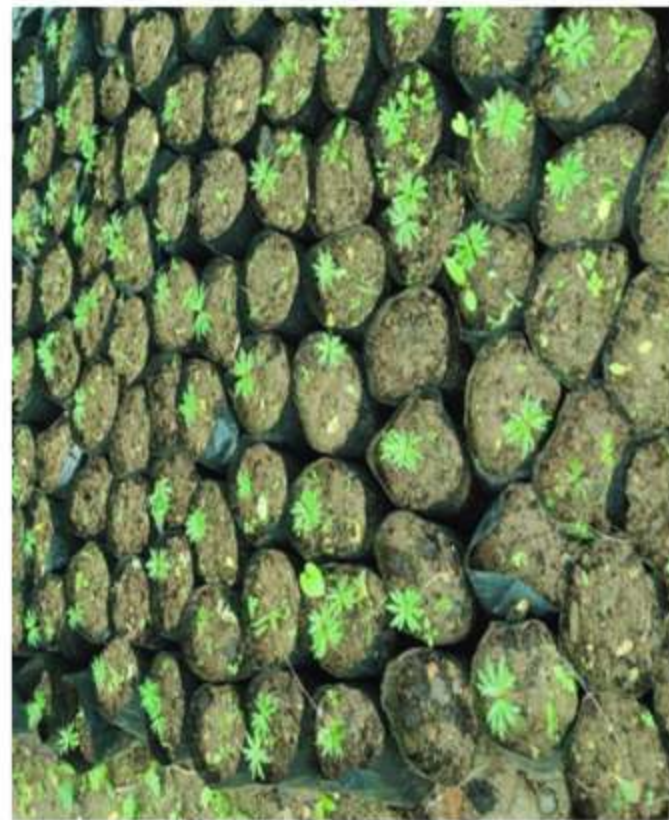


वार्षिक अनुसंधान प्रतिवेदन
ANNUAL RESEARCH REPORT
2025 - 2026



**Madhya Pradesh State Forest Research Institute
Jabalpur (M.P.)**

**मध्यप्रदेश राज्य वन अनुसंधान संस्थान
जबलपुर (म.प्र.)**



वार्षिक अनुसंधान प्रतिवेदन

ANNUAL RESEARCH REPORT

2025-2026

With best compliments from :

*Director
MPSFRI, Jabalpur*



**Madhya Pradesh State Forest Research Institute
Jabalpur (M.P)**

**मध्यप्रदेश राज्य वन अनुसंधान संस्थान
जबलपुर (म.प्र.)**

FROM THE DIRECTOR'S DESK

Research in forestry is essential for ensuring ecological sustainability, driving economic development and mitigating the effect of climate change. It provides evidence based solutions for managing forest resources and balancing conservation with demand for timber and minor forest produce. M.P. State Forest Research Institute has been consistently working towards the cause of environment, climate change, wildlife conservation and sustainable forest management.



A significant highlight of the year was the recognition of M.P. State Forest Research Institute as a Scientific and Research Organization (SIRO) by the Department of Scientific and Industrial Research, Government of India under the Scheme on Recognition of Scientific and Industrial Research Organization (SIROs), 1988.

During the year, 13 research projects were completed, 23 research projects are ongoing, 04 new project were initiated and 09 regular activities were carried out. This includes a project on conservation of different specimens of Salai (*Boswellia serrata*) funded by the Department of Biotechnology, Government of India. This is a multi-institutional project in which Jamia Millia Islamia, New Delhi and The Energy and Resources Institute, New Delhi and Madhya Pradesh State Forest Research Institute, Jabalpur are working together. During this year 14 research papers/articles were published in various journals, 07 Papers were presented in seminars/symposiums/workshops/webinar and 01 brochure was published (in two languages Hindi and Marathi) for extension of the research findings to the beneficiaries at the grassroots level. The institute also prepared the Annual Research Report 2024-2025 and hosted it on the website. The Journal of Tropical Forestry and Marketing information newsletter "Vandhan Vyapar" were published.

The guidance and support by the Honorable members of the Board of Governors and Research Advisory Committee of the institute is greatly appreciated without which our efforts could not have achieved their aim.

Madhya Pradesh State Forest Research Institute, Jabalpur has signed the Memorandum of Understanding (MoU) with many institutes including IIT Indore, Awadesh Pratap Singh University, Rewa, Malwanchal University, Indore, Sri Guru Tegh Bahadur Khalsa College, Jabalpur, Shri Ram College of Commerce and Shri Group of Institutions, Jabalpur, and Mata Gujri Mahila Mahavidhyalay, Jabalpur with the aim of promoting research work on forestry, wildlife and environment. After the signing of the MoU, both the institutes will be jointly organizing seminars, webinars, trainings and workshops and in the future scientists, research officers and professors of both the institutes will be benefitted through the sharing of knowledge and expertise. MPSFRI has also signed the MoU with Bank of Maharashtra, Jabalpur.

The Institute is thankful to Madhya Pradesh Forest Department, Madhya Pradesh Minor Forest Produce Federation, Madhya Pradesh State Biodiversity Board, IINRG ICAR, DBT Ministry of Science and Technology, Government of India, Deputy Chief Engineer (Const) Betul Nagpur Central Railway, Nagpur and Vensor Construction Company Ltd. Bhopal for providing budget to the Institute for the project works.

In order to transfer knowledge of forestry research by the institute several awareness cum exposure training for Forest Guards, Forest Rangers, School and College students were organized. Also during study tour IFS probationers visited the institute. The SFRI Participated in National Buyer-Seller meets, RCFC-CR JNKVV Jabalpur, 11th International Herbal Fair 2025, Bhopal, Mahakal Van Mela 2026, Ujjain to promote forestry research works and generate awareness in farmers, students and others.

I am also very happy with the dedicated administrative and scientific colleagues of the institute for showing team spirit and their efforts in fulfilling the tasks and achieving the targets assigned to them.

The Annual Research Report 2025-2026 will prove useful for you to get acquainted with the research activities of the State Forest Research Institute. Your suggestions are always welcome for the further development of research activities. Your valuable suggestions will be useful in taking the research works of the institute to new heights.

(Pradeep Vasudeva)
PCCF & Director

ANNUAL RESEARCH REPORT

2025-2026

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Compilation & Editing Sandeep Fellows, IFS Suraj Singh Raghuvanshi Rakesh Kumar Jain		
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Cover photo Front cover: Salai (<i>Boswellia serrate</i>) (Photo courtesy: Dr. Uday Homkar) Front back: Salai (<i>Boswellia serrate</i>) (Photo courtesy: Dr. Uday Homkar & Dr. Sachin Dixit)		
Back cover Training on Preparation of Microplans (Photo courtesy: Dr. Pratiksha Chaturvedi) Glimpses of various training and extension activities in MPSFRI, Jabalpur Photo courtesy: Suraj Singh Raghuvanshi Neetesh Soni		

This report contains semi-processed data which will be form the basis of scientific publications in future. Therefore, the data here-in may not be used without the permission of Director, MPSFRI, Jabalpur.

1. THE INSTITUTE

1.1 INTRODUCTION

The State Forest Research Institute, Jabalpur (SFRI) came into existence on 27th June, 1963 for the scientific development of forestry sector in the state of Madhya Pradesh following the recommendations of tenth Silvicultural Conference held at Dehradun in 1961. It was granted autonomy on 29th October, 1994 and was registered on 2nd August, 1995 as a society under M.P. Societies Registration Act 1973. Over the years the institute has developed as a educational, training, research and consultancy organization at the state and national level and is carrying out need based adaptive and applied research programmes for the Forest Department as well as forest dependent communities. The research programmes are focused on tropical forestry, environment, wildlife, agro forestry, biotechnology and biodiversity conservation. The vision of SFRI is to function as nodal centre of research in forestry and to provide scientific support to the state and its people on matters related to forestry, wildlife and climate change with particular emphasis on conservation, sustainable utilization and scientific management of natural resources. The institute conducts multidisciplinary forestry & wildlife research and provides technical advice to the practical problems that are encountered by the field foresters. It also disseminates research findings through training, education, seminars, workshops, participation in public fairs and consultancy services. Technical bulletins, series of pamphlets, brochures and journal namely 'Van-Dhan Vyapar' is published quarterly Vandhan Vyapar provide informatics preveling market need of NTFPs in mandis and the trade in the communities. The Journal of Tropical Forestry is also published from the institute campus by the Society for Tropical Forestry Scientists comprising of senior forest officers and scientists from the state and all over the country. The journal carries technical research papers, articles and research recommendations of forestry projects undertaken by various organizations.

The institute is located at Jabalpur in a lush green campus spread over a sprawling area of about 102 ha. The region of Jabalpur has close proximity to two major forest types, namely; sal and teak forests of Madhya Pradesh and four protected areas (PA's) namely; Kanha, Bandhavgarh, Pench and Satpuda. This unique location rendered it suitable for the setting this institute here. It houses a rich infrastructure of various research and experimental plots, research nursery, ornamental nursery, clonal nursery, medicinal and aromatic plants nursery, rose garden, seasonal garden, lac, gene-bank, mist-chambers, shade-net houses, poly houses, botanical garden, bambusetum, tissue culture, The administrative block, houses fully renovated state of art EIA, soil and seed testing laboratories, a mobile soil testing laboratory. conference halls, lecture room, museum, herbarium, auditorium, library and documentation centre and the laboratories. The hostels and officers' rest house, provides furnished accommodation and is renovated now. The institute also provides residential accommodation to its employees inside the campus.



1.2 VISION, MISSION AND GOALS

Vision

To serve as a nodal centre of research in order to provide scientific support to the state and its people on matters related to forestry, wildlife and climate change with particular emphasis on conservation, productivity, sustainable utilization and scientific management of natural resources while becoming a self sustaining center of prominence and repute in the region

Mission

To focus on various applied research programs, evaluation of implementation of various schemes, policies, and upgradation of skills of the personnel of the forest department in order to realize the vision of MPSFRI and Sustainable Development Goals (SDGs) of the sector.

Goals

To conduct study and research on:

- a. Conservation of forests, wildlife and ecosystem services
- b. Enhancement of productivity of natural forests ,plantations, and trees outside forests to meet the requirement of local communities and industries
- c. Efficient and sustainable utilization of biodiversity and forest resources.
- d. Climate change mitigation and adaptation.

