contributing to rural economic security.

4. Land Use and Development Considerations (with reference to BMCR)

Urban Planning and Land Management:

The Buchara Main Conservation Reserve lies within a developing landscape influenced by expanding villages, agricultural fields, and peri-urban growth in parts of Jaipur district. Therefore, the ecological corridor value of BMCR must be integrated into regional land-use and development planning to ensure that habitat connectivity with Sariska Tiger Reserve, Baleshwar Conservation Reserve, and Shakambhari Conservation Reserve is not compromised. Coordination among Forest Department, Revenue authorities, and local Panchayati Raj institutions is vital to prevent habitat fragmentation.

Infrastructure Development and Associated Costs:

The reserve area experiences linear intrusions such as roads, transmission lines, and village link routes that may affect free wildlife movement. Creating wildlife-friendly infrastructure (speed calming measures, signage, controlled vehicle movement, and protection works where required) involves financial planning and institutional coordination. While BMCR does not currently require heavy structural interventions like overpasses or underpasses, investment is needed for habitat improvement, boundary demarcation, and anti-poaching/monitoring infrastructure.

Resource Allocation and Land-Use Trade-offs:

Land falling within and adjacent to the corridor is sometimes used for grazing and fuelwood collection by nearby villages, which may lead to livelihood-linked pressures. As land earmarked for corridor protection cannot be converted to agricultural expansion or settlement, sensitization and community participation become crucial to reduce local conflict. Sustainable resource-sharing mechanisms and eco-development support can help balance conservation priorities with socio-economic needs of local stakeholders.

5. Community and Cultural Value

Cultural Significance:

Local rural communities around Buchara Main Conservation Reserve (BMCR) traditionally associate natural landscapes with cultural identity, seasonal festivals, and local ecological

ethics. The corridor holds ecological as well as cultural relevance as it sustains wildlife presence, which is considered an integral part of the landscape heritage of the Aravalli foothills.

Community Engagement and Awareness:

The existence of the corridor provides opportunities for increasing community awareness about biodiversity conservation, human–wildlife coexistence, and sustainable resource use. Regular orientation initiatives, eco-awareness camps, and involvement of local stakeholders support a positive conservation attitude and long-term stewardship.

Traditional Ecological Knowledge and Land Stewardship:

Pastoral and agrarian communities living adjacent to the reserve often possess traditional ecological knowledge relating to grazing patterns, seasonal water availability, and wildlife movement. Integrating such knowledge into corridor management strengthens both cultural continuity and conservation practices.

6. Policy and Regulatory Implications

Policy Support and Landscape-level Planning:

Corridor protection requires policy interventions related to land-use regulation, ecological restoration, and prevention of habitat fragmentation. The reserve's role as a linkage between Sariska Tiger Reserve and other Aravalli habitats underscores government commitment to landscape-scale conservation.

Legal Safeguards:

As a Conservation Reserve under the Wildlife (Protection) Act, 1972, BMCR benefits from legal protection against encroachment, habitat degradation, poaching, and incompatible land conversions. These safeguards promote long-term ecological integrity and wildlife safety.

Public Participation and Institutional Support:

Public support is vital for effective corridor conservation. Continued engagement of local communities, Panchayati Raj institutions, and eco-development committees ensures shared responsibility. Visible conservation outcomes—such as restoration, improved water

availability, and wildlife movement—further strengthen public confidence and compliance with protective measures.

Conclusion (Revised – Context: Buchara Main Conservation Reserve, Jaipur)

Assessment of the anthropogenic status of the Buchara Main Conservation Reserve (BMCR) corridor is essential for understanding the interface between ecological functionality and human pressures. Such evaluation enables planners and managers to identify how land-use change, livestock movement, agricultural expansion, village development, road networks and resource extraction influence corridor permeability. By recognizing the socio-economic, safety, and cultural values associated with the landscape, the Reserve managers and policymakers can design conservation strategies that balance community interests with wildlife movement requirements, ensuring long-term corridor viability within a human-dominated matrix.

Identification of Bird-Rich Sites and Habitat Use

Systematic census and seasonal avifaunal monitoring across BMCR and its adjoining landscape will help delineate bird-rich microhabitats, including scrublands, riparian stretches, agricultural fallows, waterbodies, and Prosopis-Juliflora dominated edges. Identifying habitat preferences during migratory and resident bird congregation seasons will allow prioritization of sensitive zones for habitat improvement and protective measures. All assessments will be carried out scientifically under expert guidance, applying standardized ornithological survey protocols (line transects, point counts, opportunistic records and wetland counts).

Proposed Measures for Bird Conservation in BMCR

A significant portion of bird habitats within the BMCR corridor lies in semi-open community-use landscapes, often located outside strict forest demarcations and adjacent to village

commons, grazing lands and agricultural fields. Hence, community-based conservation models become crucial to safeguarding avifaunal diversity. In this context, effective bird habitat protection can only be achieved through collaborative approaches involving Gram Panchayats, Forest Department, local conservation committees and allied governmental institutions.

To maintain and enhance habitat suitability for both resident and migratory bird species, the following strategic measures are proposed:

- I. Habitat Management and Restoration
- II. Protection and augmentation of nesting and roosting habitats near existing waterbodies and wooded patches
- III. Regulation of lopping and fuelwood extraction in ecologically sensitive patches
- IV. Promotion of native species plantations that support insectivorous and frugivorous bird guilds
- V. Community Involvement and Awareness
- VI. Sensitization of local communities regarding ecological importance of BMCR as a connectivity node
- VII. Village-level biodiversity guardians or “Bird Mitra” concept to encourage participatory monitoring
- VIII. Capacity-building through Panchayat-led conservation activities
- IX. Minimizing Disturbance in Key Habitats
- X. Seasonal protection of congregation and roosting zones during migratory peak periods
- XI. Regulation of noise, grazing intensity and vehicular movement near wetlands
- XII. Strengthening Monitoring and Documentation
- XIII. Periodic bird surveys to detect population trends
- XIV. Preparation of a bird atlas for BMCR landscape
- XV. Linking monitoring outcomes with adaptive habitat management interventions
- XVI. Habitat Improvement Measures for Avifaunal Conservation in BMCR

Plantation of Native Riparian Tree Species

Native tree species such as *Ficus benghalensis* (Banyan), *Ficus religiosa* (Peepal), *Vachellia nilotica* (Babul), *Azadirachta indica* (Neem), *Ficus racemosa* (Gular), and other indigenous *Ficus* spp. will be promoted along the embankments of ponds, anicuts, and small dams within BMCR. These species provide shade, microclimatic stabilisation, perching, roosting, and nesting habitats, in addition to fruits that serve as a key food source for resident and migratory bird species.

Habitat Enrichment on Islands within Larger Water Bodies

In larger ponds/anicut that contain small natural or artificial islands, these native tree species will also be planted strategically to create isolated predator-safe nesting and roosting habitats, improving breeding success and long-term habitat suitability for sensitive avifauna.

Development of Marshy and Reed-dominated Zones

Peripheral shallow zones and island margins will be developed into marshy and reed-filled habitats by introducing suitable aquatic and semi-aquatic vegetation (e.g., *Typha* spp., *Phragmites* spp., *Cyperus* spp.). These wetlands support a variety of waterfowl and waders and are highly preferred by migratory as well as resident species for foraging, shelter, and nesting.

Invasive Weed and Aquatic Vegetation Management

Targeted and periodic removal of invasive alien species such as *Prosopis juliflora* (Australian acacia) and *Parthenium hysterophorus* (Carrot grass) will be undertaken. Control measures for aquatic choking weeds (e.g., excessive *Eichhornia* or *Hydrilla* spread) will be implemented to maintain water quality, open-water feeding zones, and habitat visibility. Terrestrial weeds will be removed prior to seed dispersal to prevent expansion.

Regulation of Fishing Pressure

Fishing activity, if permitted, will be regulated through seasonal restrictions, gear limitations, and spatial zoning to ensure food availability for fish-eating bird species and to maintain predator-prey equilibrium around water bodies.

Eco-tourism Infrastructure for Bird Observation

Bird-watching towers, elevated platforms, and low-disturbance observation scaffolds will be installed at ecologically strategic wetlands and major ponds. Priority will be given to sites adjacent to public access routes and forest-proximate water bodies to support responsible eco-tourism without disturbing wildlife. Controlled visitor pathways and signage will be used to minimise disturbance.

Interpretation and Awareness Signage

Informational and interpretive boards illustrating the description, seasonal occurrence, ecological role, and conservation status of key bird species will be installed at bird-rich water bodies to enhance public knowledge, school outreach, and nature education.

Additional Conservation Regulations (Indicative)

- Restriction on loud noise, drones, and night-time human interference near key roosting and breeding sites;
- Seasonal protection of nesting habitats during peak breeding months;
- Prohibition of dumping of solid waste or cattle wallowing in sensitive wetlands;
- Encouragement of nature-guided tourism under a regulated permit-based system.
 - Additional Conservation Regulations

To enhance long-term wildlife conservation outcomes within Bucharā Main Conservation Reserve (BMCR), Jaipur, the following supplementary measures are proposed:

Promotion of Bird-Watching and Citizen Participation

Seasonal bird-watching programmes shall be organized, particularly around the key wetlands and water bodies during the winter migratory season. These initiatives will help promote eco-awareness, attract bird enthusiasts and support citizen-led conservation documentation (bird counts, migration records, etc.).

Establishment of a Community-based “Bird Conservation Association”

A “Bird Association” will be constituted under the guidance of the Deputy Conservator of Forests (DCF), BMCR, to mobilize local youth, researchers, nature guides and bird lovers. The association will assist in conservation outreach, community monitoring, and reporting of bird sightings and threats.

Strengthening Awareness through Public Outreach and JFM Framework

Public awareness toward avifaunal and wildlife conservation shall be enhanced by active participation in Wildlife Week, awareness drives, bird festivals, school nature clubs, and capacity-building under the Joint Forest Management (JFM) mechanism. This will improve stewardship and shared responsibility.

Dissemination of Information on Wildlife Safety and Compensation

Information related to legal protection of wildlife, mitigation of human-wildlife conflicts, and Government compensation schemes for wildlife-caused loss to life, crops or property will be made widely accessible to local communities through Gram Sabhas, Forest Chowkis and printed/visual media.

These measures collectively aim to strengthen community-led stewardship, habitat protection, and ecological sensitivity, contributing to long-term sustainability of bird and wildlife conservation within BMCR.

4.2 Areas with Potential for Movement, Stay and Reproduction

Within Buchara Main Conservation Reserve, several habitat patches exhibit high ecological potential for wildlife movement, short-term refuge and reproduction. These areas are generally characterised by:

1. Low levels of human disturbance
2. Rich natural vegetative cover
3. Availability of perennial/semi-perennial water sources
4. Habitat heterogeneity (grasslands, scrub, wetlands and forest patches)
5. Key Ecological Significance

Habitat Type	Ecological Role
Protected Forest Patches	Provide cover, nesting substrates and feeding grounds for herbivores and avifauna. Minimal human interference allows natural breeding and territorial behavior.
Wetlands & Seasonal Water Bodies	Serve as breeding and foraging habitats for resident and migratory waterbirds; provide insect-rich environments for waders and piscivores.
Grassland & Scrub Habitats	Support herbivore populations (lagomorphs, ungulates), which in turn maintain prey availability for carnivores and raptors. Provide safe movement corridors.

These habitat mosaics function as critical micro-corridors, enabling wildlife to:

- Move between resource patches
- Access water and shelter during stress periods (summer/migration)
- Establish breeding territories and nesting zones
- Avoid anthropogenic pressure zones

- Such areas are vital for maintaining genetic exchange, territorial connectivity, and overall ecological resilience of the BMCR landscape.

4.2.1 Areas Favouring Only Movement

These zones within Buchara Main Conservation Reserve (Jaipur) primarily act as wildlife movement corridors that facilitate the daily and seasonal passage of wild animals between resource-rich habitats. They serve a crucial role in maintaining landscape connectivity, allowing for gene flow, territorial dispersal, and escape routes during adverse conditions.

Ecological Characteristics

- These areas are typically composed of open scrublands, grass-dominated patches, dry rivulets (nalas), and agricultural fringes.
- The vegetation is sparse and discontinuous, dominated by species such as *Cenchrus ciliaris*, *Lasiurus indicus*, *Capparis decidua*, *Leptadenia pyrotechnica*, and *Calligonum polygonoides*.
- Water and shade availability are minimal, thus restricting prolonged stay or breeding.
- Terrain is undulating to flat, with dry sandy loam soils supporting only xerophytic growth.

Wildlife using these areas mainly include Chinkara (*Gazella bennettii*), Nilgai (*Boselaphus tragocamelus*), Indian Hare, Jackal, and occasionally Indian Fox.

Management Implications

- Maintain open corridors free from obstructions such as barbed wire fencing, new roads, or construction activities.
- Control of grazing intensity and restriction of fuelwood extraction to prevent habitat degradation.
- Undertake vegetation restoration with native grass and shrub species along movement paths.

- Establish permanent monitoring plots and camera trap stations to document usage patterns and frequency of species movement.
- Integrate these corridors with neighboring forest blocks and village common lands under a landscape-level conservation approach.

4.3 Areas Favouring Movement and Short Stay

These areas function as transitional habitats, where wildlife not only move through but also rest, graze, or drink water temporarily. They serve as intermediate use zones connecting core habitats with marginal lands, supporting short-term occupancy and foraging activities.

Ecological Characteristics

- Usually found around seasonal depressions, small tanks, and man-made ponds that retain moisture for part of the year.
- Vegetation structure is more heterogeneous, consisting of mixed grass–shrub communities with species like *Zizyphus nummularia*, *Acacia senegal*, *Prosopis cineraria*, and *Dichrostachys cinerea*.
- Provides moderate canopy cover, ground vegetation, and occasional water, making them ideal for resting and grazing.
- Attracts both herbivores and ground-dwelling birds, particularly during early morning and evening hours.
- Often located at the interface of human settlements and forested patches, hence more prone to anthropogenic pressures.

Management Implications

- Implement controlled grazing regimes to prevent overuse of vegetative resources.
- Develop seasonal water points and salt licks to enhance habitat quality.

- Introduce eco-restoration programs involving local communities under Joint Forest Management (JFM) for habitat maintenance.
- Conduct periodic ecological monitoring to study vegetation regeneration, faunal usage, and signs of disturbance.
- Prevent encroachment and illegal resource extraction by promoting awareness and patrolling.
- These sites can serve as buffer zones, mitigating disturbance to core wildlife habitats.

4.4 Areas with Potential for Movement, Stay, and Reproduction

These areas represent the core ecological zones of the Bucharu Main Conservation Reserve, supporting resident wildlife populations and providing all essential ecological components—movement, foraging, cover, nesting, and breeding conditions. These habitats form the functional backbone of the reserve and are crucial for sustaining biodiversity and ecological integrity.

Ecological Characteristics

- Composed of dense native vegetation, permanent water sources, and microhabitats that support species reproduction and population recruitment.
- Typical vegetation includes *Prosopis cineraria*, *Balanites aegyptiaca*, *Acacia leucophloea*, *Capparis decidua*, *Cenchrus ciliaris*, and *Lasiurus indicus*.
- Soil moisture and vegetative productivity remain relatively higher due to topographic depressions and improved water retention.
- Serve as key breeding grounds for Peafowl, Francolins, Chinkara, Laggar Falcon, and various reptiles.

- Provide adequate cover, nesting materials, and food resources, essential for reproduction and offspring survival.
- Human disturbance is minimal, making these areas ecologically stable and functionally resilient.

Management Implications

- Prioritize these zones for strict protection, minimizing human access, and controlling invasive species (e.g., *Prosopis juliflora*).
- Strengthen anti-poaching and patrolling activities during breeding seasons.
- Undertake habitat enrichment planting with native fruit-bearing and fodder species to enhance resource diversity.
- Maintain perennial water sources through rainwater harvesting, check-dams, or pond desilting programs.
- Develop long-term ecological monitoring frameworks including:
 - Breeding success indices,
 - Habitat utilization mapping,
 - Vegetation productivity assessment.
- Promote community participation through awareness and eco-development initiatives to ensure sustainable coexistence.

Integrated Management Perspective

The Buchara Main Conservation Reserve forms part of the semi-arid ecological landscape of Jaipur district, supporting both resident and migratory fauna.

The spatial zonation into areas of movement, short stay, and reproduction provides a scientific framework for habitat-specific management and monitoring.

Strategic Actions Recommended

- Habitat Connectivity Enhancement – linking movement corridors with adjacent forest patches (e.g., via plantation of native species and removal of barriers).
- Seasonal Water Resource Development – constructing or rejuvenating small ponds and percolation tanks to reduce dry-season stress.
- Biodiversity Monitoring – employing GIS-based mapping, camera traps, and participatory field observations.
- Invasive Species Control – removing *Prosopis juliflora* and promoting native xerophytes to restore ecological balance.
- Community Involvement – encouraging local participation in conservation through employment in restoration, watch and ward, and eco-tourism activities.

This integrated approach will ensure long-term ecological sustainability, wildlife movement continuity, and population viability within Buchara Main Conservation Reserve and its surrounding landscape.



Protected Forest Patches

Chapter 5

Managerial strategy (corridor management) with Thematic Actions

A managerial strategy for corridor management involves creating a structured plan to conserve and maintain wildlife corridors while balancing ecological needs with human interests. This strategy generally includes thematic actions focusing on habitat preservation, community engagement, policy, and monitoring to ensure that corridors remain functional for wildlife movement, migration, and reproduction. Below is an outline of such a strategy with specific thematic actions:

1. Habitat Conservation and Restoration

Goal: To preserve and restore critical habitats within wildlife corridors to support species movement, food sources, and breeding areas.

Habitat Preservation: To identify and protect key habitat zones within the corridor, focusing on high-biodiversity areas or those with sensitive ecosystems.

Vegetation Restoration: Planting native trees, shrubs, and grasses to enhance habitat connectivity and provide food and shelter for wildlife.

Water Source Management: Preservation and rehabilitation of natural water bodies (ponds, streams) to maintain water availability and attract diverse species.

Invasive Species Control: To regularly remove invasive plant species that could disrupt native flora and fauna, such as Australian acacia or carrot grass, which impact water quality and habitat structure.

Rotational grazing

Rotational grazing is a system where livestock are moved between pastures (or paddocks) to allow vegetation in previously grazed areas time to recover. It mimics natural grazing patterns and can improve pasture health, water retention, and biodiversity.

Benefits of Rotational Grazing:

1. **Improves Plant Diversity:** Well-managed grazing can control invasive species and promote native plant growth.
2. **Wildlife Habitat:** Creates a more diverse structure in vegetation, which benefits various wildlife species.
3. **Soil Health:** Reduces compaction and increases organic matter through managed manure distribution.
4. **Drought Resilience:** Deep-rooted plants enhance water infiltration and improve soil moisture storage.

Restrictions and Guidelines:

- Requires NRCS (Natural Resources Conservation Service) or FSA (Farm Service Agency) approval.
- Usually limited to specific times (e.g., outside nesting seasons).
- Stocking rates and rotation schedules must prevent overgrazing.

Translocation of animals

Translocation of animals in conservation reserves refers to the process of moving animals from one location to another as part of a conservation strategy. This technique is widely used to preserve species, maintain biodiversity, and restore or strengthen populations within conservation areas. The primary purpose of animal translocation is to ensure the long-term survival of species that are at risk of extinction, face threats in their current habitats, or need help recovering their numbers.

There are different contexts and types of translocation within conservation reserves:

1. Types of Translocation in Conservation Reserves

Reintroduction: The return of a species to a location where it has been previously extirpated (locally extinct). This can help restore biodiversity to an area and re-establish a species' role in the ecosystem.

Reinforcement (or Augmentation): The introduction of additional individuals into an existing population to help increase numbers, improve genetic diversity, or strengthen the resilience of the population.

Ex Situ Translocation: The temporary or permanent relocation of species to a controlled environment (like a zoo or breeding facility) for protection, breeding, or health management before reintroduction.

2. Objectives of Animal Translocation

Biodiversity Conservation: By moving species to conservation reserves or suitable habitats, translocation helps maintain ecological balance and supports overall biodiversity.

Genetic Diversity: Translocation can increase the genetic pool by introducing individuals from different populations, which helps prevent inbreeding and genetic bottlenecks.

Restoring Ecosystem Functions: Certain species play key ecological roles in ecosystems, such as predators controlling prey populations or herbivores shaping vegetation communities. Translocating such species can help restore the health and balance of ecosystems where they have been lost.

Population Recovery: Moving animals to new or protected areas can support the recovery of species that have declined due to threats like habitat loss, poaching, or disease.

3. Challenges and Risks of Animal Translocation

Habitat Suitability: The new location must provide the necessary resources (food, shelter, space) and environmental conditions for the species' survival. If the habitat is unsuitable, the translocated animals may struggle or fail to thrive.

Disease Transmission: Animals moving between different areas could introduce new diseases, which might affect both the translocated species and local wildlife.

Behavioral Adaptation: Animals may not adapt well to new environments, especially if the ecosystems are different from their native habitats.

Competition with Local Species: Translocated animals may outcompete native species for resources, leading to unintended ecological consequences.

Costs and Logistics: Translocation efforts can be expensive and require extensive planning, monitoring, and long-term support to ensure success.

2. Connectivity Enhancement

Goal: Ensuring that the corridor remains continuous and connected to enable unrestricted wildlife movement.

Wildlife Crossings and Underpasses: Installing overpasses, underpasses, and bridges to allow safe crossing points across roads or highways, reducing vehicle collisions and human-wildlife conflict.

Fencing and Boundaries: Use of strategic fencing in sensitive areas to prevent animals from straying into human settlements, farms, or roads while allowing for natural corridor flow.

Green Buffer Zones: Establishment of buffer zones around the corridor to limit development and reduce noise, pollution, and human disturbances.

3. Community Engagement and Education

Goal: Involvement of local communities and stakeholders in corridor conservation efforts to build support and cooperation.

Community Awareness Programs: Conducting workshops and educational programs on the importance of wildlife corridors and the benefits they bring to local ecosystems.

Collaborative Conservation: Partnership with local Gram Panchayats, village councils, and other local government bodies to ensure community alignment and involvement in conservation.

Livelihood Support: Creating alternative livelihood opportunities (e.g., eco-tourism, skill-based training, small-scale enterprises, or handicrafts) for local communities to reduce pressure on natural resources.”

4. Regulatory and Policy Development

Goal: Developing and enforcing policies that protect the integrity of wildlife corridors and ensure sustainable use.

Land Use Policies: Implementation of zoning and land use restrictions to prevent encroachment, deforestation, or agricultural expansion within the corridor.

Legal Protection: Securing official protected status for critical parts of the corridor to shield them from development or industrial activities.

Compensation Mechanisms: Establishing and publicizing mechanisms for compensating locals for any loss of property or crop damage caused by wildlife to reduce resistance to conservation efforts.

5. Research and Monitoring

Goal: To continuously assess corridor health, wildlife use, and the effectiveness of conservation measures.

Wildlife Population Monitoring: Regularly conducting species censuses and track population health to identify trends or emerging issues within corridor areas.

Habitat Quality Assessments: Using remote sensing, field surveys, and ecological indicators to monitor the condition of habitats and assess the impact of conservation actions.

Technology in Monitoring: Use of GPS tracking, camera traps, and drones to monitor wildlife movement patterns and detect human disturbances, poaching, or illegal activities.

6. Sustainable Resource Management

Goal: Managing natural resources within the corridor in a way that supports both wildlife needs and sustainable human use.

Water Resource Management: Implementing practices for sustainable water extraction, particularly in regions prone to water scarcity, to maintain water levels in wetlands, ponds, and rivers.

Controlled Grazing: Developing rotational grazing practices in corridor areas to balance livestock needs with habitat conservation.

Balanced herbivore-carnivore ratio

The maintenance of a balanced herbivore-carnivore ratio in a conservation reserve is critical for ecosystem health and biodiversity. This balance helps in sustaining the ecological processes that maintain the integrity of the habitat. Here are some key considerations for maintaining this ratio:

1. Habitat Management:

Vegetation Control: Herbivores rely on plant material for sustenance, and overgrazing by herbivores can lead to habitat degradation. Proper management of vegetation types can ensure herbivore populations do not exceed the carrying capacity of the land.

Water Availability: Herbivores are more dependent on nearby water sources, and over-concentration around these points can lead to overgrazing. Maintaining a wider spread of water sources can help regulate their movement and reduce pressure on vegetation.”

2. Predator Management :

Carnivore Presence: Carnivores naturally regulate herbivore populations. Maintaining an adequate number of apex predators ensures herbivores do not reach unsustainable levels, which can lead to overgrazing and negative impacts on the environment.

Restoring Carnivores: In reserves where predators have been removed or are in low numbers, predator reintroduction programs can help restore balance. This helps reduce herbivore populations and increases the health of plant life.

3. Monitoring Populations:

Population Surveys: Regular monitoring of both herbivore and carnivore populations helps in detecting shifts in the balance. Surveys can be used to track population densities, health, and movements.

Species-Specific Needs: Herbivore species, such as grazers, have different dietary needs and space requirements compared to browsers. Carnivores, such as apex predators need sufficient prey and large territories. Understanding these needs is crucial for effective management.

4. Research and Adaptive Management:

Research: Continual research into the specific ecological requirements of herbivores and carnivores in the conservation reserve is essential. Understanding seasonal patterns, breeding rates, and migration habits will help managers make informed decisions.

Adaptive Management: The approach to maintaining the herbivore-carnivore ratio should be flexible. Conditions change over time (e.g., climate changes, food availability), so adaptive management strategies are crucial to responding to new challenges.

7. Tourism and Recreation Management

Goal: Promotion of eco-tourism that benefits local communities while minimizing the impact on wildlife and habitat quality.

Designated Observation Areas: Creating designated bird-watching platforms, observation towers, and trails to minimize disturbance to wildlife while promoting tourism.

Educational Signage: Placing informational boards at popular sites to educate visitors about local species, ecosystem services, and conservation efforts.

Tourist Regulations: Enforcing restrictions on visitor behavior, such as noise levels, littering, and area access, to minimize the ecological footprint of tourism activities.

8. Emergency Response and Conflict Management

Goal: Proactively addressing human-wildlife conflicts and respond to emergencies to reduce damage to both wildlife and communities.

Rapid Response Teams: Establishment of specialised teams for immediate response to human-wildlife conflicts (e.g., animals entering villages) and emergencies such as forest fires to ensure timely mitigation and harm prevention.”

Conflict Resolution Mechanisms: Developing a structured process for resolving human-wildlife conflicts, including compensation, relocation of problem animals, or installation of deterrents.

Wildfire Prevention: Implementation of controlled burning and firebreaks in fire-prone areas within the corridor to reduce the risk and impact of wildfires.

9. Financial and Resource Mobilization

Goal: To ensure sufficient and sustainable funding for corridor management through public and private partnerships.

Public-Private Partnerships: Engaging businesses and NGOs in funding corridor conservation, potentially in exchange for eco-tourism opportunities or community development programs.

Conservation Grants and Donations: Seeking funding from national and international conservation organizations to support corridor management projects.

Community-Based Financing: Encouraging community-level funds or cooperative financing models for small-scale conservation efforts like planting and maintenance of trees, fencing, or monitoring.

Each thematic action contributes to the overall goal of maintaining functional and sustainable wildlife corridors, ensuring that these pathways support species diversity, ecosystem health, and coexistence with human communities. By implementing a well-rounded corridor management strategy, conservation efforts can meet ecological needs and gain long-term support from local populations and governing bodies.

5.1 Action portfolio for maintaining functionality:

An action portfolio for maintaining the functionality of a conservation reserve focuses on protecting its ecological integrity, enhancing biodiversity, and ensuring sustainable management. Here's a structured plan:

5.1.1. Habitat Management

Habitat Restoration: Rehabilitate degraded areas through afforestation, soil conservation, and water management.

Control Invasive Species: Monitor and remove invasive plant or animal species that threaten native ecosystems.

Maintain Ecological Connectivity: Establish wildlife corridors to ensure movement between fragmented habitats.

5.1.2. Biodiversity Conservation

Species Monitoring: Regularly survey and monitor populations of key species to assess ecosystem health.

Endangered Species Programs: Implement targeted recovery plans for endangered and endemic species.

Maintain genetic diversity through effective habitat management and prevention of population bottlenecks.

5.1.3. Sustainable Resource Use

Regulate Resource Extraction: Develop sustainable practices for the collection of non-timber forest products (NTFPs).

Community-Based Resource Management: Engage local communities in conservation efforts through co-management programs.

Eco-tourism: Promote low-impact tourism that generates income for conservation without degrading the environment.

5.1.4. Climate Adaptation and Resilience

Climate-Smart Conservation: Integrate climate change considerations into reserve management plans.

Enhance Carbon Sequestration: Implement practices like reforestation and wetland restoration to combat climate change impacts.

Monitor Climate Effects: Track shifts in species distribution and habitat conditions due to climate change.

5.1.5. Human-Wildlife Conflict Mitigation

Buffer Zone Development: Create buffer zones with sustainable land use practices around the reserve.

Compensation Programs: Provide timely compensation for losses due to wildlife to foster community support.

Awareness Campaigns: Educate local populations about living harmoniously with wildlife.

5.1.6. Infrastructure and Surveillance

Improve Infrastructure: Build and maintain anti-poaching camps, patrolling tracks, and waterholes.

Use Technology: Employ drones, GPS collars, and camera traps for monitoring and surveillance.

Strengthen Enforcement: Train and equip forest guards to prevent illegal activities like poaching and logging.

5.1.7. Community Engagement

Participatory Management: Involve local communities in decision-making and benefit-sharing from conservation initiatives.

Capacity Building: Train community members in sustainable livelihoods and conservation techniques.

Cultural Integration: Recognize and integrate local traditions and knowledge in conservation efforts.

5.1.8. Policy and Governance

Review and update policies to align reserve management with national and international conservation goals.

Strengthen legal protections by strictly enforcing laws to prevent illegal logging, extraction of forest resources, and wildlife trade.

Collaborate Across Borders: Work with neighbouring reserves or transboundary areas for species with large ranges.

5.1.9. Research and Knowledge Management

Scientific Studies: Conduct research on ecosystem dynamics, species interactions, and reserve carrying capacity.

Knowledge Sharing: Develop an accessible database for researchers, managers, and policymakers.

Citizen Science: Encourage local participation in monitoring and data collection.

5.1.10. Monitoring and Evaluation

Performance Indicators: Develop metrics to assess biodiversity, ecosystem services, and community involvement.

Adaptive Management: Regularly review and update management practices based on M&E findings.

Stakeholder Feedback: Use input from all stakeholders to guide improvements.

This action portfolio balances ecological, social, and economic considerations, ensuring that conservation reserves maintain their ecological functionality while benefiting local communities and supporting sustainable development.

5.2. Human–Wildlife Conflict Mitigation (Buchara Main Conservation Reserve, Jaipur)

Human–wildlife conflict (HWC) is one of the key management challenges in and around the Buchara Main Conservation Reserve, located in Jaipur District, Rajasthan. The reserve, characterized by a mosaic of dry deciduous forest, scrubland, agricultural fringes, and human settlements, supports a variety of fauna including Nilgai (*Boselaphus tragocamelus*), Wild boar (*Sus scrofa*), Peafowl (*Pavo cristatus*), Jackal (*Canis aureus*), and occasionally Leopard (*Panthera pardus*). The proximity of human habitation and agricultural fields to the reserve boundary often results in competition for space and resources, leading to crop depredation, livestock predation, and retaliatory actions by local communities.

A. Nature and Extent of Conflict

1. Crop Damage:

The most common form of conflict in the Buchara landscape arises from **Nilgai and Wild boar** entering adjoining agricultural lands, especially during the cropping seasons (Kharif and Rabi). Crops such as mustard, wheat, and bajra are particularly vulnerable. Seasonal migration of animals from adjoining forest patches to cultivated areas intensifies the problem during water scarcity periods.

2. Livestock Depredation:

Sporadic incidents of livestock attacks by **Leopard** or **Jackal** have been recorded, particularly in fringe villages and open grazing areas. These incidents create resentment among local pastoral communities.

3. Resource Competition:

Unregulated **fuelwood collection, grazing pressure, and fodder extraction** within the reserve lead to habitat degradation, thereby increasing wildlife movement towards human-dominated areas in search of food and water.

4. Water Scarcity–Driven Conflict:

During the summer months (April–June), limited availability of water sources inside the reserve compels wild animals to approach community wells and agricultural water tanks, escalating human–animal encounters.

B. Ecological and Socioeconomic Drivers

- **Habitat Fragmentation:** Expansion of agriculture, road construction, and encroachment near the reserve boundary have led to fragmentation of wildlife corridors connecting Bucharra Main with nearby forest blocks such as **Bichoon, Chandlai, and Sambhar Wetland region**.
- **Decline in Natural Forage and Water:** Reduction in grass cover, invasive weed spread (e.g., *Prosopis juliflora*), and overgrazing have diminished natural forage availability.
- **Human Dependence:** High dependence of local communities on forest-based resources for grazing, fodder, and minor forest produce continues to exacerbate interface pressures.

C. Mitigation Measures and Management Strategies

1. **Habitat Improvement and Resource Augmentation**
 - Development and maintenance of **grasslands and waterholes** inside the reserve to reduce wildlife movement toward agricultural lands.
 - Removal or control of invasive species and enrichment plantation with palatable and native fodder species such as *Cenchrus ciliaris*, *Lasiurus indicus*, *Ziziphus nummularia*, and *Acacia senegal*.
 - Periodic desiltation and renovation of natural ponds and check dams to ensure perennial water availability.
2. **Boundary Strengthening and Physical Barriers**
 - Construction of **solar-powered wildlife-proof fencing or trench cum mound barriers** along critical conflict-prone boundaries.
 - Installation of **solar lights and sound deterrent systems** in fringe villages to discourage nocturnal wildlife entry.
3. **Community Engagement and Incentive-Based Approaches**
 - Formation of **Eco-Development Committees (EDCs)** for participatory conflict management, awareness generation, and monitoring of wildlife movement.
 - Introduction of **alternative livelihood programs** such as stall-fed livestock, fodder cultivation, and promotion of non-timber forest product (NTFP) value chains to reduce dependency on core habitats.
 - Capacity building of local youth as “**Wildlife Mitigation Volunteers**” for early warning, rescue assistance, and rapid response during conflict events.
4. **Compensation and Insurance Mechanism**
 - Streamlining of the **Wildlife Damage Compensation Scheme** through online reporting and time-bound verification.
 - Encouragement of **livestock insurance** and creation of an emergency fund for immediate relief to affected families.

5. Monitoring, Research, and Early Warning

- Deployment of **camera traps and GPS-based wildlife movement mapping** to identify conflict hotspots.
- Development of a **Human–Wildlife Conflict Database** at the range level to track seasonal patterns and species-specific conflict trends.
- Coordination with local Panchayats and Forest Guards for regular field monitoring.

6. Awareness and Education

- Conducting **village-level awareness programs** on coexistence, safe livestock management, and preventive measures.
- Inclusion of conservation education in local schools to foster long-term attitudinal change.

D. Long-Term Management Vision

The long-term mitigation strategy for Bucharā Main Conservation Reserve emphasizes **coexistence through ecological restoration and community stewardship**. By improving habitat quality, strengthening protection infrastructure, ensuring transparent compensation mechanisms, and fostering community partnerships, the reserve can sustainably balance wildlife conservation with livelihood security. Integration of conflict mitigation within the broader **landscape-level conservation framework** connecting Bucharā, Bichoon, and Sambhar ecosystems will ensure the ecological integrity and resilience of this semi-arid habitat.

5.3 Action portfolio for active management

An Action Portfolio for Active Corridor Management includes a range of targeted actions aimed at sustaining and enhancing wildlife corridors to facilitate safe and effective wildlife movement, habitat connectivity, and ecological balance. This portfolio typically combines habitat restoration, regulatory enforcement, community involvement, and technological solutions. Here is a structured portfolio that can serve as a comprehensive framework:

1. Habitat Restoration and Maintenance

Vegetation Restoration: Regularly plant native tree and shrub species along corridor paths to enhance habitat quality and connectivity. Focus on species that provide food, shelter, and nesting sites for local wildlife.

Waterbody Management: Restore and maintain ponds, streams, and wetlands within corridors to support aquatic life and provide water sources for migratory and resident wildlife.

Control of Invasive Species: Actively remove or manage invasive plant species to prevent them from overtaking native flora. Introduce controlled biological agents or other suitable management strategies in particularly affected areas.

2. Community Engagement and Education

Local Conservation Programs: Organizing community programs to educate local residents on the importance of wildlife corridors. Conducting awareness drives to minimize disturbances in or near corridors, including activities like noise control and littering prevention.

Community Incentives: Offering of incentives, such as payments or community grants, for communities actively involved in corridor conservation or sustainable land management practices.

Stakeholder Collaboration: Engaging local leaders, farmers, and landowners in conservation decision-making. Develop agreements with landowners for corridor maintenance or restricted land use to enhance corridor effectiveness.

3. Monitoring and Research

Wildlife Population Monitoring: Implementing regular censuses and track animal populations within corridors to identify changes in species abundance, health, and behaviour.

Habitat Quality Assessments: Use of remote sensing, field surveys, and environmental indicators to evaluate habitat quality, including plant diversity, water quality, and food availability.

Technological Monitoring Tools: Utilization of GPS collars, camera traps, and drones to monitor wildlife movements, assess corridor use, and detect potential threats like poaching or illegal logging.

Installation of Trap Camera

Camera traps in a conservation reserve is an effective method for wildlife monitoring, studying animal behavior, and supporting conservation strategies. Here's a general outline for the installation process, including key considerations:

1. Objectives of Installation

- Wildlife population monitoring
- Species inventory
- Poaching detection
- Behavioral studies
- Habitat use analysis validity unknown

2. Equipment needed

- Camera traps (infrared, preferred for night vision)
- Mounting straps or brackets
- Memory cards (high capacity, depending on usage duration)
- Batteries or solar panels
- GPS device (for location logging)
- Notebook or mobile data app (for recording site info)

3. Site Selection: Choose locations based on-

- Animal trails, water sources, feeding areas

- Prior knowledge of animal movement
- Areas of concern (e.g., human-animal conflict zones or poaching hotspots)

4. Placement Guidelines

- Height: Usually 30-60 cm (1-2 feet) off the ground for medium to large mammals
- Angle: Perpendicular to trails for best side-profile captures
- Distance: Aim for 3-5 meters from expected animal path
- Camouflage: Use natural foliage or non-reflective covers to avoid detection
- Minimize Disturbance: Avoid altering surroundings too much during setup

5. Data Management

- Log each camera's GPS coordinates, ID number, and settings
- Regularly check cameras to replace batteries and cards (every 2-4 weeks, depending on activity and battery life)
- Store data systematically: by date, location, camera ID

4. Conflict Mitigation and Emergency Response

Conflict Resolution Teams: Establish rapid response teams to address human-wildlife conflicts, such as animals entering farms or villages. Provide guidance on deterring wildlife safely and minimizing damage.

Emergency Resources: Stocking corridor areas with essential resources such as fire-fighting equipment and first-aid kits to enable a quick response during emergencies.

Deterrents and Alarms: Installing sound-based or visual deterrent systems in areas with a high incidence of human-wildlife conflict to prevent animals from approaching villages, farmlands, or other populated areas.

5. Sustainable Resource Management

Water Resource Allocation: To ensure sustainable water extraction practices in and around corridors to maintain adequate water sources for wildlife while meeting community needs.

Sustainable Harvesting Programs: Implementation of guidelines for sustainable harvesting of non-timber forest products (e.g., medicinal plants, fruits) within corridor areas to reduce habitat disturbance.

Regulated Grazing: Working with local communities to establish rotational grazing practices that reduce overgrazing within corridors, maintaining plant cover and habitat quality.

6. Promotion of Ecotourism and Education Initiatives

Designated Wildlife Observation Sites: To set up designated viewing platforms, birdwatching towers, and trails to channel visitors to specific areas, reducing habitat disturbance elsewhere in the corridor.

Educational Signage and Materials: Installation of information signage on local flora, fauna, and ecosystem functions at entry points and observation sites to educate visitors about corridor conservation.

Eco-Tourism Guidelines: Development and enforcement of visitor regulations that promote respectful and minimal-impact interactions with the environment, such as noise control and restrictions on waste disposal.

7. The Boundaries:

Owing to lengthy boundary, clear demarcation of the forest area from the adjoining landscape is essential. In addition to construction of boundary walls proposed in the plan, construction of permanent RCC boundary pillars indicating the distance and bearing will be taken up on a priority basis. This activity will help in solving certain disputes that will eventually rise in course of time.

The area under conservation reserve is 13100.00 Ha. This forest Block is declared as protected forest by Gazette of State Govt dated 13-04-1964 it is declared as conservation reserve notified under section 36A of Wildlife (Protection) Act, 1972 vide notification dated 09-02 -2012 on 13100.00 Ha.

The plan is proposed for the Buchara Main Conservation Reserve, Jaipur Rajasthan.

- (i) DGPS survey of the pillars should be conducted and recovered.
- (ii) The forest lands of the Protected Area (PA) should be surveyed and properly demarcated using boundary pillars.
- (iii) The areas around bird-breeding sites and panther habitats should be developed and protected.
- (iv) The PA boundary should be surveyed and clearly demarcated using sturdy boundary pillars.
- (v) The proposal for Eco Sensitive Zone will be prepared as per prevailing laws and rules and in future it will be sent to the competent authority for approval.

8. Zonation

The conservation reserve area is treated as per approved working plan year 2012-13 to year 2021-22. This conservation area treated and managed as single zone.

All the management, conservation, protection, developmental and ecotourism activities will be controlled and managed from Range Office. Dense forest area at some spots in the reserve.

Dhok, Salar, google, kumtha, palash, Juiliflora, thorny species, old water bodies, grass species, adjoining office of Forester naka, Facilities like Watch Tower, Water Holding

Structures, some encroachments, old, pucca talab, old wells, old plantations and some illegal mining pits are present in this zone.

In old times, hunting of tiger was common at Shikar hodi and this shows that presence of tigers were there. Presently movement of panther, Bluebull, hyena, fox, peacocks, cats, porcupines, reptiles, mammals, birds, amphibians in the area.

5.3.8.1 ZONE PLANS

Eco-trails are connected to water holes to promote tourism activities. Office of the, Forester, Facilities like Watch Tower, Nursery, Wash Rooms, Water Holding Structures all activities like Building construction works, pucca johad renovation, Water holes, Gajlars, Watch Tower, viewpoints, sign-boards, fire lines, Eco-trails, vriksha Kunj, plantation along inspection path, ANR plantation, Grasses, plantations of silvi- pastoral species, SMC works and alien species, construction of waterholes, viewpoints, talai, watch tower, ecotourism activities IGA by SHG, water tanks, rescue center, Pucca boundary, solar system, solar tubewell, renovation of old structures, Pucca wall, biodiversity closers, eradication/singling of *Prosopis juliflora*, Interpretation Centre with refreshment and other similar activities are proposed in management plan for 10 years for this Zone. All ecotourism activities will be managed from near ranges office. Grazing will not be permitted in the zone and action against encroachers will be taken up under provisions of the Wildlife Protection Act, 1972.

The management strategies for PA would be

- a) Relocation in the all three zones as per relocation package approved by the state government
- b) Establishment of biodiversity enclosures within the Conservation Reserve to enhance habitat quality for panther and associated wildlife species.
- c) Protection will be accorded a top priority in the zone.
- d) Tourism activity would be regulated in the zone.
- e) Research activities pertaining to behavior of species and management practices will be taken up.

Management of outside area of PA

The outside area will be managed with the following objectives

- i. The revenue lands should be identified within 10 km distance from the boundary of this PA
- ii. The government lands / community lands will be restored to wildlife habitats.
- iii. To develop pastures to meet the fodder needs of local people to reduce the biotic pressure on core zone.
- iv. Develop eco-tourism programmers.
- v. To help the villagers in developing good management practices for agriculture and animal husbandry so as to maintain the balance of ecosystem.
- vi. Basic amenities for people by adopting mitigation measures

Finer classification of the area for ease of management prescriptions

There are 7 villages are situated on under periphery either fully or partially forming part of this PA. Every village is unique with respect to its composition, extent, caste equations etc.

These 7 villages forming part of the Buchara Main Conservation Reserve, Jaipur area. PA will manage total three units that will be known by their respective names. The management of the PA would be undertaken based on these management units, which represent each revenue village.

The following activities will be taken up as part of habitat protection and management, monitoring of wildlife and habitat and infrastructure development.

- i. Each management unit will be treated as basic unit for habitat protection and management and monitoring of wildlife and habitat.
- ii. Field staff will be allotted to each of these units and they will be made responsible for all the management interventions in these units. Eco development committees will be formed in these units.
- iii. Micro-plans will be prepared after conducting socio-economic studies, with the objective of conserving endangered species such as the panther, restoring the ecosystem, ensuring compatible livelihood opportunities for the local communities, and establishing an effective mechanism for infrastructure and basic amenity development.
- iv. Management unit maps describing the boundaries, infrastructures, settlements, encroachments and resources will be prepared for each of the units.
- v. Wildlife population estimation using standard techniques like transects and sign surveys and habitat monitoring using standard techniques will be carried out.
- vii. The records of basic amenities available for each unit will be maintained
- viii. Employment generation and skill up gradation programmes will be taken up at the management unit level.

5.3.8.2 THEME PLANS

The Buchara Main Conservation Reserve falls within a semi-arid ecosystem, which is predominantly characterized by a mosaic of grassland–sand dune–woodland communities. The ecological interactions between these habitat types create conditions that are highly favourable for the sustenance of diverse wildlife species, including both resident and migratory fauna. Maintaining these ecological linkages and habitat heterogeneity is therefore a central component of conservation management in BMCR.

In addition to habitat improvement and restoration, other key management priorities include protection, fire management, regulated grazing, prevention of encroachment, mitigation of man–animal conflict, monitoring of animal populations, and wildlife health surveillance. These management themes are cross-cutting in nature and extend over the entire conservation reserve. Accordingly, thematic plans have been developed in an integrated manner to address these concerns.

5.3.9. MANAGEMENT OF HUMAN SETTLEMENT IN and AROUND THE

CONSERVATION AREA

- (i) There are some encroachment inside the conservation reserve and for the better management of conservation reserve and wildlife.
- (ii) It has to be ensured that the basic facilities for a living around the PA are provided to the resident communities in accordance with the provisions in the laws in practice.
- (iii) The benefits of conservation must go to the local communities. All the employment opportunities should be given to the local communities. Self-help groups, EDC/VFPMC'S will look after and manage all the ecotourism and developmental activities, management activities inside the conservation reserve. Ecotourism activities will be carried out with the help of SHG & EDC. EDC will decide the guideline for ecotourism in their village meeting.
- (iv) In cases where the nearest villagers do not cooperate with the works of the PA, people from adjoining villages should be given the opportunity.

5.3.10. MANAGEMENT OF HUMAN SETTLEMENT IN AND AROUND THE PA

- (i) It shall be ensured that the basic civic and livelihood facilities for resident communities located in and around Buchara Main Conservation Reserve are provided in accordance with the provisions of relevant laws and policies governing Protected Areas and Conservation Reserves.
- (ii) The benefits arising out of conservation and habitat management interventions should primarily flow to the local communities. Preference shall be accorded to local residents for employment and livelihood opportunities generated through eco-development, restoration works, nature-based tourism and other conservation-linked activities.
- (iii) In cases where the nearest village communities do not cooperate or are unwilling to participate in conservation initiatives, employment and participation opportunities may be extended to willing beneficiaries from adjoining villages, to ensure the smooth implementation of reserve management activities.

5.3.10.1 HABITAT IMPROVEMENT

5.3.10.1.1 Grass land management

- (i) More inviolate areas will be created by chain link fencing for facilitating Panther habitat improvement, breeding of birds as well as for the restoration of degraded grasslands and jaal.
- (ii) In the zone, the grassland will be maintained in the optimum density and at optimum height desirable for the feeding and breeding of wildlife like Panthers and birds and fodder species in plantations be given top priority.
- (iii) The diversity of the herbaceous and perennial shrubby vegetation in the core zone will be maintained in the levels desirable for the wildlife like Panther, chinkara and birds as decided based on scientific studies.
- (iv) Grassland pastures will be developed in the area by planting and seed sowing the palatable indigenous grasses species.

(v) Villagers will be allowed to harvest the grasses from peripheral area of PA as part of scientific management. This will help in minimizing the biotic pressure on core zone.

However this will not be permitted during the breeding season of panther and BIRDS.

5.3.10.1.2 Management of the Invasive Alien Species

(i) Local villagers will be employed in all operations through EDCs for removing the Invasive Alien Species

(ii) *Prosopis juliflora* which is local in this area, will be eradicated from the area using manual and mechanical means.

(iii) The firewood will be distributed to the villagers for their confide livelihood uses.

5.3. 10.1.3. MANAGEMENT OF ANIMAL POPULATIONS:

WILDLIFE HEALTH:

Regular vaccination camps for cattle should be carried out in the villages to prevent outbreak of diseases and possible spread to wild animals.

(i) Education and awareness programmes will be conducted in nearby villages to reduce the number of unproductive cattle and to promote the adoption of productive and disease-resistant indigenous/local varieties.

(ii) Artificial waterholes will be created for wild animals in various places during pinch period.

(iii) An animal rescue centre already working in the conservation area.

(iv) Equipment for animal immobilization will be procured and staff will be trained in capture and restraint of animals

(v) Trainings will be given to the field staff in diagnosing the symptoms of disease condition in animals.

(vi) Population of species having reached undesired levels will be controlled.

Rescue centres and Treatment facilities

The role of rescue centres and treatment facilities within conservation reserves is vital to the success of conservation efforts. These directly support ecosystem health, species protection, and scientific research.

1. Wildlife Rescue and Emergency Response

- Provide immediate care to injured, orphaned, or sick animals found within the reserve.
- Respond to road accidents, poaching injuries, forest fires, or natural disasters.
- Prevent suffering and improve survival chances of individual animals, especially endangered species.

2. Rehabilitation and Release

- Rehabilitate rescued wildlife with the goal of returning them to their natural habitat within the reserve.
- Help maintain healthy wildlife populations by reducing unnatural mortality.
- Use soft-release enclosures and post-release monitoring to ensure success.

3. Conservation of Endangered Species

- BMCR acts as a safe ecological linkage and refuge for wildlife species moving between adjoining Protected Areas such as Sariska Tiger Reserve, Baleshwar Conservation Reserve and Shakambhari Conservation Reserve.
- It contributes to the in-situ conservation of regionally threatened and Schedule-I species such as leopard, caracal, striped hyena, Indian wolf, grey junglefowl and various raptors, which utilize the landscape for movement, foraging and temporary shelter.
- The reserve supports habitat continuity and protection from poaching and habitat loss, thereby aiding in population stability of these species.
- While BMCR is not a captive breeding or rehabilitation centre like those for rhino or elephants found in other regions, it plays a crucial ecological role by maintaining genetic exchange and viable movement corridors, which indirectly supports long-term species **conservation and recovery**.

4. Disease Surveillance and Health Monitoring

- Establish a systematic mechanism to monitor, diagnose, and treat wildlife diseases that could threaten the health and survival of animal populations within the reserve.
- Serve as a frontline centre for early detection, reporting, and rapid response to any suspected disease outbreak in wildlife.
- Collaborate with veterinarians, research institutions, and wildlife health experts to track disease patterns, conduct laboratory confirmations, and implement preventive measures such as vaccination or quarantine, whenever required.
- Maintain proper records and periodic health assessments to support long-term health monitoring and epidemiological studies.

5. Human–Wildlife Conflict Mitigation

- Rescue wild animals that accidentally enter nearby villages, agricultural lands or human habitations and safely release them back into suitable habitats within BMCR or adjoining forest areas.
- Reduce retaliatory actions by providing a humane and scientifically guided alternative for conflict resolution.
- Record and analyze conflict incidents to identify hotspots and support preparation of long-term mitigation strategies (such as habitat enrichment, barrier planting, and early-warning systems).

6. Research and Data Collection

- Facilitate scientific studies related to wildlife ecology, habitat use, behaviour, stress physiology, and health assessment within the BMCR landscape.
- Support real-time ecological monitoring to aid conservation biology, forest management and veterinary interventions.
- Encourage collaboration with universities, research institutions, and conservation NGOs for long-term ecological documentation and evidence-based management.

7. Education and Community Involvement

- Act as a field-based learning platform for local communities, school and college students, and nature volunteers.
- Raise awareness about wildlife protection laws, ecological importance of corridors, and the need for peaceful human–wildlife coexistence.
- Strengthen community participation and trust-building, which is vital for the sustained success of BMCR as an ecological linkage and functional corridor.

5.3.10.1.3 PROTECTION PLAN (BMCR, Jaipur)

The primary protection-related challenges in Buchara Main Conservation Reserve arise from its proximity to active and abandoned mining zones, scattered human settlements, and multiple open access routes leading inside the reserve. These factors increase the risk of illegal grazing, poaching, fuelwood extraction, and disturbance to wildlife movement.

Protection Strategies to Control Poaching and Illegal Activities

i. Joint Patrolling:

Regular joint patrolling shall be conducted by Forest Department staff in coordination with the local Police to ensure vigilance around ecologically sensitive and vulnerable areas of BMCR.

ii. Area Surveillance by Field Staff:

Forest Guards and Foresters shall maintain strict surveillance within their respective jurisdictions and promptly report any suspicious activity to the Range Officer (RO), who will initiate immediate enforcement action.

iii. Informer Network:

Each Forest Guard and Forester shall maintain a confidential network of informers within nearby villages. Genuine informers shall be suitably rewarded from the confidential fund as per departmental norms.

iv. Monitoring of Poaching-Prone Zones:

The Range Officer shall carry out focused patrolling in identified poaching-prone areas both inside and in the periphery of the reserve, maintain a record of habitual offenders, and coordinate inspection of roadside eateries or temporary camps suspected of serving bushmeat.

v. Public Participation and Incentives:

Members of the public providing credible information leading to the prevention or detection of wildlife crime shall be rewarded. Their identity will be kept confidential.

vi. Control Room Establishment:

A control room at the Range Office (located within BMCR) shall be established for real-time receipt of information and rapid response. The helpline number of the control room will be displayed through signboards and publicized locally.

vii. Inter-Departmental Coordination:

The Deputy Conservator of Forests (DCF) will attend crime review meetings convened by the Superintendent of Police (SP) to sensitize local police stations and ensure improved coordination in curbing poaching and illegal extraction.

viii. Regulation of Firearms:

Possession of unlicensed or unregulated muzzle-loading guns commonly used for poaching shall be brought under strict review. Necessary departmental communication will be made for surrender or licensing verification.

ix. NOC for New Arms Licenses:

No Objection Certificates (NOCs) for new arms licenses within the BMCR jurisdiction shall be restricted to pistols and revolvers only, after due assessment by the DCF to eliminate misuse for hunting.

x. Enhanced Patrolling During Winter:

Special patrolling schedules shall be enforced during the winter season when wildlife movement increases and poaching vulnerability is comparatively high, especially in areas rich in rare and threatened flora and fauna.