1.3 Thrust Areas

A. Forestry

1. Multilocational cum provenance trials of important forestry and bamboo species in different forest divisions of Madhya Pradesh.
2. Collection and *Ex-situ* conservation of medicinal and aromatic plants in Gene-bank of SFRI, Jabalpur and their management.
3. Conservation of Boabab tree (*Adansonia digitata*) through development and extension of it's nursery, plantation and conservation techniques in Dhar District of Madhya Pradesh.
4. Molecular characterization, authentication, and multiplication of elite genotype of *Boswellia serrata* (traina & planch) - with special reference to Madhya Pradesh.
5. Periodic observations in preservation plots established in different forest types of Madhya Pradesh.
6. Preparation of quality planting material of RET and other important species.
7. Periodic measurement of sample plots laid out in different forest areas of Madhya Pradesh.
8. Study based on growth of sample plots of Teak, Sal and other species laid out in different forest areas of Madhya Pradesh.
9. Strengthening of Market Information centres for dissemination of Market Analysis of Minor Forest Produce in different agro-climatic zones of Madhya Pradesh.
10. Standardization of Propagation technology for production of quality seedling of *Boswellia serrata*, *Buchanania lanzan* and *Shorea robusta*.
11. Standardization of species specific root trainer sizes and potting mixes of five important wild medicinal tree species.
12. Identification of seed stands for establishment of Seed Production Area of Anjan, Aonla, Bija, Haldu and Khamer.
13. Identification of seed stands for establishment of Seed Production Area of Teak.
14. अनुसंधान एवं विस्तार रोपणियों का श्रेणीकरण, मूल्यांकन एवं मान्यता का आँकलन।
15. A Scientific Study on Ecological Impacts and sustainability of Aerial Firefighting in Forests of South Panna Division.
16. मध्यप्रदेश के विभिन्न कृषि-जलवायु क्षेत्रों में कृषि-वानिकी मॉडल्स की सफलता एवं असफलता के कारकों का विश्लेषण।
17. वन विभाग म.प्र. द्वारा विभिन्न योजनाओं के अंतर्गत वर्ष 2015-16 में किये गये वृक्षारोपणों का अनुश्रवण एवं मूल्यांकन।

B. Wildlife

1. Ecology of Indian Wolf (*Canis lupus pallipes*) and its conservation implication in Nauradehi Wildlife Division, Madhya Pradesh
2. Estimation of Prey Population, Abundance and Dynamics in Madhya Pradesh
3. Maintenance of Monitoring and Evaluation Facilities and Database of Predators Prey in Madhya Pradesh.
4. Study project on wild elephant habitat use and mitigation measures to minimize man-elephant conflict: With special reference to Sanjay-Bandhavgarh habitat linkage of central highlands landscape.

1.4 MAJOR RESEARCH CONTRIBUTIONS

The institute undertakes need-based forestry research programmes of the state and plays a dynamic role to address various forestry management problems. Some of the important research contributions during the year are mentioned below:

1. Genetic diversity assessment using molecular markers for elite identification of existing candidate plus trees of Teak (*Tectona grandis*) of Madhya Pradesh.
2. Model Ravine Reclamation Plan Through Plantation in Ravine Land of Morena District.
3. Comparative study of MP Teak Timber and Imported Teak Timber
4. Network Project on Conservation of Lac Insect Genetic Resources
5. Assessment of Impact of Forest Fire on Vegetation of Madhya Pradesh.
6. Assessment of Impact of Forest Fire on Invasive Plant Species of Madhya Pradesh.
7. Assessment of Impact of Forest Fire on Fauna of Madhya Pradesh
8. Criteria for laying fire lines and their effective width.
9. जंगल की आग का मृदा संरचना एवं मृदा नमी पर प्रभाव।
10. “वन गतिविधियों के मूल्यांकन में संयुक्त वन प्रबंधन समितियों (JFMCs) की भूमिका का विश्लेषण”, विशेष रूप से वन अग्नि प्रबंधन पर ध्यान केंद्रित करते हुए।
11. Estimation of Tiger Occupancy under the project titled - AITE-2022 Evaluation of Wild Animals Population and Habitat in Madhya Pradesh.
12. ग्रीन इंडिया मिशन, म.प्र. द्वारा विभिन्न वन विकास अभिकरणों में वर्ष 2019, 2020, 2021, 2022 एवं 2023 में कॉम्पोनेन्ट A के विभिन्न सब मिशन अंतर्गत वृक्षारोपण कार्य एवं कॉम्पोनेन्ट B सपोर्ट एक्टिविटी के कार्यों का अनुश्रवण मूल्यांकन एवं प्रोजेक्ट इम्पैक्ट असेसमेंट (पी.आई.ए.) किये जाने के संबंध में।

1.5 TRANSFER OF TECHNOLOGY

1. Scientific method of Lac cultivation.
2. Training on concept of Soil Moisture Conservation and its Importance in forestry.
3. सूक्ष्म प्रबंध योजना निर्माण हेतु प्रशिक्षण कार्यक्रम।
4. Training cum awareness and orientation programmes regarding forestry research for the newly recruited trainee forest rangers and forest guards and students from various universities.
5. Participation in exhibitions and fairs.
6. Hands on experiment on kusmi lac cultivation in Bichhiya village of Umaria Forest Division of Madhya Pradesh
7. Organization of hand on training programme and internship on Biotechnology for University and College students under new education policy
8. AITE-2026 Training and data submission

1.6 Environmental Impact Studies

1. Assessment of floral and faunal bio-diversities and preparation of suitable Wildlife Conservation Plan in respect to construction of Sitapur-Hanumana Micro Irrigation Project
2. Assessment of floral and faunal diversity and preparation of wildlife passage plan on the proposed construction of 3rd railway line for the section of Itarsi- Nagpur under Narmadapuram and Betul Districts

1.7 ADMINISTRATION

The administration of the State Forest Research Institute Society is governed by a Board of Governors, comprising of the following members:

1.	Honorable Minister of Forests, Forest Department, Govt. of M.P., Bhopal	Chairman
2.	PCCF & HoFF, Madhya Pradesh, Bhopal	Vice Chairman
3.	Addl. Chief Secretary / Principal Secretary, Dept. of Forests, Govt. of M.P., Bhopal	Member
4.	Addl. Chief Secretary / Principal Secretary, Dept. of Finance, Govt. of M.P., Bhopal	Member
5.	PCCF Wildlife & CWLW, M.P., Bhopal	Member
6.	Managing Director, M.P. Forest Development Corporation, Bhopal	Member
7.	Managing Director, M.P. Minor Forest Produce Federation (Trade and Development), Bhopal	Member
8.	Director General, Indian Council of Forestry Research & Education, Dehradun	Member
9.	Director, Wildlife Institute of India, Dehradun	Member
10.	PCCF (Working Plan), MP, Bhopal	Member
11.	PCCF (Research/Extension & Lok Vaniki) M.P. , Bhopal	Member
12.	PCCF (Land Management) , MP, Bhopal	Member
13.	PCCF (CAMPA), MP, Bhopal	Member
14.	Chairman, State Expert Appraisal Committee (SEAC) M.P, Bhopal	Member
15.	Director General, MP Council of Science & Technology, Bhopal	Member
16.	Emeritus Scientist	Member (Nominated by Govt. of MP)
17.	Emeritus Scientist	Member (Nominated by Govt. of MP)
18.	Director, State Forest Research Institute, Jabalpur	Member Secretary & Treasurer

1.8 RESEARCH ADVISORY COMMITTEE

The Research Advisory Committee of the institute comprising of eminent forest officers and stakeholders examines and approves the project proposals of the institute, evaluates their progress and results and also monitors the quality of research. The committee comprises of the following members:

1.	Principal Chief Conservator of Forests & HoFF, M.P.	Chairman
2.	PCCF Wildlife & CWLW, M.P.	Member
3.	Managing Director, MP MFP Federation, Bhopal	Member
4.	Managing Director, MPRVVN, Bhopal	Member
5.	PCCF (Research and Training), M.P.	Member
6.	PCCF (Production), M.P.	Member
7.	PCCF (Research / Extension and Lokvaniki), M.P.	Member
8.	PCCF (Working Plan), M.P.	Member
9.	APCCF (JFM & FDA), M.P.	Member
10.	APCCF (Research / Extension and Lokvaniki), M.P.	Member
11.	APCCF (Development), M.P.	Member

12.	Director General, MP Council of Science & Technology, Bhopal	Member
13.	Director, TFRI, Jabalpur	Member
14.	Director (Research), Jawahar Lal Nehru Krishi Vishwavidalaya, Jabalpur	Member
15.	CCF (Territorial nominated by PCCF & HoFF), M.P.	Member
16.	Director, Horticulture, Govt.of M.P.	Member
17.	Director, Veterinary and Animal Husbandry, JNKVV, Jabalpur	Member
18.	Farmer's representative	Member
19.	Representative of NGO	Member
20.	Director, SFRI, Jabalpur.	Member Secretary

1.8 ORGANIZATION

S.No	Forestry Professionals	Sanctioned	Working
1	Director (PCCF/APCCF)	1	1
2	Addl. Director (APCCF/CCF)	1	0
3	Deputy Director (CF/Dy.CF)	2	1
4	Assistant Director (ACF)	2	0
5	Forest Ranger	3	1
6	Dy. Ranger	1	4
7	Forester	1	2
8	Forest Guard	15	10
	Total	26	19
	Scientist		
1	Forest Ecologist	1	0
2	Forest Geneticist (Scientist-E)	1	0
3	Seed Specialist (Scientist-E)	1	0
4	Tree Improvement Specialist	1	0
5	Forest Botanist	1	0
6	Biodiversity Scientist	1	0
7	Marketing Specialist	1	0
8	Wildlife (Scientist - B)	5	1
	Total	12	1
	Technical		
1	Statistical Assistant (Sr. Research Officer)	1	1
2	Technical Assistant (Social–economics), (Sr. Research Officer)	3	1
	Technical Assistant (Contingency)		2
3	Technical Assistant (Forestry Research), (Sr. Research Officer)	9	5
	Technical Assistant		2
4	Technical Assistant (Consultancy/Extension), (Sr. Research Officer)	1	0
5	Technical Assistant (Library), (Sr. Research Officer)	1	1
6	Technical Assistant (Documentation) (Sr. Research Officer)	1	1
7	Technical Assistant (Computer) (Sr. Research Officer)	1	1
	Lab Technician, (Sr. Research Officer)	6	1
8	Lab Technician		1
9	Lab Incharge, (Sr. Research Officer)	3	1

S.No	Forestry Professionals	Sanctioned	Working
10	Ledger Assistant (Research Officer)	3	1
	Ledger Assistant		0
11	Herbarium Assistant (Contingency)	1	1
12	Lab Assistant	3	0
13	Field Assistant	3	1
	Total	36	20
	Non-Technical		
1	Head Clerk	1	0
2	Accountant	2	2
3	Steno – II	2	0
4	Steno – III	2	0
5	Assistant Grade – II	2	1
6	Assistant Grade – III	4	1
7	Driver	6	1
8	Daftari	1	0
9	Peon/ Orderly	10	0
10	Khalashi	1	0
11	Chowkidar	4	0
12	Mali	4	0
13	Dak Runner	3	0
14	Sweeper	2	0
	Total	44	5

1.9 WORKING DEPARTMENTS, RESEARCH DIVISIONS AND FACILITATION CELLS OF THE INSTITUTE

Forestry research in the institute is categorized in two departments and facilitations cells which are as follows:

A. Forestry Department

A1. Biotechnology Research Division

Research Disciplines

1. Forest Genetics & Tree Improvement
2. Biotechnology
3. Phytochemistry
4. Tissue culture

A2. Conservation Research Division

Research Disciplines

1. Biodiversity Conservation
2. Forest Botany
3. Ethnobotany
4. Forest Ecology & Ecosystem Services

A3. Forest Management Research Division

Research Disciplines

1. Silviculture
2. Soil Science
3. Forest Protection
4. Forest Mensuration
5. Statistics
6. Joint Forest Management

A4. Forest Utilization Research Division

Research Disciplines

1. Timber & Fuel-wood Utilization
2. Medicinal & Aromatic Plants
3. Bamboos
4. Other NWFPs
5. Forest-based Livelihoods
6. Market Information System