5.3.10.1.4 Measures to Check Pollution (BMCR – Jaipur)

Pollution control in and around the Buchara Main Conservation Reserve (BMCR) shall be undertaken in accordance with the provisions of the Eco-Sensitive Zone (ESZ) notification and other applicable environmental legislations.

Disposal of city wastewater, solid waste or carcasses inside the Reserve boundary shall be strictly prohibited. The District Collector, Nagar Nigam/Nagar Parishad, and Rajasthan Pollution Control Board (RPCB) shall coordinate to ensure strict compliance. The Regional Office of RPCB, Jaipur North, will monitor pollution control measures.

(a) Land Pollution Control

- Adequate number of trash bins shall be installed along tourist access roads and at designated tourism nodes.
- Signage will be erected to promote responsible waste disposal and to sensitize tourists regarding cleanliness.
- All solid waste generated from temporary camps or visitor facilities shall be handled in accordance with Solid Waste Management Rules, 2016. The DCF will maintain coordination with RPCB regarding compliance.

(b) Other Pollution Control Measures

- Use of hazardous agro-chemicals or toxic pesticides in adjoining agricultural lands will be regulated as per existing state and national regulations to avoid runoff into the CR.
- Use of high-intensity lights, loud speakers and other disturbance-causing illumination during night hours near the Reserve boundary shall be regulated to avoid disturbance to nocturnal wildlife.

5.3.10.1.5 Management of Infrastructure and Communication Network

(i) Vehicles

The field staff currently uses one four-wheeler and two motorcycles for patrolling and management of the BMCR. Upgradation and replacement of vehicles shall be taken up based on operational requirement during the plan period.

(ii) Buildings

One Range Office exists adjoining the Reserve. Additional infrastructure including Forest Guard chowkis, watch towers, an interpretation centre, staff quarters and protection camps (nakas) are proposed under the 10-year plan.

(iii) Wireless Communication

A structured wireless communication network shall be developed. Proposals related to ESZ management and communication support will be prepared as per prevailing regulatory frameworks and forwarded for approval to the competent authority.

5.3.10.4 Ecotourism, Interpretation and Conservation Education

5.3.10.4.1 Identification of Tourism Zones

- a) Tourism shall be promoted in selected management units adjoining the Reserve boundary in a low-impact and regulated manner.
- b) Nature trails and wildlife-viewing routes will be demarcated and strengthened to enhance wilderness experience. Signage, resting points and view decks with stone benches compatible with the natural aesthetics will be established accordingly.

5.3.10.4.2 Infrastructure Development

- a) A dedicated Interpretation Centre shall be established at the main entrance of BMCR.
- b) The interpretation centre will display the geo-ecological landscape, native wildlife and cultural heritage of the area and shall include audio-visual screening facilities.
- c) Informative signboards shall be placed at prominent tourist interface areas including entry points, highways, transport nodes etc.
- d) Watchtowers shall be constructed at strategically important locations for enhanced wildlife viewing.
- e) Observation hides shall be developed near waterholes with guided access for genuine visitors/photographers in a controlled manner.

5.3.10.4.3 Interpretation and Publicity

- Directional and informative signage shall be installed around the Reserve.
- Thematic brochures and awareness material will be designed for tourists and student groups.
- Information will be periodically shared through social media and public platforms.

5.3.10.4.4 Conservation Education

- Regular nature camps and awareness activities will be organized for schools, colleges, media and civil society.
- Special environmental days will be celebrated with participation of local institutions and NGOs.
- Staff capacity building shall be undertaken through expert resource persons.

5.3.10.4.5 Income Generation Activities

The local communities residing in and around Buchara Main Conservation Reserve (BMCR) will be encouraged and motivated to undertake and expand eco-development initiatives. The emphasis will be on livelihood generation activities which are compatible with conservation objectives.

It is proposed to implement programmes such as:

- Promotion of non-conventional and clean energy alternatives,
- Improvement of livestock breeds,
- Employment opportunities through community-led tourism and nature-based enterprises,

- Village-level skill enhancement and market linkage support for local products.

These initiatives will be implemented in a **phased manner over the next ten years**.

Self Help Groups (SHGs) will operate under the guidance of the **Eco-Development Committees (EDCs) / Village Forest Protection and Management Committees (VFPMCs)** to manage community tourism and other income-generating enterprises. .

5.3.10.5 Village Level Specific Strategies

5.3.10.5.1 Entry Point Activities

- Entry point activities shall be finalised only after conducting a General Body Meeting at the village level for participatory decision-making.
- Improvement and development of pasture lands outside the fenced zone will be undertaken to reduce grazing pressure on reserve habitat.
- Regular veterinary and human health camps will be organised in villages adjoining BMCR to strengthen goodwill and engagement of local communities in conservation.

(Explanation – Entry Point Activities)

Entry point activities refer to small-scale, immediately beneficial interventions introduced at the beginning of an eco-development programme to gain community confidence and participation. These are quick, low-cost, and address immediate needs of local people while establishing trust between community members and the reserve management.

Examples of suitable Entry Point Activities for BMCR:

1. Awareness & Education

- Nature orientation camps for youth
- Village-level biodiversity awareness workshops

2. Community Development

- Solar street lighting, drinking water facilities, repair of village infrastructure
- Regular health and sanitation camps

3. Livelihood Support

- Promotion of eco-tourism (guides, home-stays, handicraft sales)
- Beekeeping, mushroom cultivation, organic farming demonstrations
- Formation and strengthening of SHGs

4. Natural Resource Management

- Soil and water conservation works (check dams, trenches, bunds)

- Native species plantation drives with people's participation

5. Capacity Building

- Training of youth as nature guides / eco-guardians
- Human-wildlife conflict mitigation trainings Involving local youth in biodiversity monitoring

These entry point activities help create a positive rapport between conservation authorities and local communities, ensuring smoother implementation of more extensive conservation projects in the future.

5.3.10.5.3 Proposed Eco-Development Activities

- Promotion of clean and renewable energy technologies (biogas, solar lights, LPG, smokeless chulhas) to reduce dependency on native vegetation for fuelwood collection.
- Phased reduction of unproductive livestock and improvement of local breeds through veterinary camps, controlled breeding programmes and sterilization of scrub bulls.
- Development of conservation awareness among children of adjoining villages by involving knowledge institutions such as WII, BNHS, WWF-India, etc., to create "young guardians of nature".
- Promotion of locally made handicrafts and eco-friendly products as tourist souvenirs, to be sold through reserve entry points / memento shops.
- Support to Self Help Groups for undertaking income generation activities, linked with market access and institutional coordination.
- A portion of the eco-tourism entry fees shall include an "eco-development surcharge", the proceeds of which will be earmarked exclusively for eco-development works in the buffer villages.
- Establishment of eco-huts / nature camps in nearby villages to be operated by EDCs on a pilot basis. Future expansion will be considered based on their performance and community response.

5.3.10.6 Invasive Species Eradication and Control

The spread of invasive alien species such as *Prosopis juliflora*, *Parthenium hysterophorus*, and *Verbesina encelioides* has emerged as a major ecological threat in and around Bucharra Main Conservation Reserve. These species adversely impact native floral diversity, alter soil nutrient cycles, suppress regeneration of indigenous species, and restrict wildlife movement by forming dense monocultures.

A strategic, phased and landscape-based eradication and restoration plan is therefore necessary.

5.3.10.6.1 *Prosopis juliflora* Eradication Strategy

1. Mechanical Removal (Root Eradication)

- Removal of *Prosopis juliflora* must be done with rootstock to prevent coppicing.
- Mechanical uprooting using JCB or excavators is recommended for dense stands.
- Follow-up manual weeding will be undertaken after first monsoon.

2. Utilization for Economic Benefit (Controlled Use)

A. Uprooted biomass shall be utilized for:

- Bio-briquettes / biomass-based electricity generation
- Fuel for brick kilns
- Controlled charcoal production using scientific kilns



B. This turns an ecological liability into a community asset, discouraging re-establishment.

3. Seed Control and Disposal

- Seeds shall be separated (de-seeded) using village-level machinery.
- Pods may be converted into animal fodder only after boiling or roasting to destroy germination viability.



4. Regeneration Monitoring

- Community watchers / SHG groups will be engaged for monitoring re-sprouting.
- Regrowth sites shall be immediately suppressed through native plantation.





5.3.10.6.2 Parthenium hysterophorus (Congress Grass) Management

This aggressive invasive herb damages grazing lands, reduces pollinator abundance, and causes dermatitis and respiratory allergies in humans and livestock.

Control Measures:

a) Manual Removal

- To be uprooted before flowering (preferably pre-monsoon and early monsoon).
- Gloves and protective gear mandatory to prevent contact dermatitis.
- Biomass to be deep-buried or composted through high-temperature pits (windrow composting).



b) Biological Control

- *Zygogramma bicolorata* beetle (leaf-feeding) can be introduced where suitable to biologically suppress regeneration.



c) Habitat Replacement

- After clearance, fast-growing native grasses (e.g., *Cenchrus ciliaris*, *Dichanthium annulatum*) should be sown to prevent re-invasion.

5.3.10.6.3 *Verbesina encelioides* (Golden Crownbeard) Eradication





This fast-spreading invasive annual competes with native grasses, reduces palatable biomass, and spreads rapidly through wind-borne seeds.

Control Measures:

Pre-Flowering Removal

- Manual uprooting before seed-set (March–May) to prevent seed dispersal.

Mulching / Shade Technique

- Since it is light-dependent, mulching with native grass hay reduces seedling emergence.
- Promoting canopy-forming native shrubs locally suppresses regeneration.

Restoration with Native Species

- Restoration using palatable grasses (*Cenchrus* spp., *Heteropogon contortus*) is recommended.

5.3.10.6.4 Smothering Method / Ecological Restoration (for long-term eradication)

Where complete physical eradication is not feasible immediately, ecological smothering using fast-growing, native, light-demanding tree and grass species will be used.

Once these species attain canopy height, the invasives will fail due to shade exclusion.

Steps:

1. Mechanical removal of invasive root mass and topsoil cleaning (1 m radius per pit).
2. Plantation of selected native, light-seeking species.
3. Maintenance until canopy closure.
4. Community monitoring for re-sprouting.

5.3.10.6.5 Landscape-Level Coordination

Eradication within BMCR alone is insufficient unless adjoining panchayat lands, pasturelands, and road margins are simultaneously managed. Therefore:

- Collaboration with District Environment Committee, Rural Development Department, and Panchayats is essential.

- Removal must follow a landscape approach, ensuring that weed biomass is not dumped into grazing or agricultural lands, preventing secondary spread.
- Community-led restoration will be supported under convergence with MGNREGA, CAMPA, and eco-development funds.

5.3.10.6 Converting Invasive Removal into Community Benefit

To improve participation and ownership:

- Biomass from *Prosopis* can be used for charcoal, briquettes, and furniture-grade timber.
- *Parthenium* biomass can be processed into compost after thermal treatment.
- Women SHGs can collect, process and sell briquettes/compost under EDC facilitation.

5.3.10.7 Implementation Framework and Monitoring Protocols

The success of eco-development and invasive species eradication programmes in BMCR will depend upon a **phased, community-participatory and convergence-based implementation mechanism**. A structured plan is outlined below.

5.3.10.7.1 Institutional Framework

Level	Institution / Agency	Role & Responsibility
Policy & Oversight	Forest Department (DFO BMCR / DyCF Jaipur North)	Planning, supervision, fund allocation, technical oversight
Field-Level Execution	Eco-Development Committees (EDCs) / VFPMCs	Execution of village-level interventions, SHG mobilization
Support Institutions	Panchayat Raj Institutions / Line Departments	Convergence with rural development, water, livestock & energy schemes
Knowledge Partners	WII, BNHS, WWF, Agriculture University	Capacity building & technical backstopping
Community Institutions	SHGs / local youth clubs	Livelihood & restoration activities

5.3.10.7.2 Phase-wise Implementation Plan (10-year horizon)

Phase	Duration	Major Activities	Key Outcomes
Phase I	Year 1–2	Baseline survey, village consultations, entry point activities, initial weed removal	Community mobilisation + trust building
Phase II	Year 3–5	Large-scale eradication of <i>Prosopis</i> , <i>Parthenium</i> and <i>Verbesina</i> ; pilot eco-tourism livelihood units	Visible ecological recovery + early income generation

Phase III	Year 6–8	Ecological restoration through native species plantation; pasture regeneration	Habitat improvement & wildlife utilisation
Phase IV	Year 9–10	Long-term monitoring, consolidation, expansion of tourism/value-added products	Self-sustaining ecotourism + reduced invasion

5.3.10.7.3 Monitoring Indicators

Parameter	Indicator	Method	Frequency
Invasive Removal	% reduction in Prosopis / Parthenium/ Verbesina cover	GPS-based mapping, quadrat assessment	6-monthly
Habitat Recovery	Regeneration of native grasses/trees	Sample plot vegetation study	Annual
Livelihood Gains	No. of SHGs operational, income earned	EDC records, bank linkage review	Quarterly
Energy Shift	No. of LPG/biogas/solar units installed	Household survey	Annual
Wildlife Use	Sightings along restored patches	Line transect & camera trap data	Pre-monsoon & post-monsoon

5.3.10.7.4 Convergence Strategy

To ensure sustainability and reduce financial burden, interventions will be supported through convergence with:

- CAMPA Funds – ecological restoration & plantation
- Rural Development Schemes (MGNREGA) – weed removal, soil and water conservation
- NRLM / SHG Missions – women livelihood programmes
- Panchayat Untied Funds – pasture improvement & water structures
- Tourism Revenue (Eco-development surcharge) – community benefit sharing

5.3.10.7.5 Community Incentive Mechanism

- To strengthen participation:
- Villages achieving “zero invasion pockets” may be awarded through eco-development incentives
- SHGs managing eco-huts / restoration plots to receive shared revenue
- Youth trained as Nature Guides to be given preference in employment
- Transparent benefit-sharing through EDC account management

5.3.10.7.6 Risk Management & Safeguards

- Re-invasion Risk – Managed through continuous monitoring & restoration with native species
- Overdependence on External Funding – Addressed through tourism-linked revenue & SHG-based enterprises

- Community Fatigue – Prevented by benefit-sharing + rotating involvement
- Climate Variability – Native drought-resistant species will be prioritised

5.3.10.7.7 Reporting & Review

- Quarterly review meetings at EDC/VFPMC level
- Half-yearly monitoring by Range Forest Officer
- Annual performance review chaired by DCF
- Documentation via GIS maps and photographic evidence

5.3.10.8 Village-wise Priority Action Plan (for Seven Adjacent Villages of BMCR)

5.3.10.8.1 Ecological Rationale for Priority Ranking

The villages have been ranked using the following parameters:

- Proximity to BMCR boundary or wildlife movement routes
- Field-level presence of invasive species (Prosopis, Parthenium, Verbesina)
- Dependency on forest resources (fuelwood, fodder, grazing, NTFP)
- Human–wildlife interface level
- Potential for eco-livelihood development

5.3.10.8.2 Priority Classification of the Seven Villages

Village Name	Ecological Sensitivity / Wildlife Use	Invasive Load	Forest Dependency	Priority Category
Buchara	Inside/Immediate interface zone of BMCR	Very High (Prosopis + Parthenium)	High	High Priority
Bhonawas	Major movement route adjoining hills	High (Prosopis)	High	High Priority
Tuscola	Buffer fringe but used by ungulates seasonally	High (Prosopis + Verbesina)	Medium–High	High Priority
Rooppura	Connected to grazing corridor	Moderate–High	Medium	Medium Priority
Jugalpura	Scattered wildlife presence near waterlines	Moderate (Verbesina)	Medium	Medium Priority
Fatepura	Peripheral cultivation zone	Low–Moderate	Medium–Low	Low–Medium Priority
Torda	Distant from core movement route	Low	Low	Low Priority

5.3.10.8.3 Management Focus by Category

Category	Villages	Key Interventions
High Priority	Buchara, Bhonawas, Tuscola	Intensive invasive eradication, pasture development, fuelwood substitution (LPG/solar), eco-development SHGs, eco-tourism readiness training
Medium Priority	Rooppura, Jugalpura	Partial invasive removal + assisted regeneration, water structures, skill development, youth eco-guiding
Low Priority	Fatepura, Torda	Awareness + preventive monitoring, light-level restoration, tourism linkage support

5.3.10.8.4 Indicative Timeline for These Seven Villages

Year	Focus Villages	Activity
Year 1–2	Buchara, Bhonawas, Tuscola	Rapid eradication + energy substitutions + eco-livelihood groundwork
Year 3–4	Rooppura, Jugalpura	Controlled eradication + grazing management + SHG promotion
Year 5+	Fatepura, Torda	Preventive ecological buffering and community awareness strengthening

5.3.10.8.5 Outcome Expectation

- Wildlife movement corridors freed from Prosopis blocks
- Reduced human dependence on forest biomass
- Improved grassland / pasture cover for herbivores
- Local communities integrated into eco-tourism economy
- Ecological resilience through landscape-level restoration

Village-wise Priority and Key Interventions (BMCR Landscape)

Category	Villages	Key Interventions
 High Priority	Buchara, Bhonawas, Tuscola	• Intensive invasive species eradication • Pasture development and grassland improvement • Fuelwood substitution through LPG/Solar initiatives • Formation of eco-development SHGs • Eco-tourism readiness and capacity-building training
 Medium Priority	Rooppura, Jugalpura	• Partial invasive species removal + assisted natural regeneration • Construction and maintenance of small water harvesting structures • Skill development for alternative livelihoods • Youth eco-guiding and conservation awareness programs
 Low Priority	Fatepura, Torda	• Light-level habitat restoration activities

Chapter 6

Implementation strategy

(Division of the Conservation Reserve into one management sector with villages falling in a single cluster)

6.1 Inclusive Management

6.1.2 Actions in Sync with Management Objectives

6.1.2.1 Action Portfolio for Maintaining Functional Integrity

6.1.2.1.1 Day-to-Day Monitoring (Traditional and Technology-enabled)

Monitoring Framework

a) Monitoring of Animal Population

Annual wildlife population monitoring and estimation of all major faunal species shall be undertaken during May every year by the Forest Department staff, aligned with the standard wildlife census period. A detailed Standard Operating Procedure (SOP) shall guide the methodology to ensure consistency, transparency, and scientific rigour. The SOP is enclosed separately as part of this Management Plan.

b) Monitoring of Vegetation

Periodic assessment of key vegetation parameters shall be carried out as per the prescribed SOP. This will include tracking regeneration status, invasive species spread, fodder availability, fire lines, and canopy changes. The monitoring results will feed into habitat improvement measures.

c) Monitoring of Weather Parameters

Currently, dedicated meteorological instruments are not installed within BMCR. Until such infrastructure is established, climatological data from the nearest IMD (India Meteorological Department) stations—including Jaipur and Sikar districts—shall be utilised for ecological correlation and planning. Future provisioning of an automated weather station shall be explored.

d) Monitoring of Visitor Data

Upon commencement of regulated ecotourism in BMCR, a structured visitor database shall be maintained. Carrying capacity assessment of the CR shall be undertaken beforehand and visitor numbers shall be regulated accordingly. Visitor movement-linked ecological disturbances, if any, shall

be periodically analysed and corrective measures implemented.

Scientific Rationale for Wildlife Monitoring

BMCR and adjoining revenue landscapes support a variety of wildlife species, including spillover populations from larger landscape units. At present, wildlife monitoring outside notified forest boundary remains generalised and not species-specific. To ensure robust and science-based wildlife management, it is essential to develop an accurate understanding of wildlife presence, behaviour and seasonal movements.

The monitoring exercise should therefore include:

- Estimation of population size and demographic structure
- Identification of natural shelters, breeding areas and dispersal paths
- Mapping of foraging zones and seasonal resource availability
- Documentation of traditional movement corridors and shifting habitat-use patterns
- GIS-based wildlife habitat and use-map preparation

These datasets shall form the backbone of adaptive wildlife management and conflict mitigation.

Simultaneously, frontline staff (forest guards, foresters and wildlife watchers) shall be trained in wildlife tracking, data collection, radio/GPS-based mapping, and species-specific monitoring protocols to ensure implementation efficiency.

Action Plan

S. No.	Sector	Action Area	Objective
1	Wildlife in Forest Areas	Scientific baseline assessment and long-term monitoring	To establish population status, behaviour, habitat use and threats
2	Wildlife in Adjacent Revenue Areas	Extended landscape-level monitoring	To ensure connectivity and conflict prevention through coordinated management

Post	Number
Assistant Conservator of Forests (ACF)	1
Range Officer	1
Forester	2
Forest Guard / Vanrakshak	10
Support Staff (as required)	Additional

Apart from the notified forest areas of BMCR, there exist several revenue lands, village commons, agricultural fallows and grazing landscapes where a significant number of wild animals move seasonally and use them as temporary or secondary habitats. Many resident and migratory bird species also utilise these areas for nesting and roosting, often selecting large trees or cluster-forming groves. Such nesting and roosting trees should be identified, mapped and protected, and necessary measures should be taken to ensure that the general public does not disturb or damage the trees, nests or breeding colonies.

Wild animals frequently visit natural and artificial water bodies for drinking and resting. Therefore, such water points and their surrounding microhabitats should be identified and managed scientifically as wildlife-supporting sites so that animals receive adequate protection, minimal disturbance, and a suitable ecological environment for their long-term survival.

Similarly, several ponds, anicuts, wetlands and small rivulets located around BMCR harbour fish, amphibians, reptiles and a variety of migratory aquatic birds. Some of these species are ecologically significant and sensitive. Hence, these sites should be conserved and restored wherever necessary. Plantation of native and habitat-specific tree and shrub species should be promoted around such areas to enhance habitat quality and provide food and shelter, enabling more wildlife species to gradually use these habitats as breeding or dispersal sites.

To encourage public participation and awareness, information boards and wildlife interpretation signages should be installed at suitable locations displaying the photographs, names and ecological importance of locally occurring wildlife species. Periodic awareness programmes should also be organised for school students, local communities and visitors, so that they develop a sense of

ownership and responsibility toward wildlife protection.

There are several such lesser-known revenue and community-managed habitats across the landscape adjoining BMCR which are currently awaiting scientific conservation measures. Therefore, the Wildlife Division, in collaboration with local communities and district administration, should identify, prioritise and prepare a landscape-level action plan for the conservation and ecological restoration of these wildlife-supporting areas. Once approved, such interventions will ensure protection of wildlife populations presently dependent on these fragmented or overlooked habitats and strengthen the overall ecological connectivity and faunal richness of the region.

Problems in Protection of Wild Animals in Buchara Main Conservation Reserve, Jaipur

The protection and conservation of wild animals in Buchara Main Conservation Reserve face multiple ecological and anthropogenic challenges. These issues reduce corridor functionality, interrupt animal movement, and increase mortality risk. The major problems are as follows:

1. Hunting / Poaching Pressure

Although legal protection exists under the Wildlife (Protection) Act, 1972, occasional hunting and poaching attempts are reported, especially on small mammals, reptiles, and ground-dwelling birds. When wild animals, particularly antelopes, jackals, or peafowl, move near village fringes or agricultural fields, they face intentional harm or opportunistic killing. Migratory birds visiting seasonal waterbodies also become vulnerable.

2. Road Accidents (Wildlife–Vehicle Collisions)

Several rural and inter-village roads pass through or along the periphery of BMCR. Wildlife frequently crosses these roads during movement between feeding and resting patches. Fast-moving vehicles lead to accidental mortality of monitor lizards, snakes, jungle cats, mongoose, and sometimes antelopes (Nilgai / Chinkara). Injured animals become weak and often fail to access food or water, eventually dying.

3. Unsafe Water Sources (Open Wells, Pits, and Tanks)

Near the reserve boundary and in surrounding revenue land, a number of open wells, abandoned farm pits, and irrigation tanks remain unfenced. Wild animals, while moving at night or while chasing prey, accidentally fall into them. Timely rescue is not always possible, resulting in avoidable deaths. Such incidents are increasing in human-dominated landscapes around BMCR.

4. Pollution and Improper Waste Disposal

Improper dumping of plastic and agro-waste near forest edges and village approach roads indirectly harms wildlife. Plastic carry-bags, rubber bands, and leftover packaging materials are ingested by herbivores and birds. Contaminated water sources with chemical run-off from nearby agriculture also impact wildlife health. The long-term effect of toxic substances leads to weakening, infections, or death in vulnerable species.

5. Destruction and Degradation of Natural Habitats

The micro-habitats essential for small mammals, reptiles, and birds — such as shrubs, thickets, burrows, and seasonal nala beds — are increasingly disturbed by road expansion, mining history in surrounding Aravalli foothills, fuelwood extraction, and grazing pressure. Invasive species such as *Prosopis juliflora* (Vilayati Babul) and *Parthenium* (Carrot Grass) are replacing native grasses and shrubs, resulting in habitat shrinkage, altered species composition, and reduced carrying capacity.

6. Electricity Distribution and Lighting Systems

Uninsulated electric lines and poorly installed transformers pose a risk of electrocution to arboreal and perching species. Excessive illumination around settlements and farmhouses near the corridor disrupts nocturnal wildlife movement and creates barrier effects, especially for shy and low-visibility nocturnal fauna.

Anthropogenic Pressures Affecting Wildlife Movement in BMCR

Due to rapid developmental activities in and around Buchara Main Conservation Reserve (BMCR), the demand for electricity and associated transmission infrastructure has increased significantly. As a result, the network of electric poles, live transmission lines, and distribution wires has expanded deep into rural and fringe forest areas.

This linear infrastructure often obstructs the natural and free movement of wild animals. In several instances, wildlife such as nilgai, monkeys, and large birds (e.g., peafowl and raptors) get fatally injured after coming in contact with low-hanging electric lines or colliding with poles. Electrocution events have also been recorded where animals accidentally touch live wires.

Furthermore, the presence of permanent night illumination in nearby villages, farmhouses, and road networks creates a strong light-attraction effect. A large number of insects concentrate around these light sources at night, leading to a reduction in their natural availability in outer forested habitats. This causes a food stress situation for various insectivorous wildlife species such as reptiles, small birds, bats and amphibians dwelling in the BMCR landscape.

Crop Protection Pressures

For enhanced agricultural productivity, farmers in the fringe areas surrounding BMCR are increasingly dependent on chemical pesticides, herbicides, and synthetic fertilizers. These agrochemicals not only reduce soil-dwelling insect populations but also affect pollinators such as butterflies and bees that are crucial to ecosystem health.

Chemical residues often enter the food chain when these substances accumulate in fodder and crop biomass, which is later consumed by livestock. Through livestock dung and carcass-based scavenging, toxic residues bioaccumulate and indirectly threaten wild herbivores, scavengers, and other dependent fauna.

Such agrochemical-driven ecological imbalance adversely affects pollination, natural pest control, and foraging behaviour of wildlife in and around the reserve.

Human–Wildlife Perception and Challenges in BMCR

1. Fear and Misconception about Wild Animals

In and around Bucharra Main Conservation Reserve (BMCR), many people still carry deep-rooted misconceptions and exaggerated fears about wild animals. This apprehension is often based on superstition rather than scientific understanding. As a result, harmless species such as non-venomous

snakes, monitor lizards, and other ecologically important fauna are sometimes killed unnecessarily.

Even in rare instances where large carnivores (e.g., leopard, hyena) temporarily seek shelter near human habitations due to dispersal or disturbance, people tend to react with panic and hostility instead of cooperating with the forest department for safe rescue. These situations can be effectively addressed through community sensitisation, capacity building and continuous nature education programmes.

2. Disturbance and Loss of Breeding / Feeding Habitats

The peripheral areas of BMCR, especially those adjoining human settlements and grazing paths, face gradual disturbance of wildlife breeding and feeding grounds. Expansion of agricultural activities, fuelwood collection, livestock grazing, and unauthorized human entry into core habitat pockets reduce the suitability of these microhabitats for wildlife.

Due to repeated disturbance, several species have started avoiding traditional nesting, denning or feeding sites, ultimately affecting their population stability and ecological behaviour. Protection of such microhabitats and spreading awareness among local communities is essential for wildlife survival in BMCR.

3. Decline in Co-existence Values

Historically, local communities coexisted peacefully with wildlife, guided by cultural ethics, religious beliefs and tolerance. However, with increasing materialism and changing social attitudes, these values of compassion, mutual respect and coexistence are gradually declining.

Wild animals are often perceived only in terms of the economic damage they may cause to crops or livestock, rather than their ecological importance. Although the Forest Department provides compensation for such losses under prescribed norms, people tend to prioritise immediate personal gains over long-term ecological balance. This growing disconnect between humans and wildlife underscores the need for inclusive conservation strategies, community stewardship, and revival of traditional conservation ethics.

Buchara Main Conservation Reserve (BMCR) forms a critical ecological linkage between Sariska Tiger Reserve, Baleshwar Conservation Reserve and Shakambhari Conservation Reserve within the northern Aravalli landscape. In recent years, however, increasing anthropogenic pressures around the reserve

have contributed to growing disconnect between communities and wildlife.

Therefore, there is an urgent need to sensitise and engage local communities by maintaining regular interaction with the general public, especially those residing in and around the boundary villages of BMCR. Historically, humans coexisted with wild animals and shared natural landscapes with them for generations. However, rapid changes in lifestyle, land-use patterns, and resource dependency have altered this relationship. Many people today prefer to keep wild animals away from their surroundings and attempt to eliminate potential refuges or habitat features near their settlements.

To restore coexistence, it is essential to communicate the ecological importance of wildlife, their role in maintaining ecosystem stability, and ultimately their contribution to human survival.

Other Miscellaneous Reasons

Apart from the major drivers of habitat degradation, several other small but significant factors are also posing threats to wildlife in BMCR:

- Developmental activities such as roads, buildings, boundary walls and linear infrastructure create physical barriers and lead to habitat fragmentation.
- Irrigation canals, deep open wells, and other water storage structures constructed for agriculture often become accidental “death traps,” where wild animals fall in, get injured or die.
- Dams and water harvesting structures, though beneficial for agriculture, alter the natural hydrology of the landscape, affecting water availability and habitat quality for wildlife.
- Increased human disturbance near seasonal wildlife movement paths further modifies micro-ecology and restricts free animal passage.
- As a result, the habitat gradually changes in structure and function, making it less suitable for wildlife species that depend on natural connectivity and undisturbed ecological corridors.

Ecological Threats and Wildlife Conservation Concerns in BMCR

The emerging commercial activities such as intensive fish production in nearby water bodies and the degradation of forest cover in the catchment areas have begun to alter the ecological balance of surface and sub-surface hydrology within and around Bucharra Main Conservation Reserve (BMCR), Jaipur. Excessive abstraction of groundwater is further disturbing the local “water regime”, affecting the long-term availability of water for wildlife, especially during the lean summer period. Therefore, the adoption of appropriate groundwater recharge and watershed protection measures is essential for maintaining hydrological integrity within the Reserve.

Similarly, rapid expansion of transportation networks, increasing vehicular traffic, and improved mobility infrastructure around BMCR have escalated the risks to wildlife. Roadkills involving small and medium-sized mammals, reptiles, and ground-nesting birds have been reported along adjoining link roads. Modern road access also provides hunters and poachers with quicker entry and exit routes, increasing vulnerability of wildlife. Additionally, advancement in communication systems and sophisticated weapons has made illegal hunting easier and more concealed.

Measures for Wildlife Protection and Regulation (BMCR Context)

To mitigate the above pressures, the following strengthened protection and enforcement arrangements are recommended for BMCR:

- Strengthened Surveillance & Intelligence
- A robust and discreet intelligence network should be developed to detect poaching attempts and wildlife crimes at an early stage.
- Apart from patrolling inside core forest patches, mobile patrol units should cover wildlife movement routes, feeding grounds, and fringe habitations.
- Special vigilance should be maintained in and around traditional hunting community settlements.

Monitoring of Human Settlements

Regular collection of information from villages located in and around BMCR should include:

- Details of licensed and unlicensed firearm holders.
- Presence and activities of traditional or migrant hunting communities.
- Suspicious visits by unknown or new groups/individuals showing interest in wildlife or sensitive locations.
- Number, grazing pattern, and movement routes of livestock.
- Background and details of cattle herders, who often act as reliable sources of local intelligence on wildlife movement and illegal activity.

Community-Based Crime Prevention

- Continuous public awareness programmes should be conducted to sensitise fringe communities on the ecological importance of BMCR.
- Cattle herders, fodder collectors and local farmers should be engaged as “informal intelligence points” and encouraged to report suspicious activity.

Timely Enforcement Response

- A mechanism for rapid response should be institutionalised to intercept poachers and offenders before they exit the landscape.
- Intelligence received should be immediately acted upon in coordination with the local police where required.

Road Accidents and Safe Wildlife Passage

To reduce wildlife mortality due to road accidents within and around Buchara Main Conservation Reserve (BMCR), appropriate mitigation measures should be implemented. Warning signboards should be installed along all stretches of road passing through or adjoining wildlife habitats. The Public Works Department (PWD) should be instructed to avoid new road alignments close to sensitive

wildlife habitats and movement corridors. Wherever unavoidable, eco-friendly engineering solutions such as underpasses, culverts, and speed-calming structures (speed breakers / rumble strips) should be mandated at identified wildlife crossing points based on movement data.

Vehicle movement should be regularly monitored and strict patrolling conducted by the Forest Department. Overspeeding inside or near the reserve should attract strict action; if a driver exceeds the prescribed speed limit causing wildlife harm, his/her license may be suspended or cancelled under provisions of the Motor Vehicles Act, along with appropriate legal action under the Wild Life (Protection) Act, 1972.

Construction of Parapets on Wells, Tanks and Pits

To prevent accidental falls of wildlife into open water structures in and around BMCR, Panchayat Raj Institutions and local authorities should annually identify open wells, tanks, or pits that pose a threat to wild animals. Necessary mitigation measures such as constructing parapets/boundary walls or covering openings with iron grills/nets should be undertaken. The parapet height should be at least 0.60 metres above ground level.

Dense vegetation or bushes around wells should be periodically cleared to reduce accidental approach of wild animals to these structures. Particularly deep or abandoned wells should be fully covered or permanently secured to eliminate the risk of wildlife injury or mortality.

Pollution Control Measures in BMCR

To safeguard ecological integrity within the Buhara Main Conservation Reserve (BMCR), special emphasis must be placed on effective pollution control. Locations showing signs of pollution—particularly waterholes, grazing corridors, and fringe settlement zones—should be systematically identified, mapped, and monitored. Panchayat Samitis and Gram Panchayats falling within the influence zone of BMCR should be actively engaged to ensure a pollution-free environment so that anthropogenic impacts remain minimal. The indiscriminate dumping of plastic bags and other non-biodegradable waste must be strictly prohibited, and regular community-based clean-up drives should be institutionalized.

Equally important is the prevention of toxic or chemical contaminants entering natural waterholes and seasonal drains (nalas) used by wildlife. Roadside pits or depressions containing exposed or flowing

bitumen must be covered with an adequate layer of soil or gravel, as wild animals—especially herbivores in the summer months—often get stuck in the softened tar, leading to injury and mortality.

Protection of Residential/Settlement Interface Areas

Residential clusters located within the revenue boundary adjoining BMCR should be identified and digitized for preparation of a GIS-based database. These interface zones often become potential access points for disturbance or illegal entry; therefore, routine patrolling and surveillance should be carried out. The Gram Panchayat/Panchayat Samiti concerned must be apprised of this database so that coordination for protection measures can be strengthened. Additionally, cooperation of the district administration and the police is essential for safeguarding wildlife-rich patches lying within revenue land adjoining the notified reserve boundary.

Improvement in Electricity Distribution System

The present network of overhead electric lines in and around the Reserve should be rationalized to reduce wildlife electrocution risk. In ecologically sensitive zones such as forest patches, movement corridors, and water bodies, underground cabling should be adopted wherever technically feasible. Where undergrounding is not possible, insulation of low-tension wires and height enhancement of poles should be implemented as mitigation measures. A high-level policy decision and coordination with the Jaipur Discom is required to progressively upgrade the distribution network to a wildlife-safe model.

Crop Protection Measures (with reference to Buchara Main Conservation Reserve)

To reduce crop depredation and promote coexistence between local communities and wildlife around Buchara Main Conservation Reserve (BMCR), a comprehensive campaign should be launched to encourage the use of indigenous, organic and environment-friendly crop protection methods. Farmers residing in wildlife-rich fringe areas should be educated and supported to adopt non-harmful products and sustainable practices that safeguard crops without negatively affecting wildlife.

This initiative should be implemented under a suitable government-supported or conservation-linked scheme. The Forest Department, in collaboration with agriculture and rural development institutions, should provide farmers with technical information, field demonstrations, and training related to

traditional pest-repellent methods, bio-fencing, and eco-friendly deterrent techniques. To ensure smooth adoption, low-interest loans and heavy subsidies should be provided specifically for such sustainable products. These products should be made available locally through cooperative societies or village panchayats, ensuring transparency and easy access.

Only those farmers who adopt genuinely eco-friendly and non-toxic products should be eligible for financial subsidy or loan assistance. This will discourage the use of harmful chemical repellents and promote a positive conservation ethic.

Addressing Human–Wildlife Misconceptions and Fear

In the areas surrounding BMCR, a number of misconceptions and unfounded fears about wildlife still exist. These cultural beliefs often result in hostility towards harmless species. Therefore, awareness-building must form a key component of the management plan.

Special efforts should be made to dispel myths and superstitions related to animals such as snakes, owls, jackals, bats, and cats, which are often targeted due to fear or folklore-based beliefs. Many of these species play an important ecological role in pest control and forest health.

Public sensitisation programmes should be designed to:

- Replace fear with scientific understanding,
- Promote respect for native wildlife,
- Reduce unnecessary killing of harmless animals,
- Discourage the use of wild animals in folk-magic or superstition-driven practices.

Until these misconceptions are actively addressed and removed from public perception, wildlife mortality due to misbeliefs will continue. Therefore, information dissemination, outreach campaigns, and participatory community interactions should be integral parts of the corridor and buffer zone management plan.

Protection of Breeding and Feeding Areas in and around BMCR

A significant proportion of wildlife associated with Buchara Main Conservation Reserve (BMCR) utilizes adjoining revenue land, pasture patches, and agro-forest mosaics for breeding, feeding and seasonal movement. Since these areas largely fall outside direct jurisdiction of the Forest Department, the cooperation of local Panchayats, revenue administration and police authorities becomes essential for safeguarding them. Only through inter-departmental coordination and community participation can these ecologically sensitive habitats be effectively protected.

Role of Non-Forest Areas and Local Collaboration

Many wild animals regularly disperse beyond the notified boundary of BMCR. Protection in such external landscapes requires the collective involvement of:

- Local Panchayats and village institutions
- Revenue and police departments
- Voluntary and nature-conservation organizations
- Local communities and landholders
- This shared stewardship model is crucial for maintaining continuity of ecological processes and wildlife safety beyond formal forest limits.
- Assured Availability of Water

To reduce the need for wildlife to leave forest habitats, sufficient water points and small water-retention structures (waterhole, Gazaler) should be developed at safe locations inside the Reserve. These structures must be regularly maintained and refilled, especially during the summer months. Adequate financial allocation to the Forest Division is vital for sustaining these water facilities.

Promoting a Culture of Co-Existence

The traditional cultural and religious beliefs of local communities can significantly strengthen wildlife protection. Local priests, temple caretakers, imams, granthis, and other faith leaders should be sensitized and encouraged to spread messages of compassion toward wildlife through religious teachings. When conservation is linked with local spiritual values, it nurtures a sense of co-existence, leading to gradual but long-lasting behavioral change within society.

Because wildlife occupies a sacred space in nearly every religious philosophy, spiritual institutions can play a highly influential role in creating a compassionate relationship between communities and native fauna. Their involvement can become a powerful social support system for wildlife conservation in and around BMCR.

Other Conservation Measures for Buchara Main Conservation Reserve (BMCR), Jaipur

For strengthening wildlife protection and participatory conservation in the Buchara Main Conservation Reserve, the active cooperation of the locally appointed Honorary Wildlife Wardens and village-level institutions is essential. Honorary Wildlife Wardens are appointed by the State Government under Section 4(1)(bb) of the Wildlife (Protection) Act, 1972, to support field enforcement, awareness, and rapid response actions. It is desirable that an Honorary Wildlife Warden may also be notified specifically for the BMCR landscape so that local community participation and timely coordination can be ensured.

In addition, the Forest Protection and Management Committees (FPMCs) and Eco-Development Committees (EDCs) operating in villages adjoining the Reserve need to be actively integrated with corridor protection, habitat improvement, and wildlife safety initiatives. Their involvement will strengthen community-based monitoring, early warning systems, and responsible resource use.

To minimise human–wildlife conflict risks and disease transmission, special emphasis should be placed on annual vaccination of domestic livestock residing within a 5 km buffer around wildlife-use areas. This helps prevent cross-infection and maintains the health of wild ungulates and carnivores sharing the same landscape.

A rapid-response team should remain in a constant state of preparedness for rescue operations involving wildlife that may fall into open wells, get trapped in agricultural fields, or accidentally enter

human habitation. For this purpose, the concerned Range Forest Officers should be empowered to arrange vehicles, safety gear, and medical treatment for rescued wildlife, with reimbursement provision from a contingency fund allocated at the Deputy Conservator of Forests (DCF) level.

A dedicated contingency budget at the level of DCF (BMCR) should be ensured to enable swift action during emergencies. Delay in budget sanction often hampers timely rescue, treatment or release of wild animals. Rescue equipment such as cages, nets, ropes, torches, tranquilising kits, and vehicles should be pre-positioned at the Range Headquarters and at least one strategic field location within BMCR.

A wildlife rescue and monitoring team should remain stationed at the Forest Division office or a designated BMCR protection camp. All field staff must have updated contact details of senior officials for rapid coordination. Forest Guards, Foresters and Range staff should be equipped with functional mobile phones and wireless communication devices where feasible.

There is also a need for enhanced awareness and outreach regarding the Wildlife (Protection) Act, 1972 among the local communities. Issues such as bird flu, vulture decline, poisoning events, and habitat disturbance should be widely communicated through community outreach programmes, village meetings and school-level campaigns to promote responsible and conservation-oriented behaviour.

6.1.2.1.2 Safeguarding Against Intensive Land Uses (BMCR Context)

At present, there is no major threat of drastic land-use change inside Bucharra Main Conservation Reserve (BMCR), as the legal protection status restricts diversion for non-forestry purposes. However, due to its proximity to human settlements and agricultural interfaces, preventive safeguards are essential to maintain habitat integrity and corridor functionality.

(a) Protecting Natural Ecosystems

Safeguarding measures focus on preventing fragmentation and degradation by:

- Maintaining the legal protection status of BMCR and reinforcing boundary demarcation.

- Restricting and regulating activities that may lead to land conversion, encroachment, or infrastructure spread.
- Ensuring that any road alignment or repair within/around BMCR avoids habitat disruption and does not open new forest tracts for conversion.
- Integrating ecosystem protection priorities in local and district-level land-use planning frameworks.

(b) Reducing Land-use Change

To mitigate indirect threats:

- Addressing drivers of degradation through community awareness and enforcement.
- Implementing context-specific conservation actions suited to Aravalli dry deciduous and scrub habitat.
- Strengthening patrolling and management budgets for proactive conservation.
- Encouraging community-based monitoring of forest patches, grasslands, and grazing pressure.

(c) Diversifying Rural Livelihoods

To reduce ecological pressures on BMCR:

- Promoting sustainable livelihood options in fringe villages (e.g., poultry rearing, beekeeping/honey production, value-addition of NTFPs).
- Supporting small-scale crafts such as the use of locally sourced materials for household articles, without affecting sensitive habitats.

(d) Encouraging Sustainable Land Use Practices

- Landscape-level sustainability can be encouraged by:
- Promoting regenerative and climate-resilient agro-practices in the buffer areas surrounding BMCR.
- Reducing biomass removal and wastage through structured community participation.

- Increasing transparency in forest-product value chains to discourage illegal extraction.
- Supporting policies and incentives that discourage deforestation or habitat fragmentation in adjoining landscapes.

6.1.2.2 Action Portfolio for Dealing with Human–Wildlife Interface

Standard Operating Procedure (SOP) for Dealing with Man–Animal Conflict

Human–wildlife conflict (HWC) arises from the interaction between wild animals and human populations, particularly where both share common habitats or resources. The intensity of such conflicts is influenced by the density and distribution of human populations and wildlife species. With the rapid expansion of human settlements and developmental activities across Rajasthan and India, the interface between humans and wildlife continues to increase — exposing wild animals to higher risks of encounters, injuries, and habitat disturbances.

In the context of Buchara Main Conservation Reserve (BMCR), Jaipur, which serves as an ecological linkage within the Northern Aravalli landscape, species such as leopard (*Panthera pardus fusca*) and other carnivores occasionally venture into adjoining human-dominated landscapes. This necessitates preparedness and a proactive response mechanism to manage and mitigate conflict situations effectively.

Accordingly, the following Standard Operating Procedure (SOP) shall be observed in the event of any human–wildlife conflict incident (especially involving large carnivores):

Immediate Intimation:

Upon receiving information about wildlife depredation or conflict, the nearest Forest Range Office must inform the local police administration and district control room to ensure coordinated response and crowd management.

Rapid Response:

An officer not below the rank of Range Officer or Naka In-charge shall reach the site immediately to assess the situation and take appropriate control measures.

Public Safety and Awareness:

The local residents shall be advised calmly and convincingly to maintain distance, avoid provocation, and ensure that no further damage or confrontation occurs. The field staff should secure the area and restrict unnecessary public gathering.

Animal Handling and Rescue:

If required, a qualified immobilization team should be called for safe capture or tranquilization of the animal under the supervision of a veterinary officer.

Post-Capture Protocol:

Any captured animal must be tagged with a PIT tag (Passive Integrated Transponder) prior to release in an appropriate natural habitat to facilitate future monitoring and tracking.

Documentation and Reporting:

A detailed report of the incident, including photographs, location coordinates, and sequence of actions taken, shall be submitted to the Divisional Forest Officer (DFO), BMCR Division, for record and further action.

Compliance with National Guidelines:

Management of Human–Wildlife Conflict shall strictly follow the “Advisory for Management of Human–Wildlife Conflict (HWC)” issued by the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India, dated 5th January 2021.

This advisory provides comprehensive guidance to States and Union Territories for prevention, control, and mitigation of HWC through improved coordination, capacity building, ex-gratia support, and community participation.

Effective mitigation of Human–Wildlife Conflict (HWC) requires inter-departmental coordination and well-organised response mechanisms. In the landscape of Buchara Main Conservation Reserve (BMCR), Jaipur, such an approach is especially important due to the ecological connectivity of the area with neighbouring Protected Areas and human settlements around the reserve.

HWC incidents generally occur more frequently outside the core Protected Areas, and this is often linked to the manner in which forests outside PAs are used and managed. High human presence due to fuelwood and fodder collection, grazing, forest regeneration works, upkeep activities, encroachments, and the existence of fringe settlements increases the likelihood of interface with wildlife. Villages located along the boundary of BMCR also face recurring instances of conflict, particularly in crop-fields, livestock areas and water sources shared with wildlife.

Given these circumstances, it is essential that the State institutes a Human–Wildlife Conflict Management Strategy on priority, starting with the preparation of Human–Wildlife Conflict Management Plans (HWCMPs) for identified conflict-prone zones of BMCR. These plans will help in initiating timely mitigation actions, quick response during emergency situations, and building confidence between forest administration and the local communities.

Long-term mitigation measures include habitat improvement within the reserve, scientific population monitoring of wildlife, strengthening of protection and vigilance, and improved knowledge-generation through continuous research. These actions form an integral part of overall forest and wildlife management systems and will require appropriate policy support and legal facilitation.

However, since conflict events demand immediate action, short-term and rapid-response measures must also be developed and operationalised. These include deployment of rapid response teams, early warning systems, compensation facilitation, and local community engagement at the site level.

Based on consultations and field-level inputs gathered so far, the fundamental components for HWC management in BMCR that should be adopted on priority in identified vulnerable zones include:

- Strengthened institutional coordination (Forest Department, Revenue, Police, Disaster Management, Panchayati Raj, Veterinary and Agriculture Departments)
- Quick response teams and emergency mitigation protocols
- Community outreach and confidence-building

- Habitat improvement and corridor functionality restoration

- Mechanisms for fair and timely ex-gratia compensation
- Awareness and capacity building of frontline staff and community volunteers

These measures constitute the salient features of the advisory for mitigating HWC in and around Buchara Main Conservation Reserve.

Human–Wildlife Conflict (HWC) – Management Action Framework for BMCR

The following management measures shall be put in place in forest fringe villages and other localities identified as vulnerable to Human–Wildlife Conflict (HWC) within and around Buchara Main Conservation Reserve, Jaipur:

1. Quick Response Logistics

Publicity and Communication:

Wide publicity of dedicated help lines and other reporting mechanisms shall be ensured. Information regarding nodal contact points and response teams will be displayed in strategic locations within vulnerable villages.

Information Hubs:

Local reporting hubs will be established at easily accessible locations for receiving information and relaying it immediately to field teams. These hubs will function as first points of contact for alert generation.

Deployment of Trained Teams:

Well-equipped and mobile Wildlife Rescue & Rapid Response Teams shall be deployed in potential HWC-prone areas. These teams will be provided with mobility, communication devices, capture and rescue equipment.

Collaboration:

Participation of local civil society groups, eco-development committees, and volunteer organisations shall be actively encouraged.

Standard Operating Procedures (SoPs):

Clear SoPs shall be notified, detailing:

- command-and-control hierarchy,
- field-level decision-making powers during emergencies,

- On-site command delegation,
- Authority for urgent procurement of equipment and services during exigencies.

Capacity Building:

Regular and intensive training will be organised for response personnel in wildlife handling, public communication during emergencies, and post-rescue protocols.

2. Rescue Mechanisms

For Human Victims:

Arrangements shall be ensured for quick evacuation and transport to the nearest medical facility. Standing tie-ups with local hospitals and ambulance services shall be formalised to reduce response time.

For Animal Victims:

Wildlife Rescue and Rehabilitation Centres / transit-care facilities will be identified or developed to facilitate immediate care of injured or displaced wildlife.

Veterinary Support:

Veterinary services shall be integrated into the emergency response framework.

Rapid tranquilisation and first aid arrangements shall be ensured.

Newly posted veterinarians in the area shall undergo wildlife handling and tranquilisation training, preferably through institutions such as the Wildlife Institute of India.

Critical Supplies:

Adequate stockpiles of capture equipment, handling kits, medicines, tranquillising drugs, and safety gear shall be maintained in nearby forest offices or veterinary centres.

3. Awareness and Community Engagement

Volunteer Mobilisation:

Inspired by the “Vanya Praani Mitra” model, a network of trained local volunteers shall be created to act as the initial interface between the community and forest department, assist in information flow, and support rescue teams.

Community Outreach:

Regular awareness activities will be organised on:

- conflict-avoidance behaviour,
- safe practices during wildlife encounters,
- cultivation of wildlife-deterrent plant species, and
- community-level preventive measures.
- Public Advisory & Signages:
 - Signages shall be installed in conflict-prone areas indicating dos and don'ts, emergency helpline numbers, and safe conduct guidelines during wildlife sightings.

Periodic Interaction:

Field functionaries will hold periodic meetings in vulnerable localities to review HWC status, local challenges, and preventive strategies.

Forest Management Actions for BMCR

Forest management interventions in Buchara Main Conservation Reserve (BMCR) shall focus on early conflict prevention, wildlife monitoring, and local awareness. Clear visibility lines (vistas) shall be developed and maintained along the forest boundary in close proximity to villages and habitations to minimise surprise encounters. The regular movement pathways of large wildlife species, particularly ungulates and carnivores migrating between Sariska Tiger Reserve, Baleshwar Conservation Reserve, and Shakambhari Conservation Reserve through BMCR, shall be identified and mapped. These corridors will be provided adequate signage and community awareness to avoid disturbance.

Continuous monitoring of wildlife presence and seasonal movement trends in potential conflict zones will be undertaken, particularly during crop seasons or resource scarcity. A structured database of all Human–Wildlife Conflict (HWC) cases shall be maintained at the Division/Range level, along with records of local land use changes such as agricultural intensification, NTFP collection, and cultural or

religious congregations within or near forest areas that may influence HWC.

A mechanism for rapid response will be maintained through deployment of frontline staff for immediate action upon receiving conflict reports. Appropriate rules and standard operating procedures shall be followed for timely assessment of damage and prompt disbursement of relief or ex-gratia payments. A simplified system at the field level will ensure transparency, objectivity, and prompt service delivery to affected stakeholders, thereby reducing distress among local communities.

Regular review and monitoring of HWC-prone areas will be undertaken by the DFO and Range-level officers to ensure preparedness and adaptive management.

✔ Research-Based Conflict Mitigation

Local spatial and ecological data shall be integrated through GIS-based systems at Division/Range level for early detection of risk zones. Where feasible, radio-telemetry or camera trap-based monitoring of large wildlife will be used for understanding movement behaviour. Documentation of conflict-related animal behaviour patterns and corresponding best practices will be compiled for ready reference and community sensitisation.

✔ Herbivore Conflict Mitigation (BMCR Context)

For herbivore-dominated conflicts, foraging grounds shall be maintained along forest interiors by removing lantana and invasive weeds and by encouraging palatable grasses and fodder species preferred by wild ungulates. Communities will be supported in using non-destructive deterrent methods (noise, lighting barricades, bio-fencing) to protect crops. In extreme or habitual crop-raiding cases, capture and translocation may be considered, and elimination shall only be used in the rarest of rare situations in accordance with law.

✔ Community Incentives & Insurance

Traditional migratory routes of wildlife will be protected through habitat continuity and green cover management. "Payment for Ecosystem Services (PES)" concepts may be explored for private or community land adjoining the corridor to promote conservation-compatible land use. In addition, insurance-based risk cover for crop damage, livestock depredation, and injuries/loss of human lives

due to wildlife will be explored in coordination with insurance agencies, following state-level feasibility assessment.

✓ Record Maintenance

A register shall be maintained at the Division level in a prescribed format for systematic documentation of HWC events and actions taken. This will support transparency, learning, and policy feedback for improved management in BMCR.

Detailed Field Register Format

(For Division / Range Level – Buchara Main Conservation Reserve, Jaipur)

| S. No. | Date & Time of Incident | Village / Hamlet | GPS Coordinates (Lat/Long) | Name & Contact of Complainant | Species Involved | Type of Conflict (Crop / Livestock / Property / Human Injury / Human Fatality) | Brief Description of Incident | Estimated Loss (₹) / Nature of Damage | Photographic Evidence (Yes/No) | Immediate Response Action Taken (Patrolling / Medical Assistance / Crowd Control / Strengthening Barrier etc.) | Responsible Field Staff / Beat Guard | Verification Report Date | Relief / Ex-gratia Claim Filed (Yes/No) | Relief / Ex-gratia Sanctioned (₹) | Date of Payment | Remarks / Observations (Behavioural notes / repeat offense etc.) |

✓ Supplementary Sheets (to attach with each entry)

1. Incident Verification Sheet

Particulars	Details
Identification Basis	(Direct sighting / Pugmarks / Dung / Camera trap / Community input)
Site Condition	(Near forest / Cropland interior / Water source / Village periphery etc.)
Probable Cause	(Food attraction / water scarcity / dispersal movement / seasonal migration etc.)