A5. Productivity Research Division

Research Disciplines

1. Plant Propagation
2. Seed Technology & Certification

A6. Social Economics Research Division

Research Disciplines

1. Sociological Studies
2. Forest Economics
3. Agroforestry
4. Policy Research

B. Wildlife Department

B1. Animal Ecology Research Division

Research Disciplines

1. Animal Ecology
2. Conservation Biology
3. PHVA studies
4. Re-introduction, Re-wilding and Translocation

B2. Habitat Ecology Research Division

Research Disciplines

1. Habitat Management
2. Ecosystem services valuation of PAs
3. Ecological studies of terrestrial and aquatic animals
4. Ecological studies post relocation of villages

B3. Wildlife Management Research Division

Research Disciplines

1. PA Network
2. Wildlife Management
3. Man-Animal Interactions
4. Landscape Level Planning and Management
5. Corridor Management

B4. Ecotourism and Conservation Education Research Division

Research Disciplines

1. Ecotourism
2. Attended Interpretation
3. Unattended Interpretation

C. Facilitation Cells

1. Environmental Impact Assessment
2. Climate Change, Climate Justice, REDD+
3. Extension, Training and Consultancies
4. Monitoring and Evaluation
5. GIS and Remote Sensing
6. Computer and Information Technology
7. Library
8. Documentation
9. Procurement
10. Common Research Facility

2. RESEARCH ACTIVITIES

Abstract of Research Activities

2025-2026

S. N.	Name of the Research Division	No. of Completed Projects	No. of On-going Projects	Newly Initiated Projects	No. of Regular Activities	Total
1	2	3	4	5	6	7
	Forestry Department					
1	Biotechnology	3	2	-	3	8
2	Conservation	-	6	-	1	7
3	Forest Management	1	3	-	2	6
4	Forest Utilization	1	-	-	-	1
5	Productivity	1	2	3	1	7
6	Social Economics	1	2	-	-	3
	Wildlife Department					
1	Animal Ecology	1	5	1	1	8
2	Habitat Ecology	3	-	-	1	4
3	Wildlife Management	1	2	-	-	3
4	Ecotourism and Conservation Education	-	-	-	-	-
	Facilitation Cells					
1	Environmental Impact Assessment (EIA)	-	-	-	-	-
2	Climate Change, Climate Justice, REDD+	-	-	-	-	-
3	Extension, Training & Consultancies	-	-	-	-	-
4	Monitoring & Evaluation	1	1	-	-	2
5	GIS and Remote Sensing	-	-	-	-	-
6	Computer & IT	-	-	-	-	-
7	Library	-	-	-	-	-
8	Documentation	-	-	-	-	-
9	Procurement	-	-	-	-	-
10	Common Research Facility	-	-	-	-	-
	TOTAL	13	23	4	9	49

2.1 FORESTRY DEPARTMENT

2.1.1 BIOTECHNOLOGY RESEARCH DIVISION

Mandate

1. Investigations on genetic variation, inheritance pattern and reproductive biology.
2. Exploring correlation between intra-specific variability and habitat characteristics.
3. Selection, testing and development of clones/varieties of commercially important tree species for desired traits.
4. Developing breeding and production populations through provenance, progeny and clonal trials.
5. Field verification of already identified 'candidate plus trees' and conservation of eligible ones to 'plus trees' after their genetic evaluation.
6. Selection of new candidate plus trees of economically important tree species having desired traits, such as faster growth, better form, drought resistance, disease resistance, insect resistance, NTFP production, etc. on the basis of intra-specific genetic variability.
7. Development of microsatellite markers for important tree species.
8. Molecular marker based genetic diversity analysis of populations of important forestry species.
9. Full genome sequencing of native tree species.
10. Development of improved varieties with desired quantitative (growth) and qualitative (disease, insect, pest and drought resistance) traits through genetic engineering.
11. Wood forensic studies.
12. Development of bio-informatic tools and data base for priority species.
13. Germplasm evaluation of medicinal plants for active ingredients.
14. Study of seasonal variations in the content of secondary metabolites.
15. Determination of differences, if any, in the percentages of secondary metabolites present in medicinal plant products of wild and cultivated origin.
16. Phytochemical analysis of forest foods-edible fruits, tubers, etc. for their nutritional values.
17. Phytochemical analysis of forestry plants for their potential utilization in preparation of bio-pesticides and bio-fertilizers.
18. Bio-prospecting for useful organic compounds in micro-organisms, plants and fungi that grow in extreme environments.
19. Evolution/standardization of cost effective micro-propagation (tissue culture) protocols for forestry species whose propagation from seeds or macropropagation is difficult due to scarce availability of mother plants for collection of seeds/cuttings or whose genetically superior candidate 'plus' trees/'plus' plants/'plus' clumps have been identified to produce 'elite' planting material.

List of project titles with names of funding agency

Completed Projects :- 03

1. Genetic diversity assessment using molecular markers for elite identification of existing candidate plus trees of Teak (*Tectona grandis*) of Madhya Pradesh.
Funding Agency: PCCF (Research, Extension & Lok Vaniki) M.P., Bhopal
2. Model Ravine Reclamation Plan Through Plantation in Ravine Land of Morena District.
Funding Agency: PCCF, Green India Mission, Bhopal.
3. Criteria for laying fire lines and their effective width.
Funding Agency: APCCF (Protection), Madhya Pradesh, Bhopal

On-going Projects :- 02

1. Multilocal cum provenance trials of important forestry and bamboo species in different forest divisions of Madhya Pradesh.
Funding Agency: PCCF (Research, Extension & Lok Vaniki) M.P., Bhopal
2. Organization of Hands on Training Programme and Internship on Biotechnology for University and College Students under New Education Policy.
Funding Agency: Internal : SFRI, Jabalpur

Regular Activities :- 03

1. Provenance trial of *Litsea* (*Litsea glutinosa*).
2. Maintenance of clonal germplasm of *Madhuca latifolia* (Mahua).
3. Maintenance and enrichment of Bamboosetum.

Project Summary:-

Completed Projects

1. **Title of the Project:- Genetic diversity assessment using molecular markers for elite identification of existing candidate plus trees of Teak (*Tectona grandis*) of Madhya Pradesh.**

Why this Project:-

The assessment of genetic diversity within and between populations is routinely performed at the molecular level using various laboratory-based techniques such as allozyme or DNA analysis, which measure levels of variation directly.

Genetic diversity may be also gauged using morphological and biochemical characterization and evaluation:

- (i) Morphological characterization does not require expensive technology but large tracts of land are often required for these experiments, making it possibly more expensive than molecular assessment. These traits are often susceptible to phenotypic plasticity; conversely, this allows assessment of diversity in the presence of environmental variation.
- (ii) Biochemical analysis is based on the separation of proteins into specific banding patterns. It is a fast method which requires only small amounts of biological material. However, only a limited number of enzymes are available and thus, the resolution of diversity is limited.
- (iii) Molecular analyses comprise a large variety of DNA molecular markers, which can be employed for analysis of variation. Different markers have different genetic qualities (they can be dominant or co-dominant, can amplify anonymous or characterized loci, can contain expressed or non-expressed sequences, etc.).

In particular, the newer methods incorporate modifications, thereby increasing the sensitivity and resolution in detecting genetic discontinuity and distinctiveness. The advanced marker techniques also utilize newer classes of DNA elements such as retrotransposons, mitochondrial and chloroplast based microsatellites, allowing increased genome coverage. Techniques such as RAPD and AFLP are also being applied to cDNA-based templates (i.e., sequences of complementary DNA obtained by mRNA retrotranscription) to study patterns of gene expression and uncover the genetic basis of biological responses.

Molecular Assessment of Genetic Diversity are usually based on assessing the diversity of an individual using either allozymes (i.e., variant forms of an enzyme that are coded for by different alleles at the same locus) or molecular markers, which tend to be selectively neutral.

Genetic variability within a population can be assessed through:

1. The number (and percentage) of polymorphic genes in the population.
2. The number of alleles for each polymorphic gene.
3. The proportion of heterozygous loci per individual.

Protein methods, such as allozyme electrophoresis and molecular methods, such as DNA analysis, directly measure genetic variation, giving a clear indication of the levels of genetic variation present in a species or population without direct interference from environmental factors.

Madhya Pradesh forests richly endowed with large number of forestry species among them *Tectona grandis* (teak) and *Shorea robusta* (Sal) are the predominant species. State Forest Research Institute has already been identified 305 candidate plus trees of *Tectona grandis* in different forest divisions of Madhya Pradesh. The identified plus trees are the major source of genetic tree improvement programme of this species. Under keeping above consideration the use and application of molecular tools in this project, after collection of data the genetic diversity will be assessed among the selected candidate plus trees. After analysis, highly genetically diversified CPTs will be marked as elite group. After this analysis, their morphological and genetically traits will be compared to justify their genetic and phenotypic relationship.

Research Methodology:-

1 Collection of leaf samples: The leaf samples of old and newly selected candidate plus trees will be collected from identified candidate plus trees of teak situated in different forest divisions of Madhya Pradesh along with their GPS location.

2 Methods of DNA extraction using CTAB (Cetyl tri-methyl ammonium bromide) protocol:

The DNA extraction will be performed using 3.5% CTAB protocol. Approximately 50mg of tissue (fine powdered after LN-2 treatment) will be mixed with pre-warmed (65°C) CTAB DNA extraction buffer. Pre-heated water-bath for two and half hours. The samples will then be subjected for centrifugation at room temperature (27°C) for 15 min at 13,000 rpm. Then, the supernatant will be treated with phenol:chloroform-isoamyl alcohol (25:24:1 standard, Hi-Media) for about 10 min, followed by centrifugation at 13,000 rpm for 15 min at room temperature (27°C). Then equal volume of C:I (Chloroform:Isoamylalcohol 24:1, make Ambresco) will be added and followed by centrifugation at 12,000 rpm for 12 min at room temperature (27°C). To obtain pure DNA RNase (Machery-Nagel) (20mg/ml) treatment will be given to the isolated samples. Allowed for incubation at 37°C for 40 min in Thermomixer. The supernatant then transferred into fresh centrifuge tube and mixed with pre-chilled 2-Isopropanol (make J.T.Baker) and incubated for 2 hrs at -40°C (Deep freezer) and then be centrifuged at 13,000 rpm for 15 min at 4°C. The supernatant will be discarded and the transparent DNA pellet will be retained. The DNA pellet will be washed twice with 70% ethanol and centrifuged at 10,000 rpm for 5 min at 4°C to remove any remaining salts in tubes. Afterwards, the pellet will be allowed to dry at room temperature (27°C). After drying, the DNA pellet will be re-suspended in 30 - 50 µL double distilled molecular grade water. Dissolved DNA pellet will then be stored at -40°C in deep-freezer for long term storage and further analysis such as PCR amplification etc.

3. Microsatellite amplification for genetic diversity study

- i. PCR amplifications will perform in 10µl reaction mixture, consisting of approximately 20 ng of template DNA, 50mM KCl, 20mM Tris-HCl (pH 8.0), 1.5 mM MgCl₂, 0.4 µM of each primer, 0.2 mM of each dNTP, and Taq DNA polymerase (Promega).
- ii. The reaction mixture will subject to amplification using Real Time PCR System (Eppendorf). For an initial denaturing step of 94°C for 3 min, 40 cycles of 94°C for 1 min, 50°C to 58°C annealing temperature for 30s, 72°C for 30 second, followed by 72°C for 7 min. The PCR products will be separate on agarose gel electrophoresis.

4. Scoring of DNA banding pattern for assessing genetic diversity

Scoring of DNA banding patterns obtained through genetic diversity analysis will be done using bioinformatics tool named UPGMA (Unweighted Pair Group Method with Arithmetic Mean) software.

5. Selection of elite group of candidate plus trees-

After collection of data the genetic diversity will be assessed among the selected candidate plus trees. After analysis, highly genetically diversified CPTs will be marked as elite group.

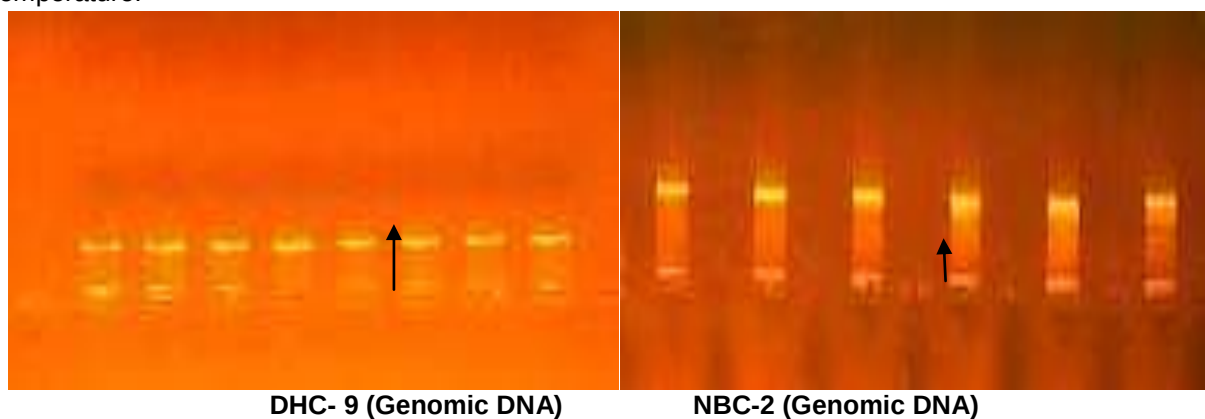
Objective of Research:-

- To isolate DNA from leaves of selected CPTs for amplification of genomic DNA.
- To assess the Genetic diversity between the identified CPTs for the identification of genetically distinct group of CPTs as elite material.
- To compare phenotypic and genotypic characters for phylo-genetic study.
- To assess the Genetic diversity within and between the CPTs.
- To identify genetically distinct group of CPTs as elite genotypes.

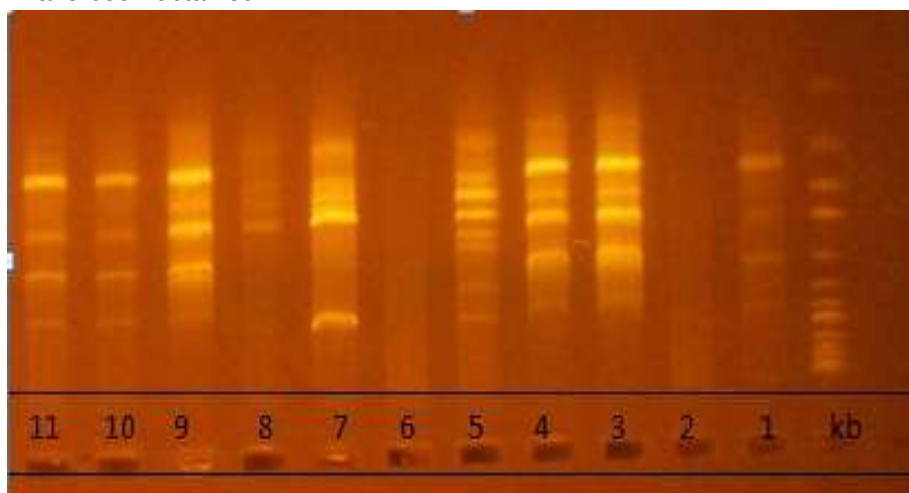
Activities Undertaken –

70 Candidate Plus Trees have been selected 5 old and 65 new CPTs have been identified from Seoni, Chhindwara, Narmadapuram (Bori range), Dewas, Harda, Damoh, Balaghat, Khandwa and Sehore forest divisions. The leaf samples were collected from identified CPTs and stored in deep fridge at -20°C Temperature. Extraction of DNA from collected leaf sample was performed with standard

C-TAB protocol. The Isolated DNA of 70 CPTs was properly preserved in deep fridge at -20°C Temperature.



The isolated DNA of 70 CPTs were amplified with the help of PCR Machine and the gel images of amplified DNA have been obtained.



Cost of the Project:- Rs. 27.60 lakh

Outcome of Research

- 1 Candidate Plus Trees are identified in different forest divisions of Madhya Pradesh which were selected under genetic tree improvement programme by State Forest Research Institute Jabalpur. These candidate plus trees were selected on the basis of their phenotypic traits.
- 2 Normally, long rotation forestry crops such as teak selection of elite material is quite difficult and time taking. This may be possible through their progeny testing which requires number of years to evaluate their field performance and on the basis of progeny performance the CPTs are converted into plus trees.
- 3 Today biotechnological interventions such as molecular markers are available which can be used for assessing genetic diversity within and between the populations. This will help for the identification of genetically distinct genotype, populations or group of populations for elite selection within a short span of time.
- 4 In the proposed project after analysis of genomic data of candidate plus trees of teak genetically distinct PT or group of PTs will be identified as a source of elite group.

2. Title of the Project:- Model Ravine Reclamation Plan Through Plantation in Ravine Land of Morena District.

Why this Project:-

Land and water resources are core constituents of terrestrial life support systems. Ever increasing biotic pressure on these most fundamental natural resources in the Indian sub-continent poses a very serious threat to regional socio-ecological balance. The conservation and restoration of

natural resources are inevitable to provide sustainable life support system and environmental security. Ravines are the worst form of water induced erosion which has severe on-site and off-site implications.

Ravine lands, characterized by deeply eroded gullies and unstable soil structures represent a serious form of land degradation that reduces productive capacity, biodiversity, and groundwater recharge. These area are prone to soil erosion, sedimentation in downstream water bodies, and desertification if left untreated. These ravines are typically found due to the process of soil erosion, primarily caused by water action in the area with vulnerable geomorphology and sparse vegetative cover (Sharda et.al., 2006)

Morena district, part of the Chambal ravine region in Madhya Pradesh, faces severe land degradation due to gully erosion and deforestation. These ravine reduce productive land, threaten biodiversity, and degrade socio-economic resilience of rural communities. This proposal aims to develop a plantation-driven reclamation strategy to stabilize soil, arrest gully expansion, restore ecological health, and improve livelihoods.

Research Methodology:-

1. Field survey was conducted to assess the erosion severity.
2. Species were selected for afforestation in the area, on the basis of phytodiversity of the area as well as soil properties.
3. Collection and analysis of soil samples - Soil samples were collected for physico-chemical properties from the project area. Soil amendment was incorporated in the plan.
4. Use of developed plantation/nursery techniques in ravine reclamation plan.
5. Assessment of funal diversity by standard method.
6. Use of soil amendment treatments. The following treatments are proposed to be given in plantation pit soil.
7. Use of exported fertile soil 40% in plantation pit.
8. Use of vermicompost in soil - 250g/pit
9. Use of observations of previous plantations/experiments.

Objective of Research:-

- To prepare model ravine reclamation plan through plantation in ravine lands of Morena district.

Activities Undertaken –

- Field survey for data collection and soil sample collection. Soil analysis and Workshop with local communities





Cost of the Project: - Rs. 9.85 lakh

Outcome of Research

This plan is for afforestation of 50 ha ravine land over 11 years in Morena Forest Division of M.P. This plan is recommended on the basis of survey carried out by SFRI during May, July & August 2025 and a project being carried out by TFRI, Jabalpur. Suitable species and spacing are recommended on the basis of various reviews.

Suitable species

Eight native and drought tolerant tree species were chosen for their adaptability to arid and semi-arid environments. Suitable tree species, grass species and live hedge (along fencing) species are as follows –

A. Tree species

Babul (*Acacia nilotica*)
 Chirol (*Holoptilia integrifolia*)
 Guggal (*Commiphora wightii*)
 Neem (*Azadirachta indica*)
 Reonjha (*Acacia leucophloea*)
 Khair (*Acacia catechu*)
 Shisham (*Dalbergia sissoo*)
 Khejadi (*Prosopis cineraria*)

B. Grass species

Deenanath grass (*Pennisetum pedicellatum*),
 Sengrass (*Cenchrus ciliaris*),
 Marval grass (*Dichanthium annulatum*),
 Fusel grass (*Iseilema laxum*),
 Ponia grass (*Sehima sulcatum*),
 Rosagrass (*Cymbopogon martinii*),
 Munj grass (*Saccharum munja*),
 Khasgrass (*Vetiveres zizanioides*)
 Doob (*Cynodon dactylon*)
 Daab (*Desmostachya bipinnata*)
 Kans (*Saccharum spontaneum*)
 Lampa (*Heteropogen contortus*)

C. Live hedge (along fencing) species

Cactus etc.

The plantation will be carried out in multiple phases, with a continuous focus on monitoring, maintenance and community engagement. Below is a detailed breakdown of the activities to be undertaken over 11 years.

Phase 1: Site Preparation and Initial Activities

- **Land Survey and Topographic Mapping:** A detailed survey to map out the ravine terrain, soil quality and water availability.
- **Soil Testing and Amendments:** Test soil fertility, pH nutrient levels and add necessary amendments (organic compost bio-fertilizers).
- **Erosion Control Measures:** Implement immediate erosion control techniques such as gully plugging and check dams.
- **Community Engagement:** Inform and training of local communities about the benefits of plantation, sustainable land management and their role in the project.

Phase 2: Initial Plantation

- **Planting Season:** Plantation will occur during the monsoon season (June to September) for optimal growth.
- **Pit Size :** 60cmx60cmx60cm
- **Spacing:** For tree species – 3m x 3m
- **Live hedge (along fencing) species** – 0.5mx0.5m

No. of plants per hectare for tree species – 300

Total no. of plants for tree species for 50 hectare - 15000

Total running meter of live hedge (along fencing) – 2800 to 4000

Total number of plants for live hedge (along fencing) – 5600 to 8000

Phase 3: Post-Plantation Care and Monitoring

- **Survival Check:** Regularly monitor sapling survival rates and casualty replacement.
- **Water Management:** Continue water conservation through additional rainwater harvesting structures.
- **Soil Fertility Management:** Regular application of organic fertilizers and mulch to maintain soil health.
- **Community Involvement:** Engage local communities in weeding, mulching etc.

Phase 4: Maturation and Maintenance

- **Maturation of Plantation:** By the 9th year, the trees will start maturing, and the ecosystem will be significantly stabilized.
- **Monitoring and Evaluation:** Conduct regular assessments of tree growth, soil health, and ecosystem restoration.