Verified by
Name & Designation

Preventive Measures Implemented	(Solar light fencing / bio-fencing / removal of attractant crop / night patrolling etc.)
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Wildlife Occupancy Trend	(Increasing/Decreasing/Stagnant)
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Place of Incident	Date of Incident	Animal Species Involved	Location (Inside Forest / Outside)	Brief Description of Incident	Validity of Claim	Damage / Loss	Compensation
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6.2 Monitoring Performance

Effective monitoring is a cornerstone of adaptive management and long-term ecological sustainability within **Buchara Main Conservation Reserve, Jaipur**. The reserve, which harbors a mosaic of dry deciduous forest, scrubland, and grassland habitats, requires a systematic and scientifically designed monitoring framework to assess the ecological health, habitat quality, species population trends, and the success of ongoing management interventions.

6.2.1 Objectives of Monitoring

The principal objectives of the monitoring program in Buchara Main Conservation Reserve are:

- To evaluate the effectiveness of habitat restoration and protection measures.
- To document changes in vegetation composition, structure, and regeneration status.
- To assess population trends of key faunal species, particularly indicator and flagship species.
- To monitor the impact of anthropogenic pressures such as grazing, encroachment, fire, and resource extraction.
- To provide a scientific basis for decision-making and adaptive management.

6.2.2 Monitoring Framework and Methodology

Monitoring activities are designed following **scientific protocols** and in accordance with the **Wildlife Institute of India (WII)** and **Forest Survey of India (FSI)** guidelines. The monitoring framework integrates **ecological, biophysical, and socio-economic parameters** to ensure holistic evaluation.

1. Vegetation Monitoring:

Permanent sample plots and transects are established across representative habitat types to record data on species diversity, density, frequency, and cover. Changes in

dominance of native versus invasive species (e.g., *Prosopis juliflora*, *Lantana camara*) are tracked seasonally. Regeneration assessments are conducted through seedling and sapling counts to evaluate forest health and natural recruitment processes.

2. **Wildlife Population Monitoring:**

Camera trapping, line transect surveys, and point count methods are used to monitor faunal diversity and abundance. Special emphasis is given to monitoring **herbivore populations** (such as *Chinkara* and *Nilgai*) and **avian indicators**, which serve as proxies for habitat quality. Regular data collection helps in detecting population trends and potential ecological imbalances.

3. **Habitat Quality Assessment:**

Parameters such as canopy cover, grass biomass, soil moisture, and water availability in natural and artificial waterholes are periodically recorded. Remote sensing and GIS-based habitat analysis are integrated for spatial assessment of vegetation dynamics and habitat fragmentation.

4. **Water Resource Monitoring:**

As the reserve lies in a semi-arid region of Jaipur, monitoring of **water bodies** (both natural depressions and artificial ponds) is crucial. Seasonal variations in water holding capacity, siltation rates, and water quality (pH, turbidity, and dissolved oxygen) are analyzed to ensure sustainable availability of water for wildlife.

5. **Anthropogenic Pressure Monitoring:**

Grazing intensity, illegal wood collection, encroachment, and fire incidents are documented through patrol reports, satellite imagery, and community feedback. These observations are mapped to identify high-pressure zones requiring focused intervention.

6.2.3 Data Management and Reporting

All monitoring data are systematically recorded in standardized formats and entered into a **centralized digital database** managed by the Range Office under the guidance of the **Deputy Conservator of Forests (DCF), Jaipur Division**. Periodic analysis and interpretation of the data are carried out in collaboration with research institutions and NGOs. Quarterly and annual monitoring reports are generated to review progress and to facilitate evidence-based decision-making for adaptive management.

6.2.4 Community Participation and Capacity Building

Local community involvement forms an integral part of the monitoring framework. Training programs for field staff and community eco-guards are conducted to build capacity in biodiversity observation, GPS data collection, and participatory resource monitoring. This participatory approach enhances transparency and fosters a sense of stewardship among stakeholders.

6.2.5 Review and Adaptive Management

The monitoring results are periodically reviewed at the Range and Circle levels to assess management effectiveness. Adaptive management strategies are developed based on monitoring outcomes — such as modifying fire management schedules, regulating grazing zones, or prioritizing invasive species removal. Continuous refinement of the monitoring

protocol ensures long-term resilience and ecological stability of the **Buchara Main Conservation Reserve**.



10-Year Management Plan (Plan Period: 2025-26 to 2034-35)

Buchara Main Conservation Reserve, Jaipur

1. Introduction

The Buchara Main Conservation Reserve spans ecologically significant dry deciduous and scrub forest habitats in the Jaipur Forest Division. It forms an important ecological corridor supporting native flora and fauna, and acts as a buffer between human settlements and core wildlife habitats.

This 10-year Management Plan aims to ensure the ecological restoration, protection, and sustainable development of the reserve while fostering community participation and eco-development.

2. Broad Objectives

1. Strengthen habitat protection and boundary demarcation.
2. Restore degraded habitats through silvi-pastoral and ANR (Assisted Natural Regeneration) plantations.
3. Conserve biodiversity and water resources through soil-moisture conservation works.
4. Improve wildlife habitat quality and mitigate anthropogenic pressures.
5. Promote nature education, eco-tourism, and community participation.
6. Strengthen infrastructure and capacity for scientific monitoring and management.

3. Major Thematic Areas and Activities

Theme / Component	Major Activities	Implementation Period (2025-26 to 2034-35)	Remarks / Expected Outcome
A. Boundary and Protection Measures	Construction of pucca boundary wall, chain-link fencing, and boundary pillars; maintenance of existing structures	2025-26 to 2028-29	Complete protection from encroachment and grazing pressure
B. Plantation and Habitat Restoration	Silvi-pastoral plantations, ANR plantations, enrichment of old RDF plots, closure areas for biodiversity conservation	2025-26 to 2032-33	Enhanced green cover, improved regeneration, fodder availability

Theme / Component	Major Activities	Implementation Period (2025-26 to 2034-35)	Remarks / Expected Outcome
C. Water Resource and Soil-Moisture Conservation	Construction and renovation of anicuts, percolation tanks, nala bunds, check dams, loose boulder structures, gabion structures	2026-27 to 2030-31	Increased groundwater recharge, year-round water availability for wildlife
D. Wildlife Habitat Improvement	Removal of <i>Prosopis juliflora</i> and other invasive species, conversion to useful biomass, creation of nesting mounds, grass seeding	2026-27 to 2033-34	Restoration of native habitat and improved wildlife carrying capacity
E. Infrastructure Development	Construction of forest chowki, nakas, watchtowers, inspection paths, signage, staff quarters	2025-26 to 2030-31	Strengthened management presence and monitoring efficiency
F. Eco-Tourism and Awareness	Development of eco-trail, interpretation centre, nature view-points, benches, toilets, signage, and cafeteria	2027-28 to 2034-35	Promotion of responsible tourism and environmental education
G. Fire Management	Creation and maintenance of fire lines, provision of fire-fighting equipment, fire awareness campaigns	2025-26 to 2034-35	Reduction in fire incidents and habitat loss
H. Research, Monitoring & Capacity Building	Establishment of baseline data plots, population monitoring, GIS mapping, staff and community training	Continuous (2025-26 to 2034-35)	Data-based adaptive management framework
I. Community Participation & Eco-Development	Awareness programs, training for eco-guides, livelihood linkage through NTFPs and eco-tourism	2028-29 to 2034-35	Strengthened community stewardship and reduced biotic pressure

4. Phasing and Priority

Phase	Period	Major Focus Areas
Phase I	2025-26 to 2027-28	Boundary wall, fencing, initial plantations, water harvesting initiation
Phase II	2028-29 to 2030-31	Expansion of habitat improvement, infrastructure completion, eco-tourism initiation
Phase III	2031-32 to 2034-35	Consolidation, monitoring, maintenance, and community-based eco-development

5. Monitoring and Evaluation

Monitoring will be conducted annually through:

- Fixed sample plots for vegetation and regeneration studies.
- Wildlife population surveys (camera traps, transects).
- Remote-sensing-based habitat assessment every 3 years.
- Water resource mapping and hydrological analysis.
- Annual review meetings at Range and Circle levels.

Mid-term evaluation will be done at the end of 2029-30, and final evaluation at the end of 2034-35.

6. Expected Outcomes

- Strengthened ecological integrity and wildlife habitat quality.
- Enhanced soil-water regime and vegetation cover.
- Sustainable eco-tourism opportunities and community benefits.
- Strengthened management capacity with long-term monitoring framework.
- Increased biodiversity resilience and improved connectivity with adjacent forest areas.

Deputy Conservator of Forest Jaipur (North)
Buchara Main Conservation Reserve item wise & year wise phasing of physical & financial targets

S.no	Activity	Unit	Rate (RS.)	Total Targets		Total targets Year wise physical & financial targets																	
				Phy.	Fin.	2025-26		2026-27		2027-28		2028-29		2029-30		2030-31		2031-32		2032-33		2033-34	
(A) Construction of Prey base augmentation enclosures	Construction of Enclosure	No.	10.00	2.00	20.00	1.00	10.00	1.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	Construction of Rescue Centre/first aid facility room for wild animals with store room	No.	15.00	1.00	15.00	0.00	0.00	1.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(B) Fencing	Construction of 6 ft pucca boundary wall	km.	47.00	50.00	2350.00	2.00	94.00	20.00	940.00	20.00	940.00	8.00	376.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Construction of chainlink Fencing	km.	20.00	1.00	20.00	0.00	0.00	1.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Maintenance of Chainlink Fencing	LS			5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	2.00	0.00
(C) Plantation Work																							
1	Silvopastoral 1 Plantation & maintenance	Ha.	0.77	200.00	154.00	0.00	0.00	50.00	38.50	50.00	38.50	0.00	0.00	50.00	38.50	0.00	0.00	0.00	0.00	50.00	38.50	0.00	0.00
2	ANK Plantation & maintenance	Ha.	0.67	100.00	67.00	0.00	0.00	50.00	33.50	0.00	0.00	50.00	33.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Closure for Bio diversity conservation	Ha.	0.54	100.00	54.00	0.00	0.00	50.00	27.00	0.00	0.00	50.00	27.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	Sowing of neem, ber etc seeds in thot/other thorny bushes	No.	0.00	0.00	10.00	0.00	0.00	0.00	5.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Grasses	LS	0.00259	0.00	10.0	0.00	0.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
6	Construction of new nursery	LS	25.00	1.00	25.00	0.00	0.00	1.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	Plantation along road side	No.	0.06	1500.00	90.00	0.00	0.00	1000.00	60.00	500.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
(D) Infrastructure Development																							
8	Construction of forest Chowki & Residence	No.	8.50	3.00	25.50	0.00	0.00	2.00	17.00	1.00	8.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

LIST OF FLORA

I. वृक्ष / Trees

S. No.	Local Name	Botanical Name	Family
1	Subabool	<i>Acacia leucocephala</i> , <i>Leucaena leucocephala</i>	Fabaceae
2	Deshi Babool	<i>Acacia nilotica</i> variety <i>indica</i> , <i>Vachellia nilotica</i>	Fabaceae
3	Safed Kheri, Kumtha	<i>Acacia senegal</i>	Fabaceae
4	Israeli Babool	<i>Acacia tortilis</i>	Fabaceae
5	Beel tree	<i>Aegle marmelos</i>	Rutaceae
6	Aldu, Mahrukh	<i>Ailanthus excelsa</i>	Simarubaceae
7	Kaala Siris	<i>Albizia lebbek</i>	Mimosaceae
8	Dhok	<i>Annogeissus pendula</i>	Combretaceae
9	Sitafal	<i>Annona squamosa</i>	Annonaceae
10	Neem	<i>Azadirachta indica</i>	Meliaceae
11	Jhinjha	<i>Bauhinia racemosa</i>	Fabaceae
12	Semal	<i>Bombax ceiba</i>	Malvaceae
13	Amaltas	<i>Cassia fistula</i>	Fabaceae
14	Seemia, Kassod	<i>Cassia siamea</i>	Fabaceae
15	Lisoda	<i>Cordia dichotoma</i>	Boraginaceae
16	Gundi	<i>Cordia dichotoma</i>	Boraginaceae
17	Lisoda	<i>Cordia myxa</i>	Boraginaceae
18	Shisham	<i>Dalbergia sissoo</i>	Fabaceae
19	Gulmohar	<i>Delonix regia</i>	Fabaceae
20	Goya khair	<i>Dichrostachys sineraria</i>	Fabaceae
21	Chamror	<i>Ehretia laevis</i>	Boraginaceae
22	Safeda	<i>Eucalyptus camaldulensis</i>	Myrtaceae
23	Bargad	<i>Ficus benghalensis</i>	Moraceae
24	Soft Fig	<i>Ficus mollis</i>	Moraceae
25	Pipal	<i>Ficus religiosa</i>	Moraceae
26	Pilkhan	<i>Ficus virens</i>	Moraceae
27	Churel, Bandar baati	<i>Holoptelea integrifolia</i>	Ulmaceae
28	Gurjan/Godal	<i>Lannea coromandelica</i>	Anacardiaceae
29	Mango, Aam Tree	<i>Mangifera indica</i>	Anacardiaceae
30	Khirni	<i>Manilkara hexandra</i>	Sapotaceae
31	Kakeda	<i>Maytenus senegalensis</i>	Celastraceae
32	Sejna	<i>Moringa oleifera</i>	Moringaceae
33	Shehtoot	<i>Morus alba</i>	Moraceae
34	Karanj	<i>Pongamia pinnata</i>	Fabaceae

35	Khejri	<i>Prosopis cineraria</i>	Fabaceae
36	Vilayati babool	<i>Prosopis juliflora</i>	Mimosaceae
37	Kadaya	<i>Sterculia urens</i>	Malvaceae
38	Jamun	<i>Syzigium cumini</i>	Myrtaceae
39	Rohida	<i>Tecomella undulata</i>	Bignoniaceae
40	Arjun	<i>Terminalia arjuna</i>	Combretaceae
41	Ber	<i>Ziziphus mauritiana</i>	Rhamnaceae

Shrubs of Bucharu Main Forest Block

S.No	Local Name	Botanical Name	Family
1	Bui, Kapok Bush	<i>Aerva javanica</i>	Amaranthaceae
2	Vajradanti	<i>Barleria prionitis</i>	Acanthaceae
3	Kair/Teent	<i>Capparis decidua</i>	Capparaceae
4	Hinsa Jaal/ Kanthari	<i>Capparis sepiaria</i>	Capparaceae
5	Karonda	<i>Carissa carandas</i>	Apocynaceae
6	Coffee Senna	<i>Cassia occidentalis</i>	Fabaceae
7	Hul-Hul, Bagra	<i>Cleome viscosa</i>	Cleomaceae
8	Gugal	<i>Commiphora wightii</i>	Burseraceae
9	Jamalgota	<i>Croton tiglium</i>	Euphorbiaceae
10	Thermocol Plant	<i>Flueggea leucopyrus</i>	Phyllanthaceae
11	Bihul	<i>Grewia damine</i>	Tiliaceae
12	Sandpaper Raisin	<i>Grewia flavescens</i>	Tiliaceae
13	Gangeran, Gondni	<i>Grewia tenax</i>	Tiliaceae
14	Tiny Flower , Hibiscus	<i>Hibiscus micranthus</i>	Malvaceae
15	Marod fali	<i>Helicteres isora</i>	Malvaceae
16	Ratanjot	<i>Jatropha curcas</i>	Euphorbiaceae
17	Adusa	<i>Justicia adhatoda</i>	Acanthaceae
18	Indian White Lantana	<i>Lanstana wightii</i>	Verbenaceae
19	Lantana	<i>Lantana camara</i>	Verbenaceae
20	Murali	<i>Lycium indicum</i>	Solanaceae
21	Haathhathodia, Nagphana	<i>Opuntia dillenii</i>	Cactaceae
22	Daansren	<i>Rhus mysorensis</i>	Anacardeaceae
23	Avaram senna	<i>Senna auriculata</i>	Fabaceae
24	Bala, Baraira	<i>Sida acuta</i>	Malvaceae
25	Kangi	<i>Sida indica</i>	Malvaceae
26	Sahdev	<i>Sida rhombifolia</i>	Malvaceae
27	Somalata	<i>Sarcostemma acidum</i>	Apocynaceae
28	Negad/Nirgundi	<i>Vitex negundo</i>	Lamiaceae
29	Ashwagandha	<i>Withania somnifera</i>	Solanaceae
30	Jhad ber	<i>Zizyphus nummulania</i>	Rhamnaceae

Herbs of Buchara Main Forest Block

S.No.	Local Name	Botanical Name	Family
1	Jungli Bhindi	<i>Abelmoschus mamot</i>	Malvaceae
2	Kanghi	<i>Abutilon indicum</i>	Malvaceae
3	Kuppikhokhli	<i>Acalypha ciliata</i>	Euphorbiaceae
4	Apamarg, Aandhijhara	<i>Achyranthes aspera</i>	Amaranthaceae
5	Putkanta	<i>Achyranthes bidentata</i>	Amaranthaceae
6	Ray Fern	<i>Actiniopteris radiata</i>	Pteridaceae
7	Vishdodi, Goatweed	<i>Ageratum conyzoides</i>	Asteraceae
8	Aloevera Gwarpaatha	<i>Aloe vera barbadensis</i>	Asphodelaceae
9	Spiny Amaranth	<i>Amaranthus spinosus</i>	Amaranthaceae
10	Jungli chanwala	<i>Amaranthus viridis</i>	Amaranthaceae
12	Satyanassi	<i>Argemone mexicana</i>	Papaveraceae
13	Jungli Mooli	<i>Blumea lacera</i>	Asteraceae
14	Rakt Punarnava	<i>Boerhaavia diffusa</i>	Nyctaginaceae
15	Aak, Mudar	<i>Calotropis procera</i>	Apocynaceae
16	Panwar	<i>Cassia tora</i>	Fabaceae
17	Gadula	<i>Ceropegia bulbosa</i>	Apocynaceae
18	Bathua	<i>Chenopodium album</i>	Amaranthaceae
19	Hulhul, Bagra	<i>Cleome viscosa</i>	Cleomaceae
20	Bengal Day Flower Bokha	<i>Commelina benghalensis</i>	Commelinaceae
21	Shankpushpi	<i>Convolvulus pluricaulis</i>	Convolvulus
22	Chonch	<i>Corchorus aestuans</i>	Malvaceae
23	Horn Fruited Jute	<i>Corchorus tridens</i>	Malvaceae
24	Jojharu	<i>Crotalaria medicaginea</i>	Fabaceae
25	Ban Tulsi Kala Bhangra	<i>Croton bonplandianum</i>	Euphorbiaceae
26	Sahdevi	<i>Cyanthillium cinereum/ Vernonia cinerea</i>	Asteraceae
27	Datura	<i>Datura stramonium</i>	Solanaceae
28	Oot kateli	<i>Echinos echinatus</i>	Asteraceae
29	Bhrangraj	<i>Eclipta prostrata</i>	Asteraceae
30	Dudhi	<i>Euphorbia hirta</i>	Euphorbiaceae
31	Laghu Dudhi	<i>Euphorbia thymifolia</i>	Euphorbiaceae
32	Vishnukranthi	<i>Evolvulus convolvulus</i>	Convolvulus
33	Van Gobi	<i>Lawnia procumbens</i>	Asteraceae
34	Jungli Tulsi	<i>Ocimum canum</i>	Lamiaceae
35	Ram Tulsi	<i>Ocimum sanctum</i>	Lamiaceae
36	Triparni, Khatti	<i>Oxalis corniculata</i>	Oxalidaceae
37	Amrul, Wood Sorel	<i>Oxalis latifolia</i>	Oxalidaceae
38	Gajar grass	<i>Parthenium hysterophorus</i>	Asteraceae

39	Kakjangha	Peristrophe bicalyculata	Acanthaceae
40	Khjoor	Phoenin sylvestris	Araceae
41	Bhumi aaunla	Phyllanthus niruri	Phyllanthaceae
42	Chirpotan	Physalis minima	Solanaceae
43	Forest Burr	Piplaia lappacea	Acanthaceae
44	Chitrak	Plumbago zeylanica	Plumbaginaceae
45	Bada Gokhru	Redalium murek	Pedaliaceae
46	Til (Jungli)	Sesamum mulayanum	Pedaliaceae
11	Luniya	Sesvium portulacastrum	Aizoaceae
47	Kanghi	Sida indica/Abutilon indicum	Malvaceae
48	Makoy	Solanum nigrum	Solanaceae
49	Kanteli	Solanum xanthocarpum	Solanaceae
50	Sharpunkha	Tephrosia purpurea	Fabaceae
51	Bhakar Biyani Rock Tephrosia	Tephrosia uniflora	Fabaceae
52	Sabuni, Svetsabuni	Trianthema portulacastrum	Aizoaceae
53	Chota Gokhru	Tribulus terrestris	Zygophyllaceae
54	Rakt Stambhi	Tridax procumbens	Asteraceae
55	Jungli Pyaaj, Coli Kaandaa	Urginea indica	Asparagaceae
56	Wavy Mulein	Verbasum sinuatum	Scrophulariaceae
57	Jungli Surajmukhi	Verbesina encelioides	Asteraceae
58	Chota Dhatura	Xanthium strumarium	Asteraceae

Climbers of Buchara Main Forest Block

S. No.	Local Name	Botanical Name	Family
1	Chirmi	<i>Abrus precatorius</i>	Fabaceae
2	Shatvari	<i>Asparagus racemosus</i>	Asparagaceae
3	Kat karanj	<i>Caesalpinia bonduc</i>	Caesalpinniaceae
4	Khadula	<i>Ceropegia bulbosa</i>	Apocynaceae
5	Kundroo	<i>Coccinia grandis</i>	Cucubitaceae
6	Ajgar bel , Pilwan	<i>Cocculus hirsutus</i>	Menispermaceae
7	Azgarbel, Mahamool	<i>Cocculus pendulus</i>	Menispermaceae
8	Aakaash Gadda	<i>Corallocarpus epigaeus</i>	Cucubitaceae
9	Amarbel	<i>Cuscuta reflexa</i>	convolvulaceae
10	Kalihari	<i>Gloriosa superba</i>	Colchicaceae
11	Behaya, Besharam	<i>Ipomoea carnea</i>	Convolvulaceae
12	Diya Baati Bel	<i>Ipomoea pes-trigridis</i>	Convolvulaceae
13	Hemkand	<i>Maerua oblongifolia</i>	Capparaceae
14	Menda Singi, Gadaria Ki Bel	<i>Pergularia daemia</i>	Apocynaceae
16	Fang/ Guar kakdi	<i>Rivea hypocrateriformis</i>	Convolvulaceae

17	Kheer kheemp	<i>Sarcostemma acidum</i>	Apocynaceae
15	Giloy	<i>Tinospora cordifolia</i>	Menispermaceae

Grasses Sedges and Bamboos of Buchara Main Forest Block

S. No	Common Name	Botanical name	Family
1	भोंगता घास	<i>Apluda mutica, Andropogon aristatus</i>	Poaceae
2	लापला	<i>Aristida adscensionis</i>	Poaceae
3	मुरट	<i>Brachiaria ramose</i>	Poaceae
4	भरुंट	<i>Cenchrus biflorus</i>	Poaceae
5	धामन सफेद	<i>Cenchrus ciliaris</i>	Poaceae
6	धामन घास काला	<i>Cenchrus setigerus</i>	Poaceae
7	पंख फिंगरग्रास	<i>Chloris virgata</i>	Poaceae
8	डूब	<i>Cynodon dactylon</i>	Poaceae
9	मोथा घास	<i>Cyprus rotundus</i>	Cyperaceae
10	डाब	<i>Desmostachia bipinnata</i>	Poaceae
11	जिरियो, जंगल चावल	<i>Echinochloa colona</i>	Poaceae
12	मकड़ा	<i>Eleusine aegyptica, Dactyloctenium aegyptium</i>	Poaceae
13	घोड़ा डूब	<i>Eleusine compressa</i>	Poaceae
14	झरनिया, क्रोफूट घास,	<i>Eleusine indica</i>	Poaceae
15	लव घास	<i>Eragrostis eragrostis</i> <i>syn.E.cilianensis</i>	Poaceae
16	लव घास	<i>Eragrostis tenella</i>	Poaceae
17	सूरवाल, काली भाला घास	<i>Heteropogon contortus</i>	Poaceae
18	गुच्छेदार घास	<i>Melanocenchris jacquemontii</i>	Poaceae
19	भारतीय धूमकेतु घास	<i>Perotis indica</i>	Poaceae
20	मुंजा, पानी पुला	<i>Saccharum munja</i>	Poaceae

21	कांस	<i>Saccharum spontaneum</i>	Poaceae
22	हिलती हुई रोएँदार घास	<i>Setaria fabre</i>	Poaceae
23	मैग्रेग्रास, हरी फॉक्सटेल	<i>Setaria viridis</i>	Poaceae
24	बरु	<i>Sorghum helipense</i>	Poaceae
25	कोमल उंगली घास	<i>Tetrapogon tenellus</i> , <i>T. tereliusa</i> , <i>T. macranthus</i> , <i>T. triangulatus</i> ,	Poaceae



LIST OF FAUNA

1. स्तनधारी वर्ग / Mammals

S.no.	स्थानीय नाम	Common name	Scientific name
1	बन्दर	Rhesus macaque Monkey	Mecaca Multta
2	बघेरा, तेंदुआ	Beghera/Leopard/Panther	Panthera pardus (Linn)
3	लंगूर	Common Langur, Hanuman Monkey	Presbytis entellus
4	जंगली बिल्ली	Jungle Cat	Felis chaus
5	नेवला	Common Mongoose	Herpestes edwardsi
6	सियार / गिदड़	Jackal	Canis aureus
7	लोमड़ी	Red Fox	Vulpes vulpes
8	जरख	Striped Hyaena	Hyaena hyaena
9	बिज्जू	Common Palm Civet	Paradoxurus hermaphrodites
10	नील गाय	Blue Bull	Boselaphus tragocamelus
11	झाउ चूहा	Hedge hog	Hemiecanus auritus
12	सांभर	Sambhar	Cervus unicolor
13	गिलहरी	Palm Squirrel	Funambulus pennant
14	चूहा	Common House Rat	Rattus rattus
15	सेही / सेवली	Indian porcupine	Hystrix indica
16	खरगोश रेगिस्तानी	Desert Hare	Lepus nigricollis dyanus
17	खरगोश	Indian Hare	Lepus nigricollis trufi
18	छछुन्दर	Grey Musk Shrew	Suncus Murinus
19	चमगादड़	Bat	Megaderma lyra
20	रेगिस्तानी बिल्ली	Desert cat	Felis libyea
21	बघेरा	Panthera pardus	Felidae

II. पक्षी वर्ग / Avifauna

1	सुर्खाब	Brahminy duck	Tadorna ferruginea
2	नक्टा	Comb duck	Sarkidiornis melanotos.
3	गुरल	Grey duck	Anas poecilorhyncha.
4	छिपक, चपक	Indian Nightjar	Caprimulgus asiaticus
5	लघुवलयित टिटहरी	Little ringed plower	Charadrius Bubius.
6	पिहूया	Pheasant tailed Jacana.	Hydrophasianus chirurgus.
7	टिहरी	River Tern	Sterna aurantia.
8	टंजन	Grey Heron	Ardea cinerea
9	कोकरई	Night Heron	Nycticorex nycticorax
10	बगूला	Pond Heron	Ardeola grayii.
11	बगूला	Little egret	Egretta garzetta.
12	सुर्खिया बगला	Cattle Egret	Bubulcus ibis
13	कांच बगला	Little Green. Bittern.	Butorides striatus
14	लगलगा	White Ibis.	Tjhreskiormis
15	बाज, काला बाज	Black Ibis	Pseudibis papillosa
16	चमचबाज	Spoon bill	Platalea leucoredia