8. Plantation Budget Estimate for 50 Hectares (11 Years)

A detailed plantation plan for ravine area of 50 ha in Morena Forest Division was prepared at a cost of Rs. 870963 per ha.

3. Title of the Project - Criteria for laying fire lines and their effective width.

Why this Project –

Wildfires pose a significant threat to ecosystems, human lives, and infrastructure. Effective fire management strategies, including fire line placement, are crucial for mitigating these risks. This project aims to develop and evaluate criteria for laying fire lines and determining their effective width.

Research Methodology

1. Data sources

- Fire line infrastructure: Numerical counts and cumulative lengths by width across six ranges (Khawasa, Ari, Rukhad, Ghatkohka, Kumbhapani, Khamarpani).
- Fire incidents: Range-wise fire points from the FSI website (2023–2025) and FOCR records.
- Field verification: On-ground validation of selected FSI fire points; detailed proforma for verified cases.

2. Data processing

- Tabulation: Standardized tables for counts and distances by width and range.
- Summarization: Range-wise incident narratives and bilingual proforma summaries.
- Analysis: Descriptive statistics (totals, proportions, averages), pattern identification (seasonality, terrain/forest type influence), and effectiveness assessment (containment outcomes vs. fire line width and proximity).

3. Limitations

Verification gaps: Some FSI fire points did not correspond to actual field incidents. Temporal granularity: Incident timing clustered in dry season; limited off-season data. Forest type resolution: Dominant types noted (teak, mixed, bamboo), but microhabitat variability not fully captured.

For study purpose year wise and range wise fire points (fire cases) as per FOCR & FSI website of PTR Buffer from year 2023 to 2025 has been obtained. For each fire case information have been recorded in a prescribed format.

Study Design – Nil.

Objectives of Research

- To review existing literature and guidelines on fire line placement and effective width.
- To develop a comprehensive framework for evaluating the effectiveness of fire lines.
- To provide recommendations for optimizing fire line placement and effective width.

Activities Undertaken - Field survey for data collection.



Cost of the Project - Rs. 4.63 lakh

Outcome of Research (for completed project):–

This research report presents a comprehensive analysis of fire line infrastructure and fire incidents in the Pech Tiger Reserve (PTR) Buffer from 2023 to 2025. It synthesizes numerical and distance-based fire line data across six ranges, examines range-wise fire incidents from FSI and FOCR sources, and includes verified case studies. The report evaluates the effectiveness of fire lines by width and outcomes. Bilingual (Hindi–English) proforma summaries and a consolidated analytical tables are provided for standardized reporting. PTR Buffer maintains extensive fire line infrastructure (265 lines; 1130.39 km), dominated by **6 m** width lines that form the prevention backbone. Fire incidents (2023–2025) are predominantly **surface fires** with **seasonal peaks in March–April**, concentrated in **teak-bearing, undulating terrains**. Verified cases demonstrate that **12 m fire lines** near ignition points significantly improve containment speed and reduce damage. Discrepancies between remote-sensed fire points and field verification highlight the need for **integrated, ground-truthed monitoring** to optimize fire management strategies. The consolidated fire case analysis across PTR buffer ranges (Ari, Rukhad, Khamarpani, Ghatkohka, Khawasa, and Kumbhapani) between 2023 and 2025 demonstrates that fireline width is a critical but non-isolated determinant of suppression success. The comprehensive analysis of fireline width and its relationship with fire suppression parameters reveals that how fire line width interacts with terrain, forest density, suppression methods, forest types etc.

There are 31 fire lines existing in Rukhad buffer range as per fire plan of PTR Seoni i.e. 3 lines of 12m width (21 km), 10 lines of 6 m width (56.50 km) and 18 lines of 3m width (74.50 km). During this study fire cases from 2023 to 2025 were studied and it has been found that 7 fire cases were recorded near 12m fire line, 3 fire cases were recorded near 6m fire line and there is no case has been recorded near 3m line. Fire was contained at fire line in 3 fire cases near 6m fire line and fire not cross the fire line. Fire was contained at fire line in 5 fire cases near 12m fire line and fire did not cross the fire line. However, fire was not contained at fire line in 2 cases near 12m fire line and fire crossed the fire line. In FOCR fire case in compartment no. RF243 fire not contained at the fire line and the distance of fire breach is 15m. However, fire has been controlled within 45 minutes by beatout suppression method. It

has also been observed in other FOCR fire case in compartment no. RF243. Fire did not contained at the fire line and the distance of fire breach is 15m and fire has been controlled within 1 hour by beat out suppression method. **6 m fire lines** are insufficient in hilly terrain, leading to prolonged suppression and larger burnt areas. **12m fire lines** consistently improve containment, reduce suppression time, and enable mechanized methods. **Outliers (e.g., Gorakhpur beat compartment No. RF238, affected area 8.62 ha)** show that width must be considered alongside **terrain type and forest density** in predictive risk models. **The fire breaches at 2 fire points in this range of compartment no. 243 and 242 of Sawangi beat. The distance of fire breaches is 15m. However, it has been controlled within 45 minute to 1 hour. This fire came from the area of adjoining South Seoni territorial division. So, the width of fire line between 2 divisions i.e. South Seoni and PTR may be increased to some extent or the frequency of clearing fire line floor may also be increased. Standardize fire line width at 12 m** in undulating and flat terrains for optimal suppression efficiency.

There are 40 fire lines existing in Ari buffer range as per fire plan of PTR Seoni i.e. 2 lines of 18m width (7.2km), 3 lines of 12m width (6.15km) and 35 lines of 6m width (157.98km). During this study fire cases from 2023 to 2025 were studied and it has been found that 10 fire cases were recorded near 3m, 6m & 18m fire lines. Fire was contained at fire line in all the 10 fire cases and fire did not cross the fire line. The Ari Buffer dataset demonstrates that **fire line width is a critical but non-isolated factor** in fire suppression. Terrain complexity and fire proximity to the line are stronger predictors of suppression success than width alone. In this range the existing fire lines with the width as per fire plan are appropriate, most effective in plan/undulating/hilly areas. Fire was contained at fire line in all fire cases and fire did not cross the existing fire lines.

More areas of Rukhad and Ari ranges are covered under bamboo forest and bamboo is dominant having height more than 12 meters in many places. In case of fire incidence fire can be breached out and spread to other places due height of bamboo & burst of bamboo nodes during fire. So, in these ranges, where bamboo is in abundance, width of selected existing fire lines should increased from 6m to 12m. All trees will be felled and timber will be transported to depots, in this exercise occasional fruit bearing and RET trees will be retained.

There are 57 fire lines existing in Khawasa buffer range as per fire plan of PTR Seoni i.e. 1 line of 30m width (10km), 1 line of 12 m width (4.5km), 53 lines of 6m width (159.45km) and 2 lines of 3m width (13.20km). During this study fire cases from 2023 to 2025 were studied and it has been found that 1 fire case was recorded near 12m fire line and 24 fire cases were recorded near 6m fire line and no case has been recorded near the 30m & 3m fire line. Fire was contained at fire line in all the 25 fire cases near 6m & 12 m fire line and fire did not cross the fire line. In this range, it has been observed that in every fire case from 2023 to 2025, fire was contained at the fire line except in one fire case in Piparia beat, Comptt. No. 267, N21°48'29" E79°29'08" (Revenue area). In this case fire point is in Revenue area the distance of fire point from existing fire line (Badanala barrier to Sanctuary boarder line) was 183m. Fire spread towards the forest area of Comptt. No. PF267 without affecting the forest area of Khawasa buffer range and reached in fire line at location N21°48'29.30" E79°29'14.35" and was controlled on the fire line. The Khawasa Buffer fire records demonstrate that **fireline width is a critical operational parameter** influencing containment success. While 6 m firelines are common, evidence shows that **wider firelines (≥12 m) drastically reduce suppression time**, especially in dense or mixed forests. Integrating mechanical suppression methods further enhances efficiency. These findings support **policy revision towards wider, standardized firelines** in PTR buffer ranges to strengthen fire management resilience.

There are 20 fire lines existing in Ghatkohka buffer range as per fire plan of PTR Seoni i.e. 6 lines of 12m width (68.32km) and 14 lines of 6m width (70.70km). During this study fire cases from 2023 to 2025 was studied and it has been found that 10 fire cases were recorded near 12m fire lines. There is no fire case near 6m fire line. The fire was contained at fire line in all the 10 fire cases and fire did not cross the fire line. The Ghatkohka dataset demonstrates that fire line width is a critical determinant of suppression success. **12 m fire lines** consistently improve containment, reduce suppression time, and enable mechanized methods. **Narrower lines (3 m)** are insufficient in hilly terrain, leading to prolonged suppression and larger burnt areas. **Outliers (Shalai beat, compartment no. R389, 8.15 ha; Tikadi beat, compartment no. R379, 5.11 ha)** show that width must be considered alongside **terrain type**. In this range the existing fire lines with the width as per fire plan are

appropriate, most effective in plan/undulating/hilly areas. The fire was contained at fire line in every fire cases and fire did not cross the existing fire lines.

There are 43 fire lines existing in Khamarpani buffer range as per fire plan of PTR Seoni i.e. 8 lines of 12m width (84km), 22 lines of 6 m width (16.49 km) and 13 lines of 3m width (47km). During this study fire cases from 2023 to 2025 was studied and it has been found that 16 fire cases were recorded near 12m fire line, 4 fire cases were recorded near 6m fire line and 1 fire case was recorded near 3m fire line. Thus 21 Fire cases were recorded in Khamarpani buffer range. **In this range, it has been observed that in every fire case from 2023 to 2025, the fire was contained at the fire line except in one case in Kokiwada beat, Comptt. No. 1495, N21°45'17" E79°08'58" (Revenue area).** In this case, fire point is in Revenue area and fire spread towards the forest area of Comptt. No. 1495 at location N21°45'15.21" E79°08'59.71" and crossed the Chukanala to Tumdidaiyat fire line (12m width) upto 10m distance and was controlled in 40 minutes by beatout and blower. It may be due to presence of dry leaves etc. on the fire line. So, it is recommended that the width of fire line may be increased upto some extent or the frequency of cleaning the fire line may be increased. The Khamarpani Buffer Range dataset demonstrates that **fire line width is a critical determinant of suppression success. 6 m fire lines** have limited effectiveness in controlling fire. **12m fire lines** consistently improve containment, reduce suppression time, and enable mechanized methods.

There are 74 fire lines existing in Kumbhapani buffer range as per fire plan of PTR Seoni i.e. 17 lines of 12m width (81.70km), 54 lines of 6m width (162.70 km) and 3 lines of 3m width (44km). During this study fire cases from 2023 to 2025 were studied and it has been found that 6 fire cases were recorded near 12m fire line, 48 fire cases were recorded near 6m fire line and 4 fire cases was recorded near 3m fire line. Thus 58 Fire cases were recorded in Khamarpani buffer range. In this range, it has been observed that in every fire case from 2023 to 2025, fire was contained at fire line in all the 58 fire cases and the fire did not cross the fire line. Hence, it is concluded that the width of existing fire lines is appropriate in this range. The consolidated fire case data demonstrates that fireline width is significant in fire suppression. Terrain complexity and suppression method selection critically influence containment efficiency. A hybrid approach—standardized 6 m firelines with adaptive suppression strategies—offers the most effective operational model for Kumbhapani and adjoining ranges.