17	छोटा किलकिला	Small blue kingfisher	Alcedo atthis
18	किलकिला	White-breasted Kingfisher	Haleyon smyrnensis
19	लघुहरित पतरिगा	Small Green Beeeater.	Merops orientalis.
20	बड़ा पतरिगा	Blue tailed Beeeater	Merops philippinus
21	नीलकण्ड	Indian Roller or Blue Jay	Coracias benghalensis
22	हुदहुद	Hoope	Upupa epops
23	भट तीतर	Common Sandgrouse	Pterocles exustus
24	पहाड़ी भट तीतर	Painted Sand grouse	Pterocles Indicus
25	हरियल	Common Green. Pigeon	Treron Phoenicoptera
26	कबूतर	Blue Rock Pigeon	Columba livia.
27	फाखता	Red turtle Dove.	Streptopelia Traquebarica
28	चित्रक, फाखता	Spotted Dove	Streptopelia Chinensis
29	पारकी, पण्डूक	Ring Dove.	Strenptopelia decaocto
30	छोटी फाखता	Little Brown Dove.	Streptopelia senegalensis
31	पपीहा	Brain fever Bird.	Cuculus varius
32	कोयल, कोकिल	Koel	Eudynamys scolopacen
33	महोक	Crow pheasant	Centropus sinensis
34	लगगर	Laggar-Falcon	Falco biarmicus Jugger Gray
35	मोर, मयूर	Common Pea fowl.	Pavo cristatus
36	लाल वन कुटकुट	Red Junglefowl	Gallus gallus
37	जंगली मुरगी	Grey jungle fowl	Gallus sonneratii
38	काला तीतर	Black partridge	Francolinus francolinus
39	सफेद तीतर	Grey partridge	Francolinus pondicerianus
40	बटेर	Common Quail	Coturnix coturnix
41	चानक, चाइना बटेर	Rain Quail	Coturnix coromandelica
42	क्षुप बटेर	Bush Quail	Perdica asiatica
43	जल कुककुटी	White breasted Waterhen	Amaurornis phoenicurus
44	जलमुर्गी	Indian Moorhen	Gallinula chloropus
45	सारस	Sarus crane	Grus antigone
46	भरत पक्षी	Small Indian Skylark	Alauda gulgula
47	चन्दुल	Crested Lark	Galerida cristata
48	जंगली अगिया	Redwinged Bush Lak	Mirafr erythro-ptera
49	अबाबील	Common Swallow	Hirundo rustica
50	सफेद लटेरा	Grey Shrike	Lanius excubitor
51	छोटा लटेरा	Baybacked shrike	Lanius vittatus
52	जंगली कसया	Cuckoo shrike	Coracina melanoptese
53	पीलक	Golden Oriole	Oriolus oriolus
54	कृष्ण शीश पीलक	Black headed Oriole	Oriolus xanthornus
55	पहाड़ी भुजंग	Whitebellied Drongo	Dicrurus caerulescens
56	भीमराज भुजंग	Racket tailed Drongo	Dicrurus paradiseus
57	तिल्वर	Rosy pastor	Sturnus roseus.
58	घूसट शीर्ष मैना	Grey headed Myna	Stuirnus malabaricus
59	बामनी मैना	Brahminy Myna	Sturnus pagodaru;m
60	देशी मैना	Common Myna	Acridotheres tristis
61	गंगा मैना	Bank Myna	Acridotheres ginginianus

62	जंगली मैना	Jungle Myna	Acridotheres Fuscus
63	देशी कौवा	House crow	Corvus splendens
64	जंगली कौवा	Jungle crow	Corvus macrorhynchos
65	तरुपिक	Tree Pie	Dendrocitta Vagabunda
66	बुलबुल	Red vented Bulbul	Pycnonotus cafer
67	भोहों वाली बुलबुल	White checked Bulbul	Pycononotus luteolus
68	जर्द बुलबुल	Black Headed Yellow Bulbul	Pycononotus meanicterus
69	सतभाई	Jungle Babbler	Turdoides striatus
70	डूमरी, चिलचिल	Common Babbler	Turdeides caudatus
71	शाह बुलबुल	Paradise Fly-catcher	Terpsiphone paradise
72	जंगली चिड़ी	Yellow throated sparrow	Petronia xanthocollis
73	गौरेया	House sparrow	Passer domesticus
74	बया	Black breasted weaver bird	Ploceus benghalensis
75	बया	Common weaver bird	Ploceus philippinus
76	मुनिया	Green munia	Estrilda formosa
77	चरचरा, सर मुनिया	throated munia	Lonchura Malabarica
78	पनडुब्बी	Snake-bird	Anhinga rufa
79	कठफौड़वा	Pied wood-packer	Picoides mahrattensis
80	कठ फौड़वा	Glodenbacked wood pecker	Dinopium benghalense
81	हीरामन तोता	Large Indian Parakeet	Psittacula eupatria
82	लाइबर तोता	Roseringed Parakeet	Psittacula krameri
83	तुइया तोता	Blossomheaded Parakeet	Psittacula cyanocephala
84	घुग्घु	Indian Great Horned owl	Bubo bubo
85	बिदुंकित उलूकक	Spotted owlet	Athene brama



III. सरीसृप / Reptiles

S.no.	स्थानीय नाम	Common name	वैज्ञानिक नाम / Scientific name
1	कछुआ पानी का	Indian sawbaok	Kachnga tecta
2	कछुआ तालाब का	Indian mud turtle	Lissemys punctata
3	कछुआ भूमि का	Starred tortoise	Geochelone elegans
4	छिपकली	Northern house gecko	Hemidactylus flaviviridis
5	छिपकली	Fat tailed gecko	Eublepharis macularivl
6	गिरगिट	Common garden lizard	Calotes versicolor
7	हालनियां	Indian chameleon	Chamaeleon zeylanicaul
8	गेह	Common indian monitor	Varanus beagalansis
9	छुमुही	Johr's earth boa	Eryx johnii
10	धामण	Common rat snake	Ptyas mucosus
11	करायत	Common indian krait	Bungarus caeruleus
12	नग	Indian cobra	Naja naja
13	चित्ती	Russell's viper	Vipera rapelli
14	सांडा	Spiny tailed lizard	Uromastix hardwikii
15	पिटवाईपर	Pitviper	Ancistrodon himalayahus

IV. उभयचारी वर्ग / Amphibians

S.no.	स्थानीय नाम	Common name	वैज्ञानिक नाम / Scientific name
1	सामान्य मेंढक	Common Indian Toad.	Bufo melanostictus
2	मेंढक, डेटका	Marbled Toad	Bufo stomaticus
3	मैंदा, डेटका	Indian Bull Frog	Rana tigerina
4	मैंदा, डेटका	Burrowing Frog	Rana tomopterna

V. Butterflies

Scientific Name	Common Name	Family	Hindi Name
Acraea terpsicore	Tawny Coster	Nymphalidae	कृष्ण कमलिनी
Appias olferna	Eastern Puffin	Pieridae	कृष्ण गोविंदी
Ariadne ariadne	Angled Castor	Nymphalidae	तरंग अरंड
Azanus ubaldus	Bright Babool Blue	Lycaenidae	उज्जवल बबूली
Belenois aurota	Indian Pioneer /Pioneer White	Pieridae	अग्र-दूत
Catochrysops strabo	Forget-me-not	Lycaenidae	तिनिषा
Catopsilia pomona	Common Emigrant / Lemon Emigrant	Pieridae	पीला ययाति
Catopsilia pyranthe	Mottled Emigrant	Pieridae	चितीदार ययाति
Cepora nerissa	Common Gull	Pieridae	पुष्पलता
Chilades lajus	Lime Blue		निंबुड़ा
Chilades pandava	Plain Cupid	Lycaenidae	साइकस मदन
Cigaritis vulcanus	Common Silverline	Lycaenidae	बाघी रंजतरेखा

Colotis danae	Pale Orange Tip	Pieridae	रक्तसिरा
Colotis etrida	Little Orange Tip/Small Orange Tip	Pieridae	छोटा नारंगीसिरा
Colotis fausta	Large Salmon Arab	Pieridae	बडा मरुधर
Danaus chrysippus	Plain Tiger	Nymphalidae	कोरी विषैली
Danaus genutia	Striped Tiger		धारीदार विषैली
Delias eucharis	Common Jezebel	Pieridae	देशी चतुरंगी
Euchrysops cnejus	Gram Blue	Lycaenidae	पलाश नील
Euploea core	Common Indian Crow	Nymphalidae	देशज काग
Eurema blanda	Three Spot Grass		त्रिबिंदी हल्दीया
Eurema brigitta	Small Grass Yellow	Pieridae	छोटी हल्दीया
Eurema hecabe	Common Grass Yellow	Pieridae	द्वि-हल्दीया
Eurema laeta	Spotless Grass Yellow	Pieridae	कोरीहल्दीया
Freyeria putli	Black-spotted Grass Jewel	Lycaenidae	यामली रत्नमाला
Freyeria trochylus	Orange-spotted Grass Jewel		नारंगी रत्नमाला
Graphium agamemnon	Tailed Jay	Papilionidae	हरी तिकोनी
Graphium doson	Common Jay	Papilionidae	चितीदार तिकोनी
Hypolimnias bolina	Great Eggfly	Nymphalidae	नीलचंद्र
Hypolimnias misippus	Danaid Eggfly		श्वेतचंद्र
Ixias marianne	White Orange Tip	Pieridae	सफेद नारंगी सिरा
Junonia almana	Peacock Pansy		नारंगी मंडला
Junonia hierta	Yellow Pansy	Nymphalidae	पीत मंडला
Junonia lemonias	Lemon Pansy	Nymphalidae	नींबू मंडला
Junonia orithya	Blue Pansy	Nymphalidae	नील मंडला
Lampides boeticus	Pea Blue	Lycaenidae	नील छिमी
Melanitis leda	Common Evening Brown	Nymphalidae	सांझ-भूरी
Pachliopta aristolochiae	Common Rose	Papilionidae	एशियाई लोहित
Papilio demoleus	Lime Swallowtail	Papilionidae	निंबुई
Papilio polytes	Common Mormon	Papilionidae	छोटा बहुरुपिया
Pelopidas mathias	Small Branded Swift	Hesperiidae	विभक्त दागी-तृणासुर
Phalanta phalantha	Common Leopard		गुलदार
Talicauda nyseus	Red Pierrot		लोहित तेजस
Vanessa cardui	Painted Lady	Nymphalidae	उर्वशी
Zizina otis	Lesser Grass Blue	Lycaenidae	मझली नीलू
Tirumala limniace	Blue Tiger		नीली विषैली

Notification

राजस्थान सरकार
वन विभाग

क्रमांक: प. 3(9)वन/2025

जयपुर, दिनांक:- 4 AUG 2025

अधिसूचना

वन्य जीव (संरक्षण) अधिनियम 1972 (1972 का केन्द्रीय अधिनियम संख्या 53) की धारा 36क द्वारा प्रदत्त शक्तियों का प्रयोग करते हुये राज्य सरकार एतद्वारा स्थानीय समुदायों के साथ परामर्श करने के पश्चात कोटपूतली-बहरोड जिले की तहसील पावटा व सीकर जिले की तहसील श्रीमाधोपुर में स्थित वनखण्ड बुचारा मैन की रक्षित वन भूमि, जिसका विवरण नीचे दी गई अनुसूची-I एवं सीमाओं का विवरण अनुसूची-II के अनुसार है, को पारिस्थितिकीय एवं प्राणी जातीय, वनस्पतीय, भू-संरचना, संबंधित नैसर्गिक एवं प्राणी शास्त्रीय महत्व को ध्यान में रखते हुए संरक्षण आरक्षित घोषित करती है, जिसे भविष्य में बुचारा मैन संरक्षण आरक्षित के नाम से जाना जावेगा।

अनुसूची-I

क्र.सं.	जिला	तहसील	ग्राम पंचायत	वन खण्ड का नाम	क्षेत्रफल (हेक्टर)	भूमि का वर्गीकरण
1.	कोटपूतली-बहरोड	पावटा	टसकोला	बुचारा मैन	49.385	रक्षित वन
		पावटा	भोनावास	बुचारा मैन	581.609	रक्षित वन
		पावटा	फतेहपुरा (खुर्द)	बुचारा मैन	99.087	रक्षित वन
					509.839	रक्षित वन
		पावटा	टोरडा गुजरान	बुचारा मैन	228.981	रक्षित वन
	पावटा	बुचारा	बुचारा मैन	2905.200	रक्षित वन	
2.	सीकर	श्रीमाधोपुर	जुगलपुरा	बुचारा मैन	63.820	रक्षित वन
योग:-					4437.921 है.	

अनुसूची-II

- उत्तरी सीमा :** रक्षित वनखण्ड बुचारा मैन की उत्तरी सीमा (अधिकतम वनखण्ड बुचारा मैन के कम्पार्टमेंट संख्या 1 की उत्तरी सीमा)
- दक्षिणी सीमा :** रक्षित वनखण्ड बुचारा मैन की दक्षिणी सीमा (अधिकतम वनखण्ड बुचारा मैन के कम्पार्टमेंट संख्या 5 की दक्षिणी सीमा)
- पूर्वी सीमा :** रक्षित वनखण्ड बुचारा मैन की पूर्वी सीमा (अधिकतम वनखण्ड बुचारा मैन के कम्पार्टमेंट संख्या 4 की पूर्वी सीमा)
- पश्चिमी सीमा :** रक्षित वनखण्ड बुचारा मैन की पश्चिमी सीमा (अधिकतम वनखण्ड बुचारा मैन पार्ट सीकर का ग्राम जुगलपुरा की पश्चिमी सीमा)

राज्यपाल की आज्ञा से,

हस्ताक्षर
(बीजो जॉय)
विशिष्ट शासन सचिव

प्रतिलिपि :- निम्नांकित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित है:-

1. सचिव, महामहिम राज्यपाल, राजस्थान, जयपुर।
2. प्रमुख शासन सचिव, मुख्यमंत्री, राजस्थान, जयपुर।
3. समस्त निजी सचिव/मंत्रीगण/राज्य मंत्रीगण, राजस्थान, जयपुर।
4. निजी सचिव, मुख्य सचिव, राजस्थान, जयपुर।
5. समस्त अति. मुख्य सचिव/समस्त प्रमुख शासन सचिव/समस्त शासन सचिव, राजस्थान, जयपुर।
6. पुलिस महानिदेशक, राजस्थान, जयपुर।
7. सचिव, राजस्थान विधानसभा, जयपुर।
8. प्रधान मुख्य वन संरक्षक (वन बल प्रमुख) राजस्थान, जयपुर।
9. प्रधान मुख्य वन संरक्षक एवं मुख्य वन्य जीव प्रतिपालक, राजस्थान जयपुर को प्रेषित कर निवेदन है कि उक्त अधिसूचना को माध्यम से REAMS के माध्यम से ई-गजट में प्रकाशित करवाने का कष्ट करे।
10. प्रधान मुख्य वन संरक्षक, कार्य आयोजना एवं वन बन्दोबस्त, राजस्थान जयपुर।
11. संभागीय आयुक्त, जयपुर।
12. संभागीय मुख्य वन संरक्षक, जयपुर।
13. जिला कलेक्टर, कोटपूतली-बहरोड/सीकर/जयपुर।
14. उप वन संरक्षक, जयपुर(उत्तर)।
15. उप वन संरक्षक, सीकर।
16. संसदीय कार्य विभाग।
17. गार्ड फ़ावली।

विशिष्ट शासन सचिव

प्रतिलिपि निम्नांकित को सूचनार्थ प्रेषित है:-

1. सचिव, पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार, इंदिरा पर्यावरण भवन, जोर बाग रोड, नई दिल्ली।
2. महानिरीक्षक, वन (वन्य जीव), पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार, इंदिरा पर्यावरण भवन, जोर बाग रोड, नई दिल्ली।
3. निदेशक भारतीय वन्य जीव संस्थान, पोस्ट बॉक्स नं. 18 चन्द्रबनी, देहरादून।

विशिष्ट शासन सचिव

Land Record

चैक लिस्ट बिन्दु संख्या:-4 भूमि का जिलेवार, तहसीलवार, ग्राम पंचायतवार, मौजावार एवं खसरावार वर्गीकरण का सारणीबद्ध विवरण:-									
क्र. सं.	जिला	तहसील	ग्राम पंचायत	नाम मौजा/गाँव	खाता संख्या	खसरा नम्बर	रकबा (बीघा में)	रकबा (है० में)	भूमि का वर्गीकरण
1	जयपुर (हाल कोटपूतल-बहरोड़)	पावटा	टसकोला	टसकोला	—	1 जुज	195.00		गै. मु. पहाड़
2					—	2 जुज	0.25		गै. मु. पहाड़
							195.25	49.385	
3	जयपुर (हाल कोटपूतल-बहरोड़)	पावटा	भोनावास	भोनावास	—	1 जुज	151.35		गै. मु. पहाड़
4					—	2 जुज	187.25		गै. मु. पहाड़
5					—	6 जुज	1.60		गै. मु. पहाड़
6					—	24 जुज	75.60		गै. मु. पहाड़
7					—	43 जुज	26.75		गै. मु. पहाड़
8					—	81 जुज	61.75		गै. मु. पहाड़
9					—	1281 जुज	233.10		गै. मु. पहाड़
10					—	1282 पूरा	238.80		गै. मु. पहाड़
11					—	1283 पूरा	176.60		गै. मु. पहाड़
12					—	1284 पूरा	572.70		गै. मु. पहाड़
13					—	1285 पूरा	35.20		गै. मु. पहाड़
14					—	1286 पूरा	142.60		गै. मु. पहाड़
15					—	1287 पूरा	141.60		गै. मु. पहाड़
16					—	1288 जुज	203.40		गै. मु. पहाड़
17					—	1291 जुज	22.25		गै. मु. पहाड़
18					—	1292 जुज	28.90		गै. मु. पहाड़
							2299.45	581.609	
19	जयपुर (हाल कोटपूतल-बहरोड़)	पावटा	फतेहपुरा (खुर्द)	फतेहपुरा	—	1 जुज	391.75		गै. मु. पहाड़
							391.75	99.087	
20	जयपुर (हाल कोटपूतल-बहरोड़)	पावटा	फतेहपुरा (खुर्द)	रूपपुरा	—	1 पूरा	122.10		गै. मु. पहाड़
21					—	2 पूरा	128.30		गै. मु. पहाड़

22					—	3	पूरा	164.00		गै. मु. पहाड़
23					—	4	पूरा	274.65		गै. मु. पहाड़
24					—	5	पूरा	169.70		गै. मु. पहाड़
25					—	6	पूरा	120.00		गै. मु. पहाड़
26					—	7	पूरा	144.00		गै. मु. पहाड़
27					—	8	पूरा	205.40		गै. मु. पहाड़
28					—	9	पूरा	98.90		गै. मु. पहाड़
29					—	10	पूरा	101.70		गै. मु. पहाड़
30					—	11	पूरा	119.70		गै. मु. पहाड़
31					—	12	पूरा	80.30		गै. मु. पहाड़
32					—	13	पूरा	77.85		गै. मु. पहाड़
33					—	14	पूरा	79.00		गै. मु. पहाड़
34					—	15	पूरा	48.00		गै. मु. पहाड़
35					—	16	जुज	82.10		गै. मु. पहाड़
								2015.70	509.839	
36	जयपुर (हाल कोटपूतल —बहरोड़)	पावटा	टोरडा गुजरान	टोरडा	—	1205	जुज	168.20		गै. मु. पहाड़
37					—	1214	जुज	622.70		गै. मु. पहाड़
38					—	1215	जुज	114.40		गै. मु. पहाड़
								905.30	228.981	
39	जयपुर (हाल कोटपूतल —बहरोड़)	पावटा	बुचारा	बुचारा	—	51	जुज	335.50		गै. मु. पहाड़
40					—	244	जुज	29.40		गै. मु. पहाड़
41					—	255	जुज	535.40		गै. मु. पहाड़
42					—	326	जुज	46.35		गै. मु. पहाड़
43					—	327	जुज	7.10		गै. मु. पहाड़
44					—	344	पूरा	295.50		गै. मु. पहाड़
45					—	345	पूरा	1123.00		गै. मु. पहाड़
46					—	346	जुज	257.60		गै. मु. पहाड़
47					—	347	जुज	73.50		गै. मु. पहाड़
48					—	360	जुज	21.90		गै. मु. पहाड़
49					—	399	जुज	2.20		बंजड़ दोयम
50					—	400	जुज	22.85		बंजड़ दोयम
51					—	403	जुज	42.15		बंजड़ दोयम
52					—	404	जुज	67.65		बंजड़ दोयम
53					—	410	जुज	58.15		बंजड़ दोयम
54					—	411	जुज	27.25		गै. मु. पहाड़
55					—	412	जुज	99.70		गै. मु. पहाड़
56					—	413	जुज	140.75		गै. मु. पहाड़
57					—	414	पूरा	120.00		गै. मु. पहाड़

58					—	415	पूरा	120.00		गै. मु. पहाड़
59					—	416	पूरा	96.00		गै. मु. पहाड़
60					—	417	पूरा	112.90		गै. मु. पहाड़
61					—	418	पूरा	79.10		गै. मु. पहाड़
62					—	419	पूरा	99.20		गै. मु. पहाड़
63					—	420	पूरा	140.00		गै. मु. पहाड़
64					—	421	पूरा	140.90		गै. मु. पहाड़
65					—	422	पूरा	76.20		गै. मु. पहाड़
66					—	424	जुज	75.70		गै. मु. पहाड़
67					—	434	जुज	0.75		बंजड़ दोयम
68					—	721	जुज	18.00		गै. मु. पहाड़
69					—	722	जुज	57.10		गै. मु. पहाड़
70					—	988	जुज	127.55		बंजड़ दोयम
71					—	989	जुज	161.40		बंजड़ दोयम
72					—	990	पूरा	174.60		बंजड़ दोयम
73					—	991	पूरा	72.00		बंजड़ दोयम
74					—	992	पूरा	308.00		बंजड़ दोयम
75					—	993	पूरा	112.00		बंजड़ दोयम
76					—	994	पूरा	64.00		बंजड़ दोयम
77					—	995	पूरा	48.00		बंजड़ दोयम
78					—	1001	पूरा	16.00		बंजड़ दोयम
79					—	1002	पूरा	16.00		बंजड़ दोयम
80					—	1003	जुज	31.10		बंजड़ दोयम
81					—	1004	जुज	25.10		बंजड़ दोयम
82					—	1035	पूरा	196.00		बंजड़ दोयम
83					—	1036	पूरा	196.00		बंजड़ दोयम
84					—	1037	पूरा	160.00		बंजड़ दोयम
85					—	1038	पूरा	192.00		बंजड़ दोयम
86					—	1039	जुज	222.60		बंजड़ दोयम
87					—	1040	पूरा	200.00		बंजड़ दोयम
88					—	1041	जुज	347.60		बंजड़ दोयम
89					—	1335	जुज	591.10		गै. मु. पहाड़
90					—	1336	पूरा	1000.90		गै. मु. पहाड़
91					—	1337	पूरा	1872.00		गै. मु. पहाड़
92					—	1338	पूरा	1010.00		गै. मु. पहाड़
93					—	1339	पूरा	20.25		गै. मु. पहाड़
								11486.00	2905.200	
94	सीकर (हाल नीम का थाना)	श्री माधोपुर	जुगलपुरा	जुगलपुरा	—	1787	पूरा	77.57		बंजड़
95					—	1788	पूरा	31.51		बंजड़
96					—	1873	पूरा	18.86		बंजड़
97					—	1874	पूरा	0.12		बंजड़

98					—	1876	पूरा	71.44		बंजड़
99					—	1877	पूरा	52.82		बंजड़
								252.32	63.820	
	वन खण्ड बुचारा मैन का कुल रकबा है0 में							17545.77	4437.921	

उप वन संरक्षक
जयपुर (उत्तर)

चैक लिस्ट बिन्दु संख्या:-5 भूमि का ग्रामवार व ग्राम पंचायतवार सारणीबद्ध विवरण:-					
क. सं.	ग्राम पंचायत	ग्राम	कुल खसरा संख्या	कुल खाता संख्या	क्षेत्रफल (है0 में)
1	टसकोला	टसकोला	2	—	49.385
2	भौनावास	भौनावास	16	—	581.609
3	फतेहपुरा (खुर्द)	फतेहपुरा	1	—	99.087
		रूपपुरा	16	—	509.839
4	टोरडा गुजरान	टोरडा	3	—	228.981
5	बुचारा	बुचारा	55	—	2905.200
6	जुगलपुरा	जुगलपुरा	6	—	63.820
				कुल योग	4437.921

चैक लिस्ट बिन्दु संख्या:-6 प्रस्तावित वन भूमि का वनखण्डवार सारणीबद्ध विवरण:-				
क. सं.	वन खण्डका नाम	अधिसूचना क्रमांक	दिनांक	क्षेत्रफल (है0 में)
1	बुचारा मैन	1 (6) (16) राज.8 / 74	01-01-1975	4437.921

उप वन संरक्षक
जयपुर (उत्तर)

राज २-११५ ७११)

२/१

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①

प्रपत्र (अ)

1(6)(16) राज-8/74 विज्ञापित

D-1-1-75

चूंकि इसके साथ संलग्न अनुसूची में समाविष्ट वन-भूमि तथा बंजर-भूमि में भवना उस पर सरकार के और प्राईवेट व्यक्तियों के अधिकारों के प्रकार तथा सीमा की जांच और उनका अभिलेखन राजस्थान अधिनियम, १९५३ (१९५३ का राजस्थान अधिनियम संख्या १३) की धारा २६ की उप-धारा (३) के अधीन जारी की गई विज्ञापित के अनुसरण में किया जा चुका है।

अतः अब उपर्युक्त अधिनियम की धारा २६ की उप-धारा (३) के द्वारा प्रदत्त शक्तियों के प्रयोग में, राज्य सरकार एतद्वारा घोषित करती है कि कथित अधिनियम के अध्याय ४ के अनुबन्ध, पूर्वोक्त वन-भूमि और बंजर-भूमि पर लागू होंगे जो कि अतः प्रस्तावित वन कहलाया जावेगा।

राज्यपाल की आज्ञा से, s.d
शासन सचिव उपशासन सचिव
राज २-११५ (८) विज्ञापित
शासन सचिव (राज्यपाल)

भूमि का विवरण

जिला	तहसील	वर्ग-लण्ड	मोबा	अनुमानित क्षेत्रफल (एकड़ों में)	विशेष विवरण
१	२	३	४	५	६

कोठपतली	द्वारा मेन	(21-7-74)	कोठा	१२२-०३	सीमा विवरण परिलिप्त (प्र) संलग्न है
✓ मोनाबास	✓	✓	✓	१६२७-१५	
✓ फतेपुरा	✓	✓	✓	२३४-५४	
✓ रूपपुरा	✓	✓	✓	१२५५-६२	
✓ बुगलपुरा	✓	✓	✓	१५६-६६	
✓ टोरडा	✓	✓	✓	५५५-६१	
✓ द्वारा	✓	✓	✓	७१७६-७५	

१०१५७-२६ एकड़

अर्थात् ४४-२६ वर्ग किलोमीटर

म ए. ए. ए.