On-going Projects

1. Title of the Project:- **Multilocal cum provenance trials of important forestry and bamboo species in different forest divisions of Madhya Pradesh.**

Why this Project:-

The literal meaning of provenance defines the place of origin or source. In forest genetic studies, provenance trials are studied about the geographical source of plants or their places of origin from where the plants or seed sources have been collected. In this type of studies, indigenous / local species or species obtained from other places are planted in different multilocations/agro-climatic zones and their growth performance in which their survival percentage, their growth performance are studied from them. Thus, the species whose provenance performs well in different multilocations/agro-climatic zones are propagated and planted on a large scale under genetic and tree improvement programme.

A massive root trainer plantation activities of Aonla, Chirol, Harra, Bahera, Achar, Sissoo, Shisham, Sagon and other forestry species in 63 territorial forest division of Madhya Pradesh has been proposed by Principal Chief Conservator of Forest, Research Extension & Lok Vaniki, Bhopal in which the root trainer plants of above mentioned species will be planted during rainy season 2022. Keeping under above consideration an attempt will also made (as per the availability of seeds) under R & E activities for multilocal cum provenance trials of Bija, Haldu, Tinsa, Dhaman, Achar, Shisham and *Dendrocalamus stocksii* in above proposed plantation activities for observing best performing provenance of these species in various territorial forest divisions.

Research Methodology: -

1. **Seed collection** – CPTs of Bija, Haldu, Tinsa, Dhaman, Achar and Shisham will be selected from Balaghat, Chhindwara, Seoni, Seoni, Chhindwara and Chhindwara provenances respectively. The seeds will be collected from identified CPTs.

2. Raising of plants – Collected seeds will be handed over to Conservation Division of SFRI for raising of root trainer plants. *Dendrocalamus stocksii* will multiplied by macro-proliferation.

3. Species wise Number of plants required for multilocal cum provenances trial–

20 plants of each proposed species will require for their multilocal cum provenance trials. At each territorial division, 20×6 (provenances) = 120 plants of each species will be required for 1 replication and thus total 120×4(replication) = 480 plants will be required for each division. In this way total 528 plants (including causality replacement) will be required for 1 division. Thus total 528×63 (division) = 33264 will be required. 15 plants of this bamboo species will be planted with 4 replications at 16 forest divisions. In this way total 1056 plants (including 10% casualty) of *Dendrocalamus stocksii* will be required under this project.

4. Growth data observations – The various parameters of growth data such as height, girth, survival percent, and number of culms per clump will recorded annually during September and October.

5. Causality replacement – The number of plants under causality will be replaced next year after the plantation.

Study Design: The multilocal cum provenances trial will be done at RBD design as mentioned below.

Design of forestry species								
Provenances	Treatments	Replications	Treatments					
Balaghat	T1	R1	T1	T2	T3	T4	T5	T6
Chhindwara	T2							
Seoni	T3	R2	T6	T5	T4	T3	T2	T1
Seoni	T4							
Chhindwara	T5	R3	T4	T1	T6	T5	T3	T2
Chhindwara	T6	R4	T5	T4	T1	T2	T6	T3

Provenances	Treatment	Replications
Jabalpur	<i>Dendrocalamus stocksii</i> (Treatment-1)	R1
		R2
		R3
		R4

Plantation site map –

R1	(T1) Balaghat Bija 20(4×4)	(T2) Chhindwara Haldu 20(6×6)	(T3) Seoni Tinsa 20(2×3)	(T4) Seoni Dhaman 20(4×4)	(T5) Chhindwara Achar 20(4×4)	(T6) Chhindwara Shisham 20(4×4)
R2	(T6) Chhindwara Shisham 20(4×4)	(T5) Chhindwara Achar 20(4×4)	(T4) Seoni Dhaman 20(4×4)	(T3) Seoni Tinsa 20(2×3)	(T2) Chhindwara Haldu 20(6×6)	(T1) Balaghat Bija 20(4×4)
R3	(T4) Seoni Dhaman 20(4×4)	(T1) Balaghat Bija 20(4×4)	(T6) Chhindwara Shisham 20(4×4)	(T5) Chhindwara Achar 20(4×4)	(T3) Seoni Tinsa 20(2×3)	(T2) Chhindwara Haldu 20(6×6)
R4	(T5) Chhindwara Achar 20(4×4)	(T4) Seoni Dhaman 20(4×4)	(T1) Balaghat Bija 20(4×4)	(T2) Chhindwara Haldu 20(6×6)	(T6) Chhindwara Shisham 20(4×4)	(T3) Seoni Tinsa 20(2×3)

The above planting design will replicate all 63 divisions.

The spacing of proposed species will be 6×6 mt for Haldu, 2×3 mt for Tinsa, 4×4 mt for Bija, 4×4 mt for Achar, 4×4 mt for Shisham, 4×4 mt for Dhaman and bamboo species at 4×4 mt. Approx 1.5 hectare area in each territorial division will require for proposed forestry and bamboo species.

Objective of Research:-

- To evaluate best performing provenance by multilocal cum provenance trial.

Activities Undertaken:-

Multilocal cum provenance trials of important forestry and bamboo species in 16 territorial forest divisions of M.P.

1. Root trainer plants of *D.latifolia*, *A.cordifolia* and polypoted plants of *D.stocksii* has been distributed to 11 Forest Divisions upto March 2025 namely Damoh, S.Seoni, N.Balaghat, Gwalior, Jhabua, Anupoor, Narmadapuram, Ashok Nagar, Sihore, Ujjain & Jabalpur.
2. Root trainer plants of *D.latifolia*, *A.cordifolia* and polypoted plants of *D.stocksii* has been distributed to 05 Forest Divisions during July 2025 to September 2025 namely N.Betul, Rewa, W.Chhindwara, Khandwa and Chhatarpur.
3. Correspondence made for procurement of seeds of Bija, Tinsa & Dhaman species.
4. Seeds of Achar and Bija received from W.Chhindwara and N.Balaghat forest division respectively handed over to Conservation Div. for preparation of seedlings. Preparation of seedlings of Achar is under progress. And germination of Bija seeds is very poor.
5. Annual Growth Data of *D.latifolia*, *A.cordifolia* and *D.stocksii* have been collected from Gwalior, Jabalpur, Damoh, Amarkantak, Jhabua and Ujjain forest division.

Cost of the Project: - Rs. 31.83 lakh



Expected Outcome of Research:-

Evaluation of best performing provenance from different forest division of proposed species.

2.Title of the Project:- Organization of Hands on Training Programme and Internship on Biotechnology for University and College Students under New Education Policy.

Why this Project:-

आज के आधुनिक समय में जैवप्रौद्योगिकी एक महत्वपूर्ण विषय है जिसके अंतर्गत विभिन्न विषयों पर अनुसंधान किये जा रहे हैं। जैव प्रौद्योगिकी विषय व्यावहारिक एवं तकनीकी दृष्टि से अति महत्वपूर्ण है जिसका उपयोग समाज के विभिन्न क्षेत्रों में किया जाता है जैसे कृषि/पशुविज्ञान, फार्मास्यूटिकल्स उद्योग, विकृत रोगों के निदान में, मानव/वन्य प्राणि फोरेंसिक विज्ञान में, जीन क्लोनिंग में इत्यादि में किया जा रहा है। विगत कुछ वर्षों में जैवप्रौद्योगिकी विषय का उपयोग वानिकी विषय में उच्चगुणवत्ता वाले पौधों को क्लोनिंग के माध्यम से तैयार करने में उपयोग किया जा रहा है इस के साथ ही वानिकी में इस

विषय के आधुनिक तकनीकों का उपयोग करते हुये DNA Fingerprinting के माध्यम से विभिन्न प्रजातियों में अनुवांशिकीय विविधता का भी अध्ययन किया जा रहा है।

संस्थान की जैवप्रौद्योगिकी प्रभाग के अंतर्गत बायोटेक्नोलॉजी प्रयोगशाला स्थापित है जिसमें वर्तमान में महत्वपूर्ण उपकरण संधारित हैं जिनका व्यावहारिक उपयोग करते हुये इस विषय पर महत्वपूर्ण परियोजनायें सम्पादित की जाती रही हैं इसके साथ ही इस प्रभाग द्वारा देश एवं प्रदेश के विभिन्न शैक्षणिक संस्थानों से आये हुये प्रशिक्षणार्थियों को जैवप्रौद्योगिकी विषय पर स्नातक एवं स्नातकोत्तर स्तर के विद्यार्थियों को Internship/ Apprentice/Project/Summer training and Dissertation प्रदाय करने के साथ-साथ आवश्यकतानुसार अन्य प्रशिक्षणार्थियों को Hands on Training भी विभिन्न-विभिन्न समयावधि के लिये प्रदाय किये जाते रहे हैं एवं इन प्रशिक्षणों के आयोजन द्वारा जो प्रशिक्षण शुल्क प्रशिक्षणार्थियों से लिया जाता है वह संस्थान की Project ID – FD/P/II/25-26/16 में वित्तीय स्रोत के रूप में जमा किये जाते हैं। वर्तमान में संस्थान द्वारा विभिन्न शैक्षणिक संस्थानों से एम.ओ.यू. भी किये गये हैं एवं किये गये एम.ओ. यू. के उद्देश्यों की पूर्ति के लिये इन संस्थानों के विद्यार्थियों द्वारा समय-समय पर संस्थान से प्रशिक्षण प्राप्त करते हैं।

Research Methodology:- देश एवं प्रदेश स्तर के विभिन्न शैक्षणिक संस्थानों को जैव प्रौद्योगिकी विषय पर प्रायोजित होने वाले कार्यक्रमों की रूप रेखा से पत्राचार के माध्यम से अवगत कराना।

1. प्रशिक्षणार्थियों को प्रभाग अंतर्गत उपलब्ध जैव प्रौद्योगिकी से संबंधित उपकरणों के विषय में अवगत कराना।
2. प्रशिक्षणार्थियों को इन उपकरणों के उपयोग की जानकारी प्रदाय करना।
3. प्रशिक्षणार्थियों को प्रभाग अंतर्गत एक दिवस से लेकर चार माह और छह माह की प्रमाण पत्र के साथ प्रशिक्षण प्रदान करना
4. विद्यार्थियों को चार एवं छह माह के Dissertation करना
5. प्रशिक्षण उपरांत प्रशिक्षणार्थियों से विस्तृत प्रतिवेदन तैयार कर पीपीटी के माध्यम से प्राप्त किये गये प्रशिक्षण के उपयोगों का प्रस्तुतिकरण करना।

Study Design:- Proposed Training Programme/Work Plan

S. N.	Training Type	No of students	No. of trainings in month	No. of trainings in a year
1.	One day	1120 Total (35 student in one batch)	04 in a month (20 days per month)	08
2.	5 days			
3.	7 days			
4.	8 Days			
5.	10 Days			
6.	Four Months	20	Once in a year	01
7.	Six Months	06	Once in a year	01
8.	FOWE	35	Once in a year	01

Objective of Research:-

- विभिन्न हितधारकों (Stakeholders) के लिए जैवप्रौद्योगिकी विज्ञान वर्ग एवं वानिकी जैव प्रौद्योगिकी विषय पर प्रशिक्षण कार्यक्रम आयोजित करना।
- संस्थान में स्थित बायोटेक्नोलॉजी लैब में रखे उपकरण के रखरखाव हेतु कुशल व्यक्ति की पदस्थापना और संस्थान के वित्तीय संसाधनों के स्रोतों को बढ़ाना।

Outcome of Research:-

इस परियोजना के अंतर्गत आयोजित जैवप्रौद्योगिकी प्रशिक्षण कार्यक्रमों एवं इंटर्नशिप से निम्नलिखित महत्वपूर्ण परिणाम प्राप्त हुए हैं।

संस्थान का उद्देश्य और कीर्ति घर घर तक पहुँची जिससे संस्थान को हर कॉलेज और यूनिवर्सिटी से विद्यार्थियों को प्रशिक्षण कार्यक्रम में शामिल होने भेजा जा रहा है। संस्थान की एक अति महत्वपूर्ण लैब जिसमें tissue culture की पुनः स्थापना की गयी जिसमें विद्यार्थियों का शोध कार्य सुचारु रूप

से चल रहा हैं। विद्यार्थियों द्वारा विभिन्न प्रकार की पादप प्रजातियों पर अति महत्वपूर्ण शोध कार्य कर रहे हैं जिसे lab to land तक का सफर किया जा रहा हैं।

1- fo|kfFk; k d d'ky e of)

प्रशिक्षण कार्यक्रमों के माध्यम से विद्यार्थियों को आधुनिक जैवप्रौद्योगिकी तकनीकों एवं उपकरणों का व्यावहारिक ज्ञान प्राप्त हुआ, जिससे उनके तकनीकी एवं प्रयोगात्मक कौशल में उल्लेखनीय वृद्धि हुई।

2- 0;kogkfjd f'k{k dk c<kok

नई शिक्षा नीति (NEP) के अनुरूप इस परियोजना ने सैद्धांतिक ज्ञान के साथ-साथ व्यावहारिक प्रशिक्षण को बढ़ावा दिया, जिससे विद्यार्थियों की समझ अधिक मजबूत हुई।

3- jktxkj ,o 'kk/k voljk e of)

प्रशिक्षण प्राप्त करने के पश्चात विद्यार्थियों के लिए रोजगार के अवसर बढ़े उच्च शिक्षा एवं शोध Research के प्रति रुचि विकसित हुई।

4- fofHkUu lLFkkuk d l kFk l g;kx

देश एवं प्रदेश के विभिन्न विश्वविद्यालयों एवं महाविद्यालयों के साथ सहयोग स्थापित हुआ, जिससे शैक्षणिक नेटवर्क मजबूत हुआ।

5- ç;kx'kkyk l l k/kuk dk çHkkoh mi;kx

संस्थान में उपलब्ध जैव प्रौद्योगिकी प्रयोगशाला एवं उपकरणों का बेहतर उपयोग सुनिश्चित हुआ।

6- çf'k{k.k dk; Øek dk lQy l pkyu

वर्ष 2025-26 के दौरान कुल 26 training तथा दो कॉलेज से 21 विद्यार्थियों एवं एक यूनिवर्सिटी से 3 विद्यार्थियों द्वारा चार और छह माह का Dissertation किया जा रहा हैं। 26 प्रशिक्षण कार्यक्रम सफलतापूर्वक आयोजित किए गए, जिनमें लगभग 605 विद्यार्थियों ने भाग लिया।

çLr|rh dj.k ,o eY;kdu:-

प्रशिक्षण के उपरांत विद्यार्थियों द्वारा PPT प्रस्तुतिकरण एवं रिपोर्ट प्रस्तुत की गई, जिससे उनके सीखने के स्तर का मूल्यांकन किया गया।

fu"d" (Conclusion) :-

यह परियोजना पूर्णतः सफलता से चल रही हैं एवं इसने विद्यार्थियों के समग्र विकास, कौशल उन्नयन तथा संस्थान को वित्तीय लाभ तथा molecular और tissue culture को पूर्ण कुशलता से संचालित किया जा रहा एवं शैक्षणिक गुणवत्ता को सुदृढ़ करने में महत्वपूर्ण योगदान दिया जा रहा हैं।







Training Activities

7. I LFkku dh vk; e ;kxnku

प्रशिक्षण कार्यक्रमों के माध्यम से प्राप्त प्रशिक्षण शुल्क से संस्थान के वित्तीय संसाधनों में वृद्धि हुई।

8. SFRI Signed MoU

1. Shri Ram College, Jabalpur
2. Avdhesh Pratap Singh University, Rewa
3. Guru Teg Bahadur Khalsa College, Jabalpur
4. Malavanchal University, Indore



Shri Ram College, Jabalpur



Guru Teg Bahadur Khalsa College, Jabalpur



Avdhesh Pratap Singh University, Rewa



Malavanchal University (Index Groups), Indore

Regular activity

1. Title of the Project:- Provenance trial of *Litsea* (*Litsea glutinosa*).

Why this Project:-

Litsea glutinosa commonly known as maida chal belongs to family Lauraceae is an evergreen tree. Its bark contains active alkaloid known as laurotetanine which is a derivative of tannic acid and is very useful in several diseases and also used in cosmetic industries. Due to increased demand of bark by Agarbatti industry, the trees are completely stripped for the extraction of bark. The prevailing destructive practices have threatened the survival of this very precious species from the state of Madhya Pradesh and hence this species becomes under threat category. Today, its *ex situ* conservation is one of the major challenging tasks because it is highly recalcitrant in nature. Keeping under above considerations a provenance trial has been taken up in SFRI campus for its *ex situ* conservation and observing best performing provenence.

Research Methodology:-

A provenance trial of *Litsea glutinosa* has been taken up in SFRI campus in the year 2010-11 with 8 provenances from Jagdalpur-15, Pachmarhi-15, Baihar – 16, Lalbarra (Balaghat)-20, Patalkot – 15, Rewa – 15, Betul – 15, Langhi (Balaghat) -15 plants (total 126 plants). The plants were raised through stem branch cuttings under mist chamber. The best performing provenance will be evaluated on the basis flowering & fruiting pattern, height and girth.

Study Design:-

Total plants 126
Number of provenances 8
Spacing 3×3 meter

1. Jagdalpur Total plants = 15 (3 lines of 5 plants each)	2. Pachmarhi Total plants = 15 (3 lines of 5 plants each)	3. Lanji (Balaghat) Total plants = 15 (3 lines of 5 plants each)	4. Lalbarra Balaghat Total plants = 20 (2 lines of 5 plants each in block one and 2 lines of 5 plants each in block two)
5. Patakot Total plants = 15 (3 lines of 5 plants each)	6. Rewa Total plants = 15 (3 lines of 5 plants each)	7. Betul Total plants = 15 (3 lines of 5 plants each)	
8. Baihar Balaghat Total plants = 16 (2 rows of 8 plants each)			

Objective of Research:-

- Maintenance and collection of growth data.

Activities Undertaken:-

- Lopping of branches, removal of weeds, soil working, data collection on - Height, Girth, Flowering and fruiting etc. Flowering and fruiting have been observed in Pachmarhi provenance (Tree No. 17 & 26), Lanjhi Balaghat provenance (Tree No. 33 & 41), Patakot provenance (Tree No. 57, 60, 61, 62, 63, 65 & 70), Betul provenance (Tree No. 91), Lalbarra, Balaghat provenance (Tree No. 101, 103, 104 & 109) and Baihar provenance (Tree No. 112 & 116).

Cost of the Project - Rs. 0.50 lakh

Expected Outcome of Research:-

As *Litsea glutinosa* is critically endangered tree species of forest of Madhya Pradesh. By provenance trial of this species the best performing provenance will be evaluated and will be further used for genetic and tree improvement programme.

2. Title of the Project:- Maintenance of clonal germplasm of *Madhuca latifolia* (Mahua).

Why this Project:-

Mahua is a versatile fruit bearing tree species which occurred in different forest division of M.P. It is considered as a valuable tree which yields fuel, edible flowers, oil yielding fruits, fuel and timber. The fermented flowers can be used to produce country liquor. The oil obtained from its fruits is used for cooking by tribal. It has been noticed that Mahua is not being planted and old trees are dying due to human interference and natural calamities. Deforestation and increasing population are mainly responsible. Loss of qualitative germplasm is another important factor. If tribal are supplemented with quality planting material such as the grafted plants of quality germplasm which will give early fruiting and tribal can enhance their economy substantially. The germplasm consisting of 36 grafted Mahua plants were planted in 2010-11. At present 26 grafted Mahua plants are available. In this regular activity the flowering and fruiting behavior from grafted mahua plant will be observe.

Research Methodology:-

The germplasm consisting of 36 grafted Mahua plants from 6 plus trees (6 clonal plants from each plus tree) was raised in the SFRI campus during 2010-11.

I. Study Design:-

SFRI-5	SFRI-4	SFRI-3	SFRI-2	SFRI-1	Damoh
36	30	24	18	12	6
35	29	23	17	11	5
34	28	22	16	10	4
33	27	21	15	9	3
32	26	20	14	8	2
31	25	19	13	7	1

Objective of Research:-

- Maintenance of clonal germplasm and recording flowering and fruiting time.

Activities Undertaken:-

Pruning of branches, soil working application of FYM, removal of weeds, data collection on - Height, Girth, Flowering fruiting etc.

Cost of the Project - Rs.0.50 lakh

Expected Outcome of Research:-

The germplasm of Mahua can be utilized as genetic resource for further tree improvement programme.

3. Title of the Project:- - Maintenance and enrichment of Bamboosetum.**Why this Project:-**

Bamboos are very important for making different kind of items and presently bamboo stands next to timber species. SFRI consist about 1 hectare area covered under various important 37 bamboo species 12 genera. The main objective of proposed regular activities is to maintain and to create awareness among various stakeholders such as farmers bamboo growers, students etc. Bamboosetum plays an important role in *ex-situ* conservation of different species/varieties of bamboo. The another important objective of proposed regular activity is to enrich with new bamboo species for the enrichment of this Bamboosetum. By the proposed regular activities of enrichment and maintenance of existing Bamboosetum will also help for multiplication of important bamboo species and will also useful to create awareness among the people for physical identification of different bamboo species.

Research Methodology:-

The existed bamboosetum of 1 hectare area including 37 species covering 9 genera will be maintained through soil working. As per requirement for the enrichment of bamboosetum time to time the new bamboo species are also introduce from north east, West Bengal, RFRI, KFRI etc.

Study Design:-

For introducing of new species a spacement 4×4 meter will be applied in a pit size 45×45×45 cm.

Objective of Research:-

To maintain and enrich Bamboosetum of SFRI.

Activities Undertaken:-

Preparation of thalas, irrigation, removal of weeds and soil working.

Cost of the Project - Rs.0.50 lakh

Expected Outcome of Research:-

To aware about the different bamboo species to aware about the different bamboo species to various stakeholders, students, farmers etc.

Other significant achievements:-

70 CPTs of Teak have been identified from 9 Forest Divisions of Madhya Pradesh and the DNA of 70 teak CPTs have been successfully isolated for genetic diversity analysis.