7045 जे.के.ए. सं. 51
रब फार्म (बी) 1/18

कार्यालय वन बन्दोवस्त/सहायक वन बन्दोवस्त अधिकारी

खसरा बन्दोवस्त बाबत वन-खण्ड 2042 518

नाम ग्राम कतहुरा तहसील महाबलपुर जिला जयपुर सम्बत् वर्ष

खसरा नम्बर	क्षेत्रफल	किस्म बनीन	खातेदार अथवा शिकमी खातेदार का नाम	विशेष विवरण
१	२	३	४	५
955	3.5 3.5	जे.के.ए.	राधाचन्द	
मे.ग	3.5	288-18 (कट)		
प्रतिनिधि सहायक वन बन्दोवस्त अधिकारी (पञ्जाब) जयपुर (हस्ताक्षर वरुण कुमार शर्मा) जयपुर (राजस्थान) 12/11/2018 12/11/2018				

पं० मु० उ० ७०४-८-६४५०,००० का०



१०११ जाऊं कां के २९
 फार्म (बी) ①

कार्यालय वन बन्दोवस्त/सहायक वन बन्दोवस्त अधिकारी, जयपुर
 खसरा बन्दोवस्त बाधत वन-खसरा रेन्ज २२/१०
 नाम ग्राम ३१ तहसील ३१ जिला ३१ संवत् वर्ष

खसरा नम्बर	क्षेत्रफल	किस्म जमीन	खातिदार अथवा शिकमी खातिदार का नाम	विशेष विवरण
१	२	३	४	५
५९५५	३३५११	३१.५.६१	२८५११	
२४४ "	२६१/३	—	—	
२४५ "	५३२१/३	—	—	
३२६ "	४६१/२	—	—	
३२७ "	५/२	—	—	
३४४ ५५	२६५११	—	—	
३४५ "	०१२३/१	—	—	
३४६ ५५	२४७११/२	—	—	
३४७ "	७३११	—	—	
३४८ "	२९१११/३	—	—	
३४९ "	२/४	३३३३३	—	
४०० "	२२११/२	—	—	
४०१ "	४३/३	—	—	
४०२ "	६७११/३	—	—	
४१० "	५८/३	—	—	
४११ "	२७१/१	३१.५.६१	—	
४१२ "	६६११/४	—	—	
४१३ "	९४०१११	—	—	
४१४ "	३९८५११/४	—	—	

३१-५-६१
 (३१-५-६१)
 ३१-५-६१

३१-५-६१

३१-५-६१


 नमस्ते (वी) (11)

कार्यालय वन वन्दोवस्त/सहायक वन वन्दोवस्त अधिकारी, कानपुर
 खसरा वन्दोवस्त बावत वन-खसरा रेन्ज 218
 नाम ग्राम खसरा तहसील खसरा जिला कानपुर सम्बत वर्ष 2018

खसरा नम्बर	क्षेत्रफल	हिस्सा बमीन	खातेदार अथवा शिकमी खातेदार का नाम	विशेष विवरण
1	2	3	4	5
898	390/1/2	गो.प.प.प.	अ.क.प.प.	
892	920/	—	—	
895	1/2	—	—	
896	992/1/2	—	—	
897	60/2	—	—	
898	1/2	—	—	
820	980/	—	—	
829	980/1/2	—	—	
822	60/2	—	—	
828	62/1/2	—	—	
828	1/2	गो.प.प.प.	—	
629	92/	गो.प.प.प.	—	
622	26/2	—	—	
1200	926/1/2	गो.प.प.प.	—	
1200	969/1/2	—	—	
1200	968/1/2	—	—	
1200	62/	—	—	
1200	300/	—	—	
1200	294/1/2	—	—	
1200	50/	—	—	

(नमस्ते वन वन्दोवस्त अधिकारी)
 (कानपुर) (218 रेन्ज)
 (कानपुर)

(नमस्ते वन वन्दोवस्त अधिकारी)
 (कानपुर)

12-12-20, 000 फीट



जमाबन्दी (प्रतिलिपि)

प्रपत्र पी-26 (सी)
(देखिये नियम 153 ए)

ग्राम का नाम :- जुगलपुरा
पटवार हल्का :- सांवलपुरातबरान
भू.अभि.नि. :- सांवलपुरा तबरान
नहसील :- श्रीमाधोपुर
जिला :- सीकर

अंतिम चौसाला आधार सम्बत :- 2074 - 2077 जमाबंदी 2074 (वर्ष 2017) से स्थायी
भूमि धारक का नाम :- राज,सरकार
क्षेत्रफल की ईकाई :- हैक्टेयर
खाता संख्या नया :- 566
खाता संख्या पुराना :- 553

काश्तकार का नाम:-

1. वन विभाग हिस्सा- पूर्ण,

खसरा संख्या	क्षेत्रफल	भूमि वर्गीकरण	कृषक द्वारा संदत्त लगान	सिंचाई के साधन	अन्तरण के क्रम में प्रमाणित नामान्तरकरण संख्या व दिनांक	टिप्पणी
1787	19.6200	बंजड़	19.6200	39.24		
1788	7.9700	बंजड़	7.9700	15.94		
1873	4.7700	बंजड़	4.7700	9.54		
1874	0.0300	बंजड़	0.0300	0.06		
1876	18.0700	बंजड़	18.0700	36.14		
1877	13.3600	बंजड़	13.3600	26.72		
कुल खसरे - 6	63.8200		63.8200	127.6400		

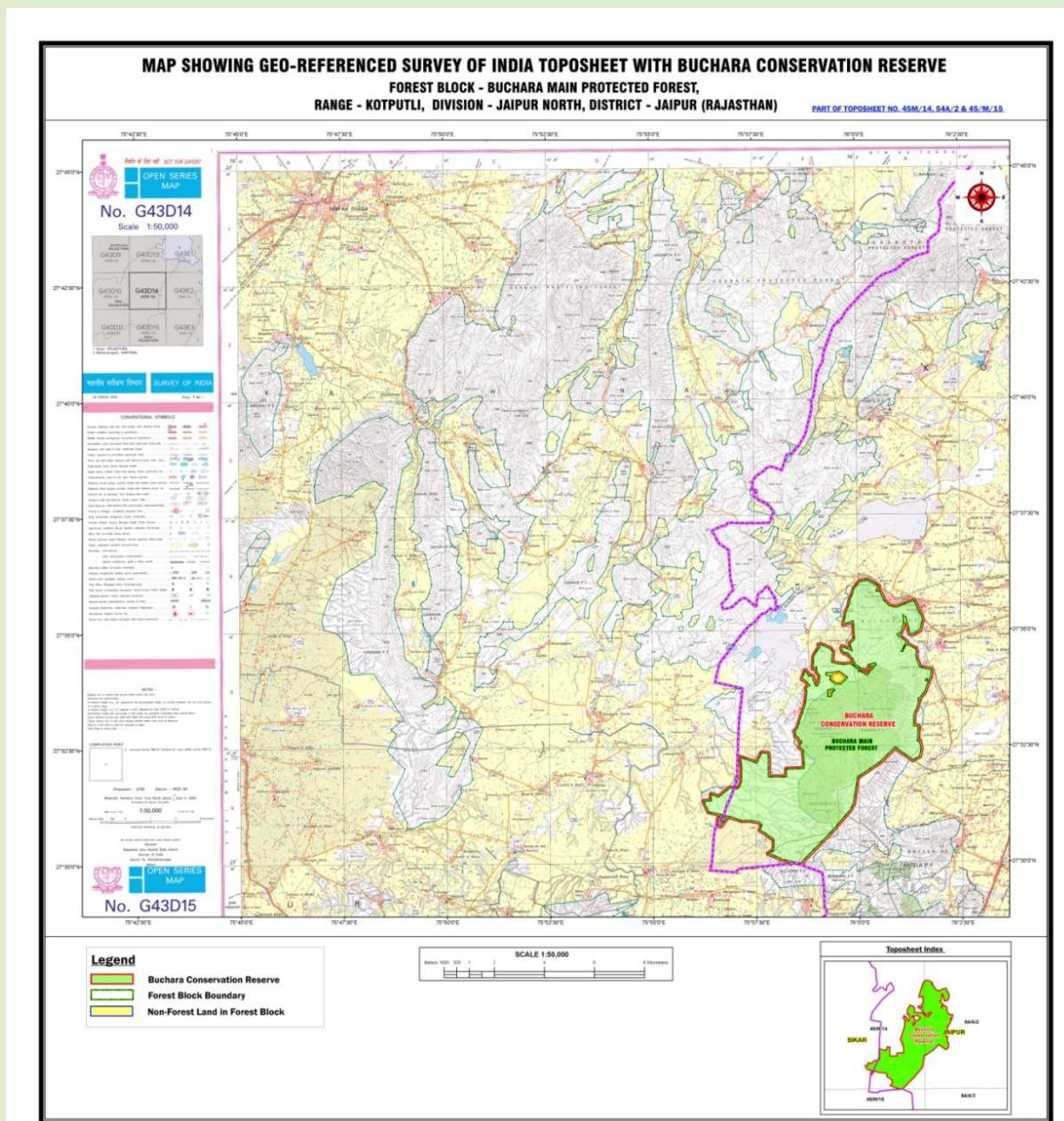
यह प्रपत्र केवल प्रार्थी की जानकारी के लिए है।

इसका उपयोग किसी भी न्यायालय में साक्षी के रूप में नहीं किया जा सकता है।

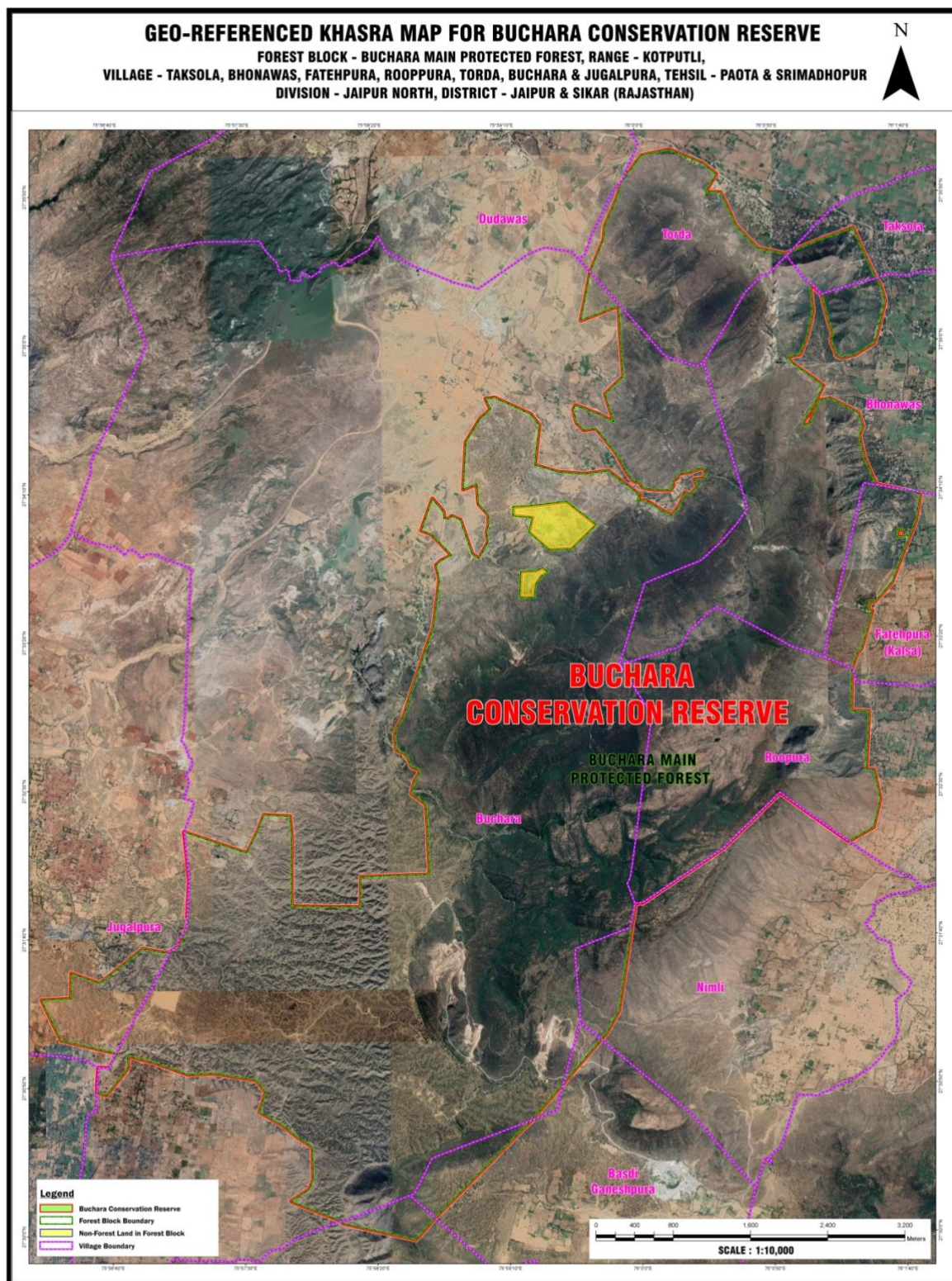
नकल जारी करने की तिथि :- 27-Jun-2024

NIC

GT Sheet for Geo-referencing



Geo-referencing of Khasra Map

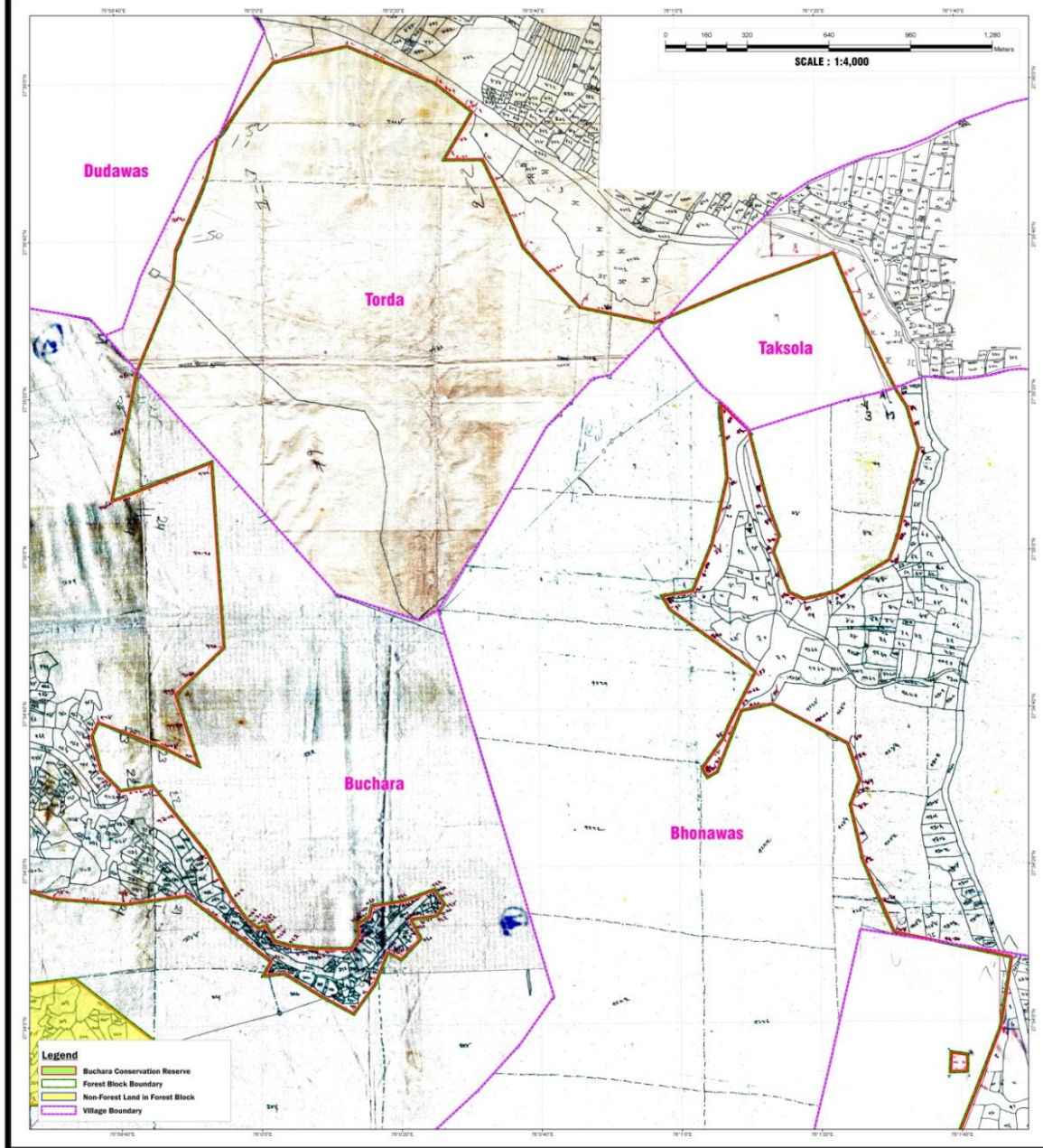


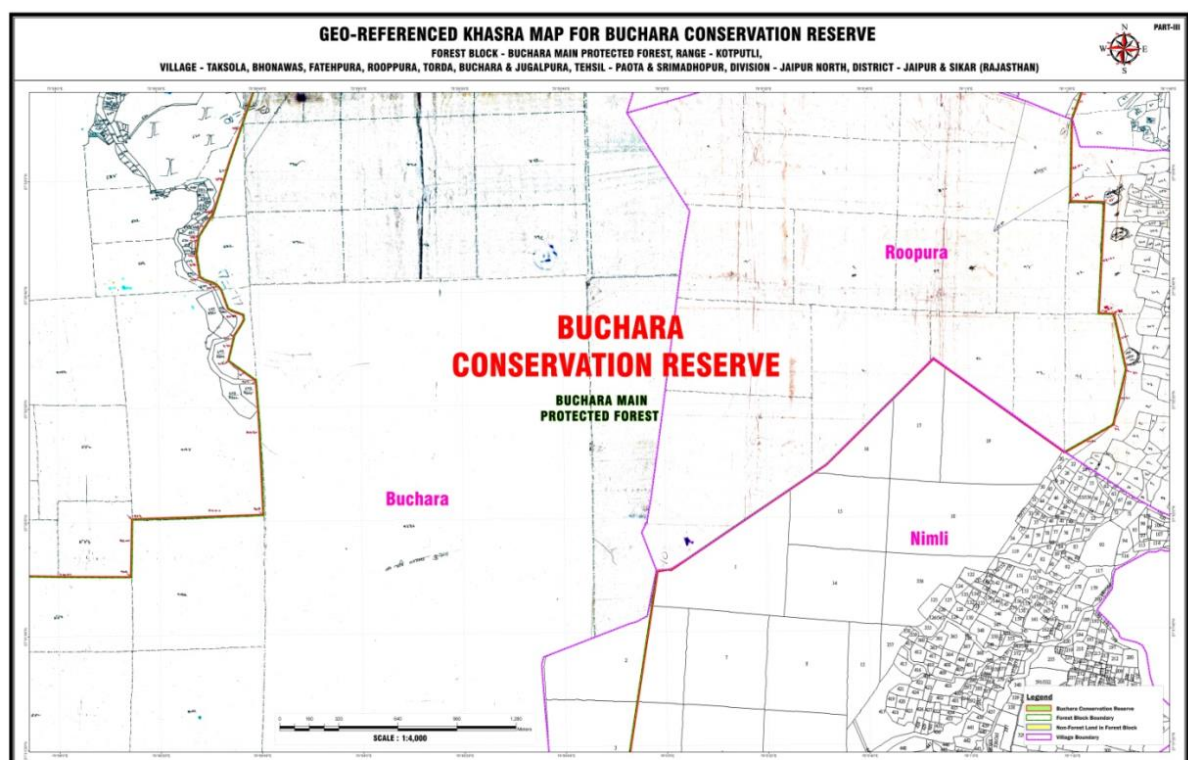
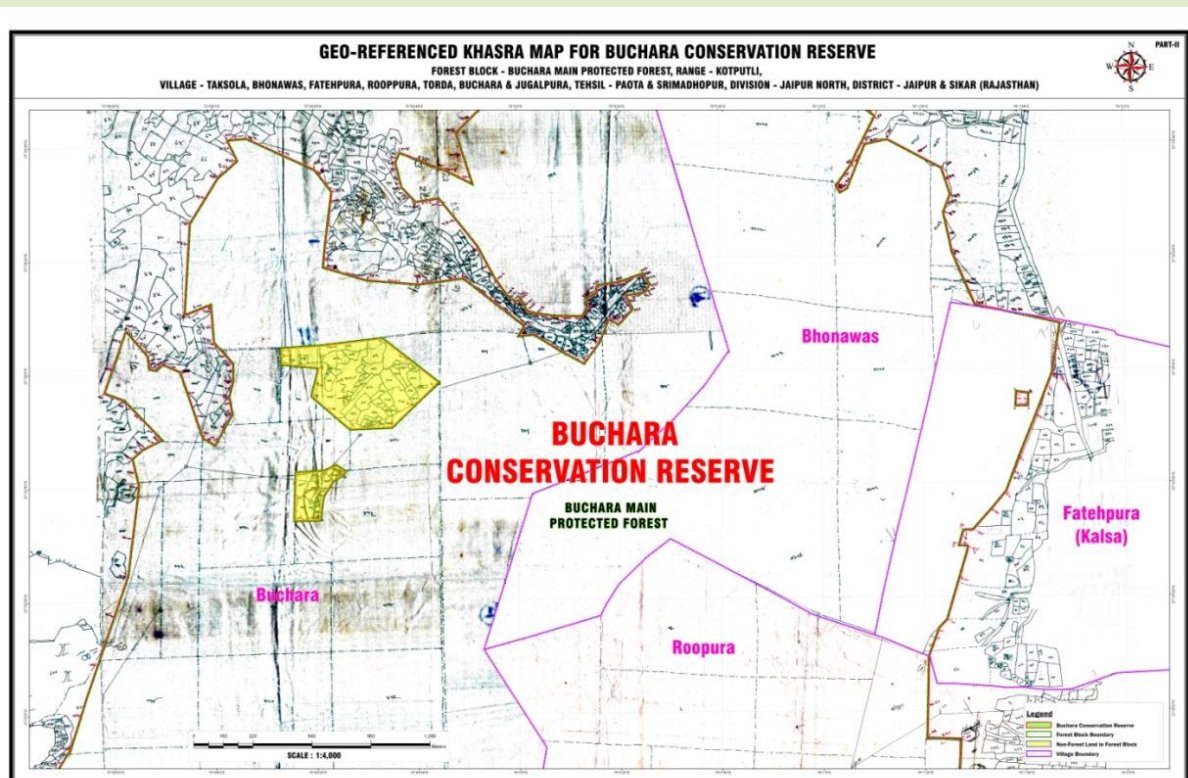
GEO-REFERENCED KHASRA MAP FOR BUCHARA CONSERVATION RESERVE

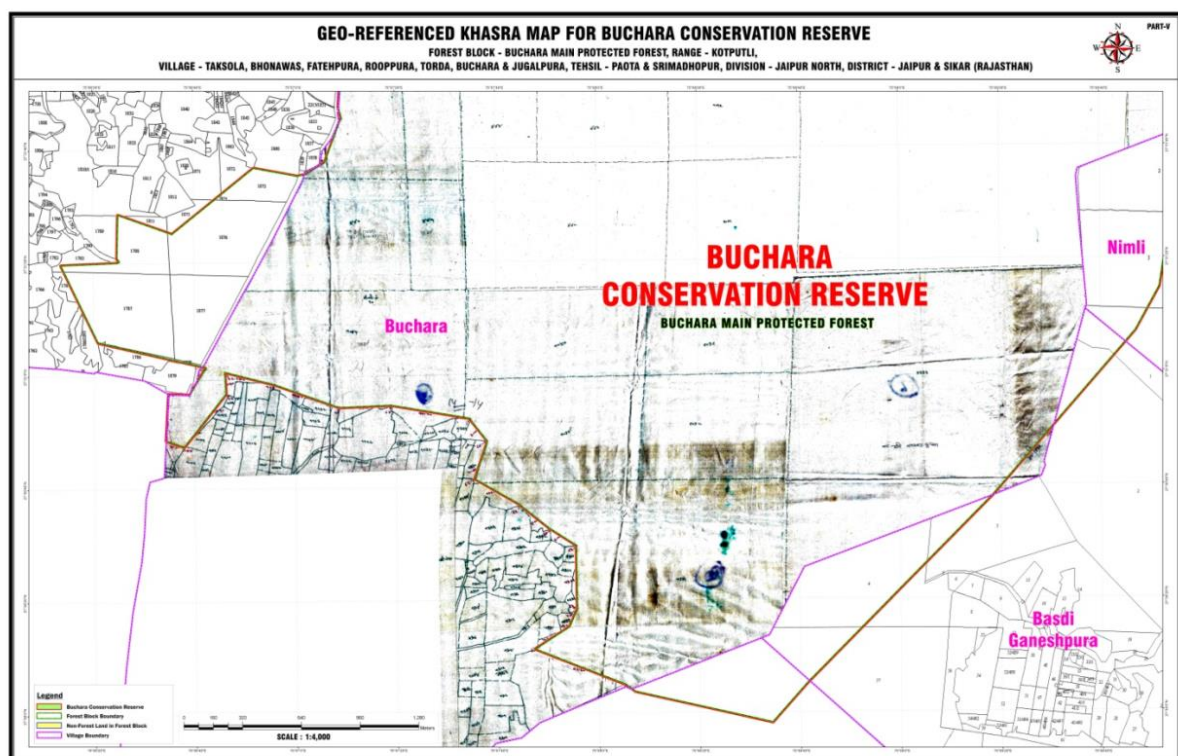
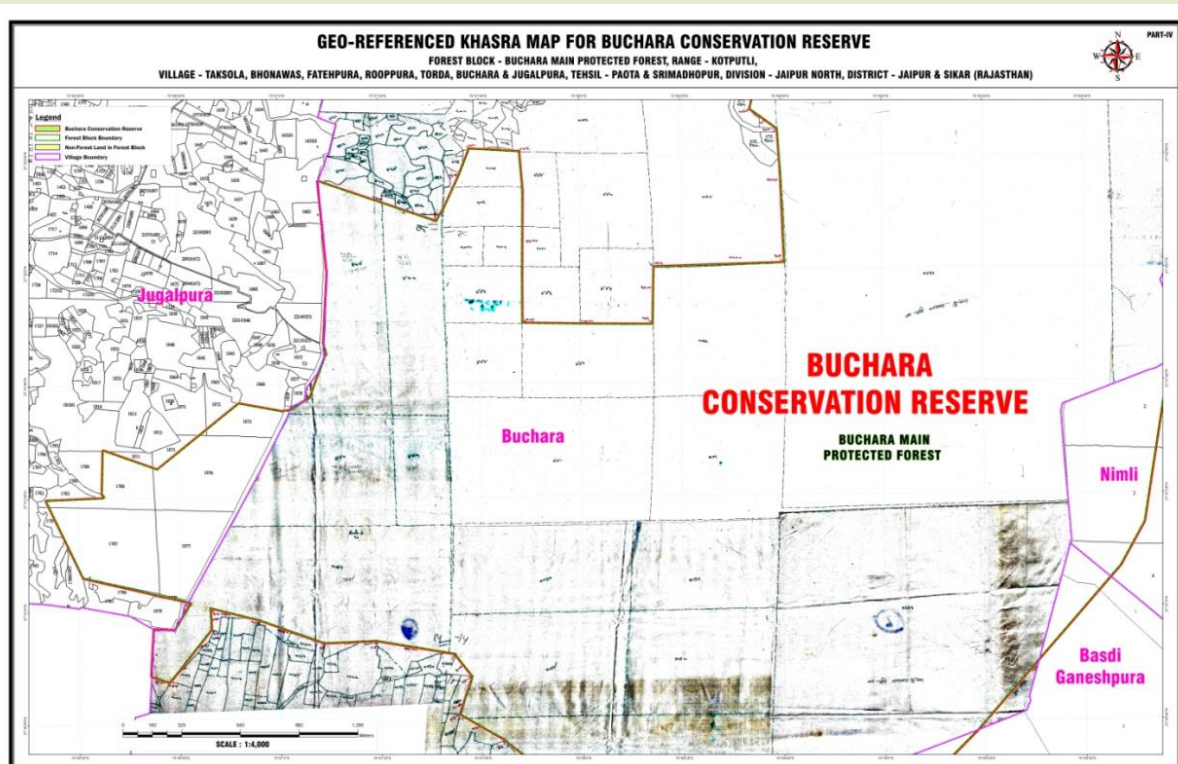
FOREST BLOCK - BUCHARA MAIN PROTECTED FOREST, RANGE - KOTPUTLI,
VILLAGE - TAKSOLA, BHONAWAS, FATEHPURA, ROOPPURA, TORDA, BUCHARA & JUGALPURA, TEHSIL - PAOTA & SRIMADHOPUR
DIVISION - JAIPUR NORTH, DISTRICT - JAIPUR & SIKAR (RAJASTHAN)



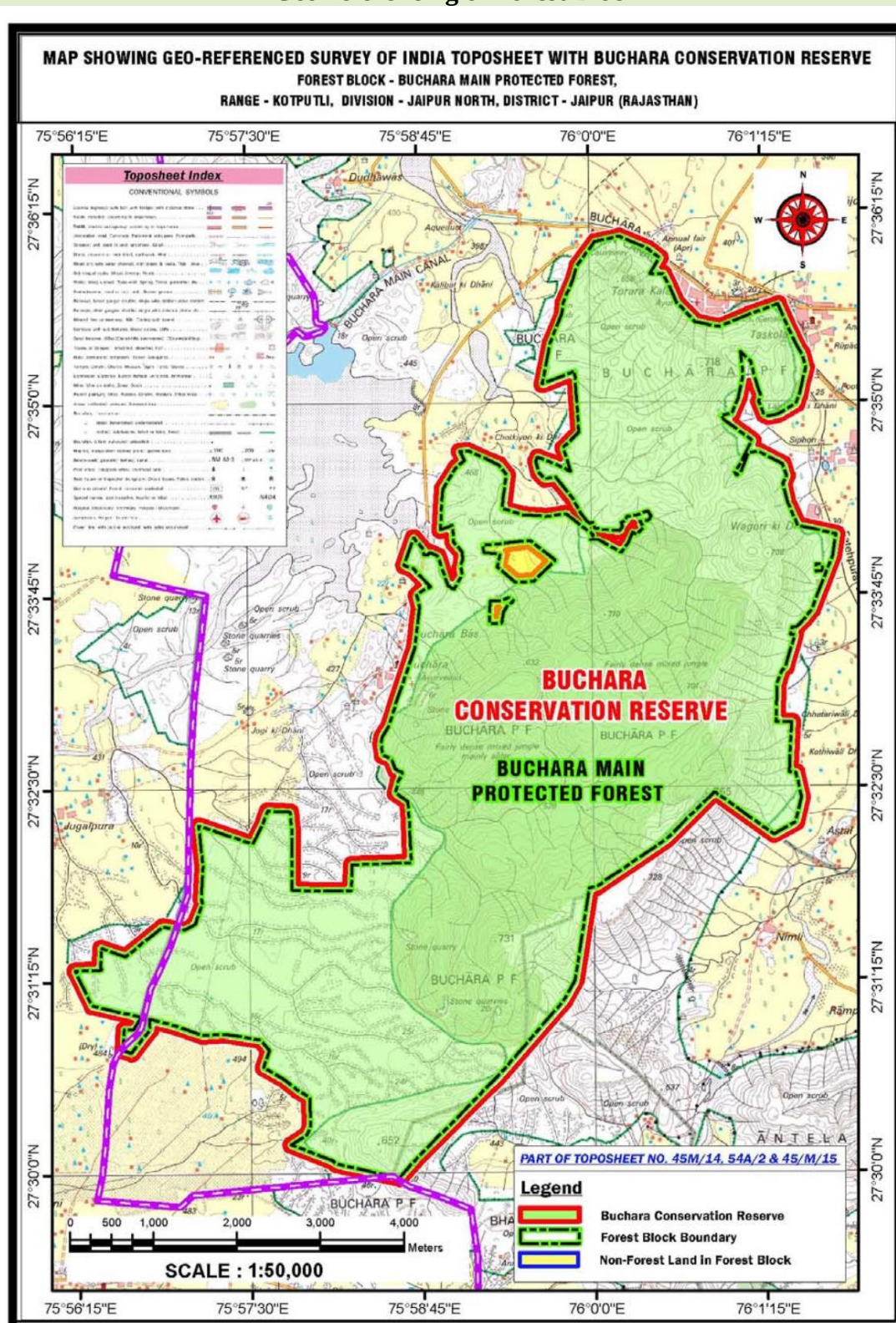
PART-I

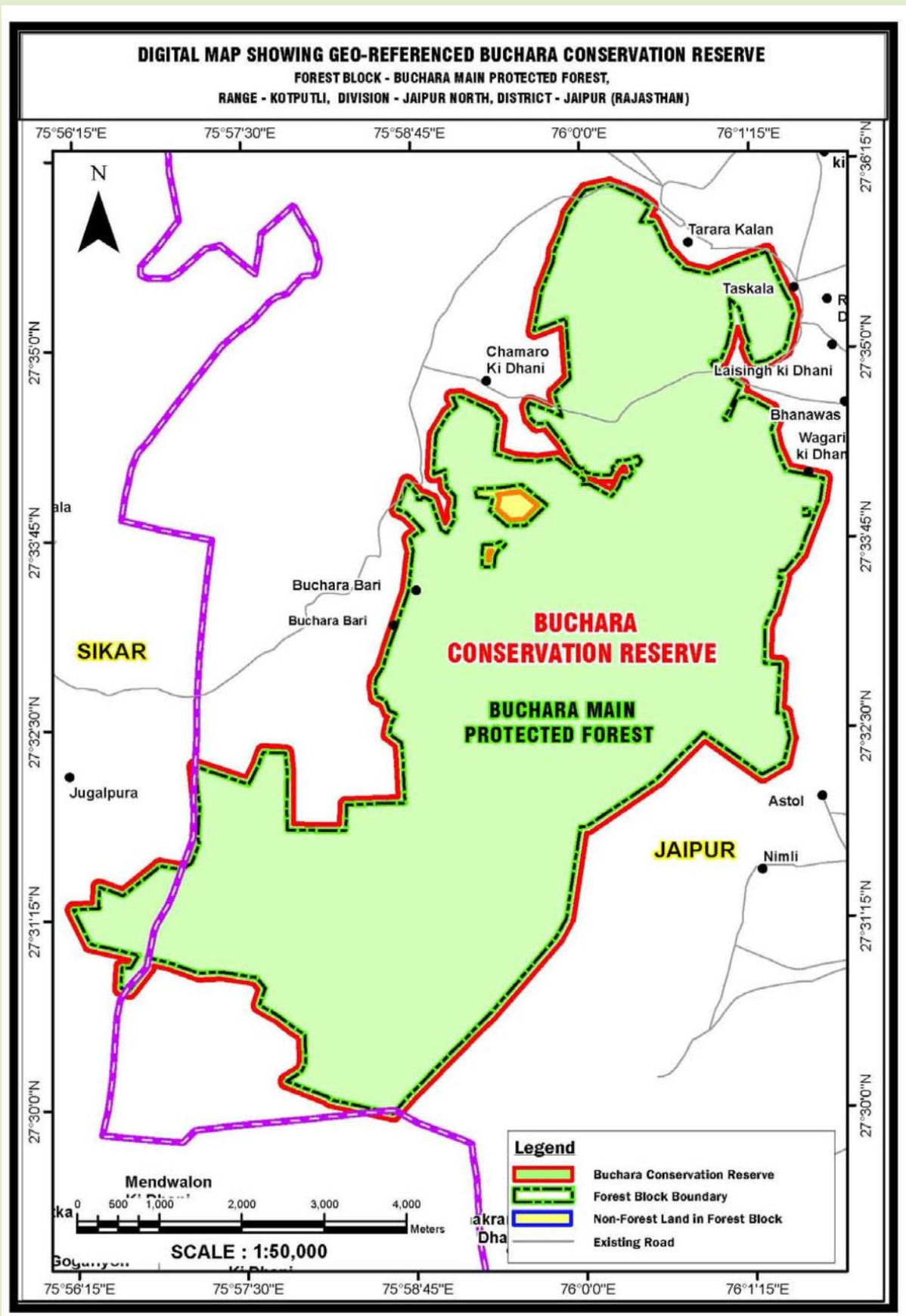






Geo-referencing of Forest Block





Proposal letter with Panchayat recommendations

- कार्यालय क्षेत्रीय वन अधिकारी कोटपुतली -

क्रमांक 1065

दिनांक 21-11-2024

निमित्त :- उप वन संरक्षक
जगपुर (उत्तर)

विषय :- बुचारा में कन्जर्वेशन रिजर्व घोषित किये जाने काका ।

संदर्भ :- श्रीमान के कार्यालय का पत्र क्रमांक एक (1) FCA/उपसं
जउ/2024-25/6291 दिनांक 03-07-2024 के क्रम में ।

महोदय,

उपरोक्त विषयान्वर्ति संश्लेषित पत्र के क्रम में निवेदन है कि वनखण्ड बुचारा में कन्जर्वेशन रिजर्व घोषित करने हेतु ऐयार कर पूर्व में भिजवाये गये कन्जर्वेशन रिजर्व प्रस्ताव में बिन्दु संख्या - 4 की पूर्ति पूरी की जाने हेतु उस्तानित भूमि को कन्जर्वेशन रिजर्व बनाया जाने हेतु सम्बन्धित सभी ग्राम पंचायतों से सहमति पत्र पाये गये हैं। जिसकी पाठना में प्रस्तावित क्षेत्र (वनखण्ड बुचारा में) से लगती ग्राम पंचायतों यथा फलेहपुराखुर्दि, टखोला, भोनावास, टेरडा-गुतरान, जुगलपुरा से बुचारा कन्जर्वेशन रिजर्व घोषित किये जाने सम्बन्धी सहमति पत्र (NOC) प्राप्त कर लिया गया है। (संलग्न-1) जबकि शेष रही एकमात्र ग्राम पंचायत बुचारा के हरपंच से उक्त वाकत सम्पर्क किये जाने पर सहमति पत्र (NOC) देने से मना कर दिया गया है। अतः रिपोर्ट श्रीमान को अग्रिम जानकारी के लिए प्रेषित है।

संलग्न :- उपर्युक्तानुसार किला - 05

भवदीय


क्षेत्रीय वन अधिकारी
कोटपुतली

Survey
3
25/11/24

राजस्थान सरकार
कार्यालय- ग्राम पंचायत फतेहपुरा खुर्द
पंचायत समिति पावटा (जयपुर) राज.

प्रेषक: सरपंच/सचिव ग्राम पंचायत फतेहपुरा खुर्द पंचायत समिति पावटा (जयपुर)	प्रेषित: माननीय श्री श्रीम वृत्त अधिकारी कोटपुतली बहरोड
--	--

क्रमांक :- ग्राम पं. फते. खु. / 2024/15

दिनांक :- 2/8/2024

आज दिनांक 7/7/2024 को ग्राम पंचायत फतेहपुरा खुर्द की बैठक में सर्वसहमति से सुझाव कन्जर्वेशन रिज़र्व घोषित करने के सम्बन्ध में प्रस्ताव लिया गया है। तथा इस सम्बन्ध में वन विभाग को पूरी मदद का आश्वासन दिया गया है।

उक्त बैठक प्रस्ताव संख्या 4 दिनांक 7/7/2024 को लिया गया।

उपरोक्त के सम्बन्ध में ग्राम पंचायत को कोई आपत्ति नहीं है।

Fateash

अधिकारी वृत्त
ग्राम पंचायत फतेहपुरा खुर्द
पंचायत समिति पावटा (जयपुर)

उत्तर) हा
के तहत व
देखने एवं
ते पर्यटकों
अ गेट/प्र
है कि इस
असुविधा,
तय करन
एक कि
आपके नि

गुजरात प्रान्त

कार्यालय:-ग्राम पंचायत दसकोला

પં.સ. પાચદા, જિલ્લા પરિષદ-જયપુર (સજ.)

प्रश्नक:-

सरपंच/ग्राम विकास अधिकारी

शान पंचायत टसकोला

प. स. पावटा (जयपुर) राज.

प्रेषित—

श्रीमान वसन्ती वन कधीकारी
वसन्ती कुली (राज.)

कलांक

दिनांक 5.8.2024

अनु दिनांक 5.8.2024 को गणतंत्र पंचायत एसकेला कावें
सर्व समिति में सुझावों के निशान निजर्व घोषित करने के
सम्बन्ध में सदस्यों की गई है तथा इस सम्बन्ध में
उन विभाग की पूरी मद का आश्वासन दिया गया है
उस क्षेत्र में निर्णय लिया गया है

सद्वत्

सरपंच

ग्राम पंचायत टसकोला
पुंस्त.पावटा (कोटपूतली-बहरोडा)

राजस्थान सरकार

कार्यालय:- ग्राम पंचायत भौनावास

पंचायत समिति पावटा (जयपुर)

प्रेषक:-

सरपंच/ग्राम विकास अधिकारी

ग्राम पंचायत भौनावास

पंचायत समिति पावटा (जयपुर)

प्रेषित:-

श्रीयुक्त

क्षेत्रीय वन अधिकारी

कोटपुतली जयपुर (उत्तर)

क्रमांक- SP-I भौनावास

दिनांक 05/08/2024

आज दिनांक 05/08/2024 को ग्राम पंचायत भौनावास की बैठक में सर्वसम्मति से छुचारा इंटरवेंशन (रिजर्व) घोषित करने के क्रम में सहमति दी गई। तथा इस सम्बन्ध में वन विभाग पूरी मदद करने का आश्वासन दिया गया।
अगली बैठक प्रस्ताव सं० दिनांक 05/08/2024 को लिया गया

रेवरी

रेवरी कैंवर

सरपंच

ग्राम पंचायत भौनावास
पंचायत समिति पावटा (जयपुर) राज

कार्यालय

ग्राम पंचायत - दोरडा गुजराज

पंचायत समिति, पावरा (जयपुर) राज.

सरपंच

महन्त श्री प्रेमनाथ जी महाराज

Mob. 9711150703, 9636809958

क्रमांक ८.२.१

दिनांक ५-८-२०२५

आज दिनांक ५-८-२०२५ को ग्राम पंचायत दोरडा गुजराज की बैठक में सर्व समिति के द्वारा नवर्षे वृक्षारोपण के सम्बन्ध में सहमति दी गई तथा इस सम्बन्ध में एक विज्ञापन को पुरी मदद का आसपास दिया गया। उक्त बैठक प्रस्ताव संख्या ०५ दिनांक ५-८-२०२५ को लिखा गया।


महन्त श्री प्रेमनाथ जी महाराज
सरपंच
ग्राम पंचायत दोरडा गुजराज
पावरा (जयपुर) राजस्थान

कार्यालय - ग्राम पंचायत जुगलपुरा

पंचायत समिति - अजीतगढ़, जिला - सीकर (राज.)

प्रसंग:-

सरपंच/ग्राम विकास अधिकारी

ग्राम पंचायत जुगलपुरा
पंचायत समिति - अजीतगढ़
जिला - सीकर (राज.)

प्रेषित:-

श्रीयुक्त

श्रीमती वन अधिकारी
काटपुरा की कच्चाई

दिनांक

12/07/2024

क्रमांक:-

आज दिनांक 5/07/2024 को ग्राम पंचायत जुगलपुरा की बैठक में सर्व सदस्य से लुचारा वन्यवन रिजर्व घोषित करने के सम्बन्ध में प्रस्ताव लिया गया है तथा इस सम्बन्ध में वन विभाग को पूरी मदद का आश्वासन दिया गया है।

उक्त बैठक प्रस्ताव संख्या

2 दिनांक 3/07/2024 को लिया गया।

उपरोक्त के सम्बन्ध में ग्राम पंचायत की बोर्ड आपत्ति नहीं है।

सुनीता देवी

सरपंच
ग्राम पंचायत जुगलपुरा
अजीतगढ़ जिला - सीकर

पंचायत :- ग्राम पंचायत, बुचारा

पंचायत समिति पावटा (जयपुर) राज.

प्रेषक:-

बिमला देवी

सरपंच

ग्राम पंचायत बुचारा

पंचायत समिति पावटा(जयपुर)

मो. 9828493395

प्रेषित:

श्रीमान

मांक-ग्रा./पं./बु./

दिनांक 23/02/2023

अनापत्ति प्रमाण पत्र

पंचायत सौरभ बैठक दिनांक 06-02-2023 के प्रस्ताव सं. 03 के पारित निर्णय की पालना में वन विभाग खातेदारी मुमी (ग्राम-बुचारा) जो कि वन विभाग के अनुसार बुचारा वन क्षेत्र के नाम ले जाना जाता है। जो यदि राजस्थान सरकार बुचारा वन क्षेत्र को सरकारी वन-क्षेत्र घोषित करती है, तो ग्राम पंचायत-बुचारा को सौरभ हेतु राज/आपत्ति नहीं है।

(उक्त अनापत्ति प्रमाण पत्र सही दस्तावेज कर्ता द्वारा पंचायत सौरभ में पारित निर्णय की पालना में जारी किया गया है।)

[Signature]
जगदीश प्रसाद गुजर
ग्राम विकास अधिकारी
ग्राम पंचायत बुचारा
प.स.पावटा जयपुर

[Signature]
बिमला
सरपंच
ग्राम पंचायत बुचारा
प.स.पावटा (जयपुर) राज.



कार्यालय:-ग्राम पंचायत टसकोला

पं.स. पावटा, जिला परिषद्-जयपुर (राज.)



प्रेषक:-
सरपंच/ग्राम विकास अधिकारी
ग्राम पंचायत टसकोला
पं.स. पावटा (जयपुर) राज.

प्रेषित:-

श्रीमान.....

क्रमांक 2022-23/ 93

दिनांक 23/02/2023



अनाथानि पुत्राणपञ्च

पंचायत कोम वेड्ड दिनांक 05/01/2023 के प्रत्यक्ष संजा - 02 में
पारित निर्मम बीकलना में वनविभाग को देवारी भूमि (शरी-2सकोला)
जो वनविभाग के अन्तर्गत हुआ वन क्षेत्र के नाम से जाना जाता है।
को यह राजस्वमान सरका हुआ वन क्षेत्र के संरक्षित वन
क्षेत्र घोषित कर दी है, जो ग्राम पंचायत - टसकोला को कोई ऐसा
/आय नहीं है।

इस अनाथानि पुत्राणपञ्च अर्थात् स्थायी वस्ती द्वारा पंचायत को
में पारित निर्मम बीकलना में आती छिछ गयी।

ग्राम विकास अधिकारी
ग्राम पंचायत टसकोला
प.स. पावटा (जयपुर)

प्रमाण
सरपंच
ग्राम पंचायत टसकोला
प.स. पावटा (जयपुर)

कार्यालय ग्राम पंचायत-टोरडा गुजरान



पंचायत समिति - पावटा जिला- जयपुर (राज.)

सरपंच/सचिव
ग्राम पंचायत टोरडा गुजरान
पंचायत समिति पावटा (जयपुर)

श्रीमान्

ड:- गा/पं./टो./ 2022-23/ 116

दिनांक 23/02/2023

अज्ञापति प्रज्ञाण पत्र



पंचायत कोरम बैठक दिनांक 2-2-2023 के प्रस्ताव संख्या 02 में
परित निर्णय की पालना में वन विभाग खातेदारी शुरू
ग्राम पंचायत टोरडा गुजरान जो कि वन विभाग के अनुसार
वन खण्ड पुनरा वन क्षेत्र के नाम से जानी जाती है यदि
इसे राजस्वान सरकार वन खण्ड पुनरा वन क्षेत्र को संतुष्टि
वन क्षेत्र घोषित करती है, तो ग्राम पंचायत टोरडा गुजरान
को कोई रतनाज/अपति नहीं है

उक्त अज्ञापति प्रज्ञाण पत्र अद्यो हस्ताक्षर
द्वारा पंचायत कोरम में परित निर्णय की पालना में जा
क्रिया गया।

Vishnu
ग्राम विकास अधिकारी
ग्राम पंचायत टोरडा गुजरान
पं.स.पावटा (जयपुर)

सहस्र
सरपंच
ग्राम पंचायत टोरडा गुजरान
पं.स.पावटा, जयपुर

कार्यालय:- ग्राम पंचायत भौनावास

पंचायत समिति पावटा (जयपुर)

संख्या:-

सरपंच/ग्राम विकास अधिकारी

ग्राम पंचायत भौनावास

पंचायत समिति पावटा (जयपुर)



प्रेषित:-

श्रीयुक्त

दिनांक 23/02/2023

अनामति प्रमाण पत्र

पंचायत कोरम बैठक दिनांक 5/01/2023 के प्रस्ताव संख्या 01 के अंतर्गत निर्णय की पालना के जो कि वन विभाग के अनुसार वन खंड वृक्षार वन क्षेत्र के नाम से जानी जाती है यदि इसके राजस्थान सरकार वन खंड वृक्षार वन क्षेत्र को संरक्षित वन क्षेत्र घोषित करती है तो ग्राम पंचायत भौनावास को कोई खर्च नहीं आएगा। आपाति नहीं है।

उक्त अनामति प्रमाण पत्र अधोक्रयस्थल के द्वारा पंचायत कोरम के अंतर्गत निर्णय की पालना के जारी किया गया।

(अशोक कुमार)
ग्राम विकास अधिकारी
ग्राम पंचायत भौनावास
पावटा (जयपुर)

रेवती कोंवर
सरपंच
ग्राम पंचायत भौनावास
पावटा (जयपुर) राज

राजस्थान सरकार

कार्यालय-ग्राम पंचायत फतेहपुरा (खुर्द)

क:-

सरपंच/सचिव
ग्राम पंचायत फतेहपुरा (खुर्द)
पंचायत समिति पावटा (जयपुर)

प्रेषित:-

माननीय

क्रांक- 139

अनापत्ति प्रमाण पत्र

दिनांक 23/2/23

पंचायत कोरम बैठक दिनांक 5/1/2023 के प्रस्ताव संख्या 03 में पारित निर्णय की पालना में जो कि वन विभाग के अनुसार वनखण्ड बुचारा वन क्षेत्र के नाम से जानी जाती है, यदि इसे राजस्थान सरकार वनखण्ड बुचारा वन क्षेत्र के संरक्षित वन क्षेत्र घोषित करती है तो ग्राम पंचायत फतेहपुरा (खुर्द) को कोई हतराज / आपत्ति नहीं है।

उक्त अनापत्ति प्रमाण पत्र अधोहस्ताक्षर कर ग्राम पंचायत कोरम में पारित निर्णय की पालना में जारी किया गया।

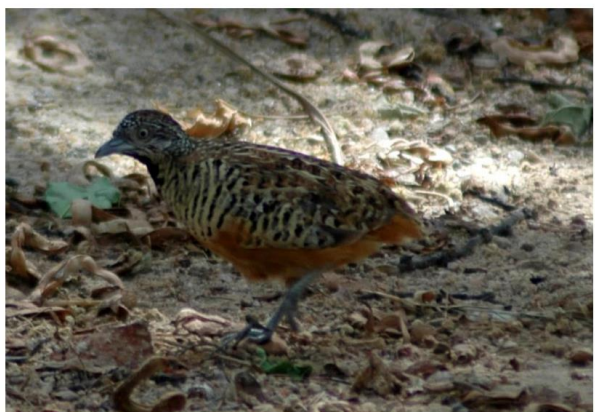
नेमीचन्द गुर्जर
ग्राम विकास अधिकारी
ग्राम पंचायत फतेहपुरा (खुर्द)
पंचायत समिति पावटा (जयपुर)

सरपंच
ग्राम पंचायत फतेहपुरा (खुर्द)
पंचायत समिति पावटा (जयपुर)

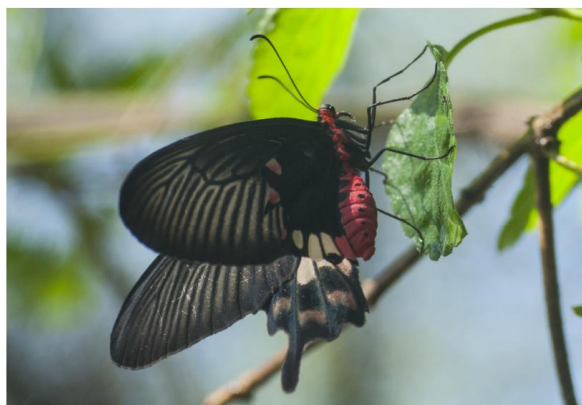
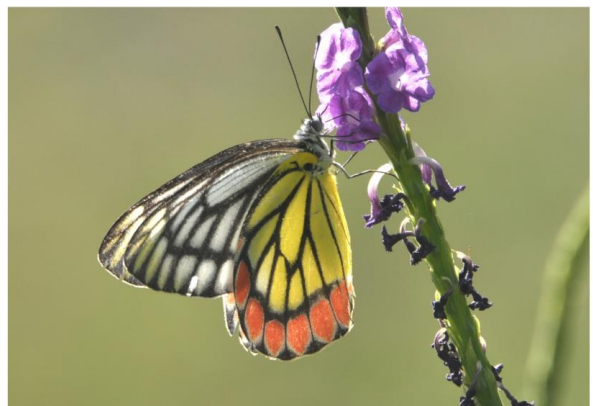
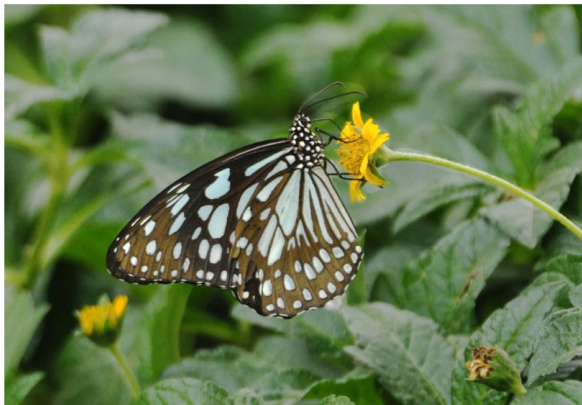
Rich Biodiversity of BMCR

Birds

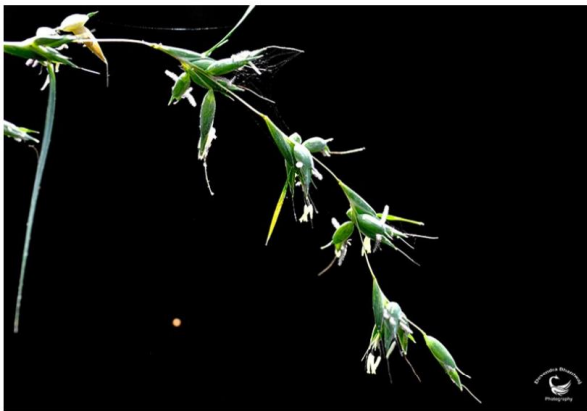




Butterflies



Flora



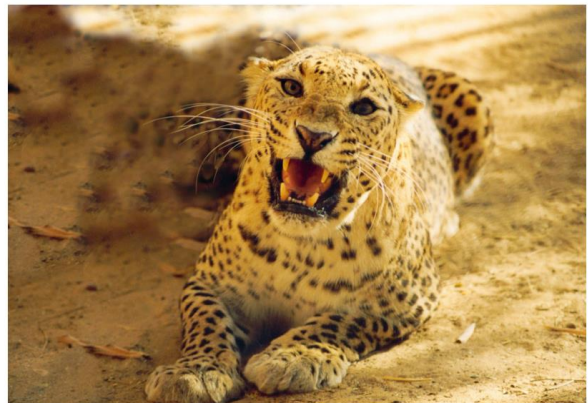


Reptiles



Wild Animals





Insects