2.1.2 CONSERVATION RESEARCH DIVISION

Mandate

1. Identification of biodiversity rich forest areas in the state and assessment of present biodiversity status in them.
2. Identification of locally rare, endangered and threatened species in wild and development of their in-situ and ex-situ conservation techniques.
3. Assessment of the biodiversity conservation status in the existing MPCAs/PPAs and suggesting need-based management of intervention for improvement.
4. Identification of suitable forest areas for the establishment of new MPCDAs and recording/documentation of base line data on biodiversity in them.
5. Assessment of the functioning of Biodiversity Management Committees (BMCs) and suggesting measures for improvement.
6. Assessment of the status of Access Benefit Sharing (ABS) and suggesting measures for improvement.
7. Assessment of region-specific potential of NTFP production in forests.
8. To investigate into the infestation of various insect pests in forest nurseries, plantations and forest areas; and suggest suitable preventive/control measures, preferably cultural and/or biological control measures.
9. To study the extent and frequency of occurrence of various diseases in forest nurseries, plantations and forest areas; identification of causative organisms and suggesting suitable prophylactic and control measures, preferably cultural and/or biological control measures.

List of project titles with names of funding agency

Ongoing Projects : 06

1. Collection and *Ex-situ* conservation of medicinal and aromatic plants in Gene-bank of SFRI, Jabalpur and their management.
Funding Agency: M.P. State Biodiversity Board
2. Conservation of Boabab Tree (*Adansonia digitata*) through development and extension of it's nursery, plantation and conservation techniques in Dhar District of Madhya Pradesh.
Funding Agency : M.P. State Biodiversity Board
3. Molecular characterization, authentication, and multiplication of elite genotype of *Boswellia serrata* (traina & planch) - with special reference to Madhya Pradesh. (SFRI, TERI, New Delhi and Jamiya Islamiya, New Delhi)
Funding Agency : DBT, New Delhi
4. Periodic observations in preservation plots established in different forest types of Madhya Pradesh.
Funding Agency : PCCF GIM, Bhopal
5. Preparation of quality planting material of RET and other important species.
Funding Agency : Internal project
6. Restoration of Botanical Garden of S.F.R.I., Jabalpur.
Funding agency : Internal project

Regular Activities : 01

1. Maintenance of Forest Herbarium and Museum of SFRI Jabalpur
Funding agency : SFRI, Jabalpur

Project Summary:-

Ongoing Project

1. Title of the Project:- Collection and *Ex-situ* conservation of medicinal and aromatic plants in Gene-bank of SFRI, Jabalpur and their management.

Why this Project:-

The Gene bank of medicinal plants has been established in the year 1996 in the institutes premise. The main objective of constructing this gene bank is to conserve important medicinal and aromatic plant species. The proposed work will be helpful in ex-situ conservation of more medicinal plants (total target is 600 species). This will also helpful in creating awareness among the forest field staff, farmers, students and members of other institutions regarding the identification and conservation practices of these medicinal and aromatic

Research Methodology:- This is not a research project but following works will be carried out under the project.

Detailed action plan:

In the State Forest Research Institute, a medicinal plant gene bank is already existed. This gene bank is needed to be strengthened by adding new species or new strains.

- a. **Collection of new plants:** Survey will be made in different forest areas, institutions, farmer's field for collection of new species. Beside this seeds will also be procured from different sources to enrich the medicinal plant gene bank.
- b. **Development and maintenance of demo plots:** We have already developed several plots like – Medicinal Climborium, Navgrah Vatika, Nakshatra Vatika, seed collection and vegetative cutting collection plots etc. These plots needed to be enriched with new species and regular maintenance.
- c. **Development of new plots:** Some open plots of different important species will be developed with proper information regarding the identification and utility of the plant.
- d. **Plant utility display:** For each species labels will be prepared showing information regarding its local name, scientific name, uses etc.
- e. **Maintenance of gene bank of medicinal plant and infrastructures:** All above mentioned structures including live plants will be maintained under the project.

Study Design:- This is not research project but work will be carried out as scheduled in following table

Work	1 st Quarter	2 nd quarter	3 rd quarter	4 th quarter
Staff selection	*			
Collection of plants	*	*	*	*
Procurement of materials	*	*		
Display of plants	*	*	*	*
Report preparation and submission to funding agency		*		*

Activities Carried out: -

- 470 species collected and conserved.
- More than 1500 visitor visited the site
- Maintenance of Medicinal plant nursery.
- Collection of plants in five replicates

Cost of the Project:- 22.37 lakh

Interim findings: - Plants are collected and conserved in gene bank

Expected Outcome of the Project : -

- This work will help in *Ex-situ* conservation of about 600 medicinal and aromatic plant species in the medicinal plant gene bank. This will be a self explanatory presentation.

2. Title of the Project:- Conservation of Boabab Tree (*Adenсонia digitata*) through development and extension of it's nursery, plantation and conservation techniques in Dhar District of Madhya Pradesh.

Why this Project:-

This project is designed as per the requirement of the M.P. State Biodiversity Board Bhopal. In this project nursery technique through seed and stem cuttings will be developed. Although plants of this species are prepared in most of the nursery but simple techniques of plants preparation will be developed so that local people of Dhar District will be able to prepare the plants. Similarly, plantation methodology will be developed using all precautions for its success. Awareness programme will be organized in Dhar district for its multiplication, plantation and conservation.

Research Methodology:-

- Survey:** Survey will be conducted in entire Dhar district to study the problems regarding conservation of this species. Discussion will also made with officials, field staff and local people especially with traditional healers, botanist etc. regarding the conservation of this species.
- Development of nursery techniques:** Survey will be made in different sites of study area for seed collection of this species. Beside this seeds some stem cuttings will also be procured for development of nursery techniques. Nursery technique through seed is already developed but plantlets development through stem cutting to be standardized.
- Extension of developed nursery and plantation technique:** Trainings on nursery and plantation will be given to the local people of the Dhar district. Prepared, plantlets will be provided free of cost to the local people of Dhar District and nearby areas (suggested by funding agency) with proper plantation methods to be adopted. This will help in conservation of the species in this area.
- Sustainable use of fruits and other parts:** Study will also carry out to identify the local utility of fruits and other parts and present trends/methods of its harvesting. To minimize the over harvesting suitable harvesting methods will be sorted. Information on suitable harvesting methods will be provided to the local people. This will help in conservation of the species in this area.

Study Design:- This is a research project will be carried out as scheduled in following table

Work	1st year	2nd year	3rd year
Staff selection	*		
Survey, collection of fruit/cutting for nursery technique.	*	*	
Preparation and maintenance of plants by Social Forestry Indore.	*	*	
Training, plants and literature distribution.		*	*
Report preparation and submission to funding agency		*	*

Objectives

- To standardize the nursery technique through seeds and stem cuttings.
- To identify the factors effecting sustainability of the species in Dhar district.
- To create awareness programme among the local people for conservation of this species.
- To compile the traditional knowledge of local people regarding the species.

Activities Carried out: -

- Different experiments are laid to development of Nursery technique.
- 2000 plants are prepared in Indore
- Additional 1800 plants are prepared in SFRI Nursery.
- Two trainings organized in Dhar. More than 300 participants participated.

Cost of the Project:- 26.32 lakh

Interim Findings:

- **Stem cutting:** Sprouting was observed in most of the cuttings which was remained for more than six months but rooting was not seen in any of the cutting planted.
- **Hot water treatment:** we can reduce the seed germination time of the species within one week which is very important otherwise it takes minimum 30 days for seed germination.
- **Seed coat removal:** 55.4% seeds germinated. 20% seed not germinated and decayed due to fungal infection. Rest seed were not germinated.
- **Grafting:** 100% success rate
- **Budding:** Successfully tried.

Expected Outcome of the Project:-

- This work will be helpful in *ex-situ* conservation of Baobab Tree (*Adensonia digitata*) in Dhar area.

3. Title of the Project:- Molecular characterization, authentication, and multiplication of elite genotype of *Boswellia serrata* (traina & planch) - with special reference to Madhya Pradesh. (SFRI, TERI, New Delhi and Jamiya Islamiya, New Delhi)

Why this Project:-

Increasing demand for resin, unsustainable harvesting for obtaining resin exudates by puncturing or damaging the bark could lead to mortality. Availability of several adulterants of *B. serrata* in the market affects the efficacy of drug and may be lethal if substituted with toxic adulterants. In view of immense therapeutic value of *B. serrata* and scarce data regarding its pharmacognosy activities, the information on intraspecific genetic relatedness is important for selection of divergent genotypes for effective conservation and management of its germplasm resources. The fact that is highly valuable, but endangered medicinal plant species, efforts for identification of the elite *B. serrata*, its conservation and multiplication may ensure sustainable availability of this species at an affordable cost.

Research Methodology

Following works were carried out under the project.

- Collection of planting material:** Survey will be made in different forest areas for collection of seeds of *Boswellia serrata*. Seeds and stem cutting will be collected from the known source for development of nursery technique.
- Preparation of plantlets:** Plants are prepared by using suitable nursery techniques.
- Sample collection:** Gum and leaf samples will be collected and provided to TERI and JMI for further studies.

Study Design :

Activities/Objective	Milestones and Deliverables											
	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1. Survey and collection of <i>Boswellia</i> accessions (0-24 months)												
2. Maintenance of rooted cuttings (6-24 months)												
3. Identification of elite <i>B. serrata</i> genotypes based on quality specifications of extracted gum as per API standards using HTPLC fingerprinting												
4. Standardisation of DNA isolation, and AFLP/GBS technique (0-6 months)												
5. Assessment of genetic diversity using AFLP/GBS marker (7-30 months)												

Activities/Objective	Milestones and Deliverables											
	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
6. Standardization of in vitro propagation protocol for elite <i>B. serrata</i> genotype												
7. Analysis of genetic fidelity among regenerated plantlets using molecular markers												
8. Development of nursery technique and conservation of core germplasm												

Role and Responsibility of all Participating Investigators & Institutions:-

All PI will be responsible for overall execution of the project, monitoring of the project progress and submission of reports. Prof. Jawaid A. Khan will be responsible for in vitro micro-propagation of elite germplasm and clonal fidelity study of tissue cultured raised plants, whereas Dr. Uday Homkar will also be responsible for technical guidance and supervision for collection and maintenance of germplasm. Dr Shyam Sundar Sharma will be responsible clonal fidelity, molecular genetic diversity. Co-PI; Prof. Meryam Sardar will responsible metabolic profiling using HPTLC and another Co-PI Dr Mayurika Goyel will be responsible for extraction and phytochemical profiling using HPTLC. Other Co 21 investigators will be responsible for assisting during germplasm collection, maintenance and molecular wet lab activities.

Objectives of Research:-

- Survey, collection and maintenance of *Boswellia serrata* germplasm from different forest regions of Madhya Pradesh (SFRI).
- Identification of elite *B. serrata* genotypes based on quality specifications of extracted gum as per API standards using HTPLC fingerprinting (JMI, TERI).
- Assessment of molecular genetic diversity of selected *Boswellia serrata* accessions using AFLP/GBS markers (TERI).
- Standardization of in vitro propagation protocol for elite *B. serrata* resin gum material and samples genotype (JMI).
- Analysis of genetic fidelity among regenerated plantlets using molecular markers (JMI, TERI).
- Development of nursery techniques and conservation of core germplasm of *Boswellia serrata* (SFRI).

Activities carried out-

- Gum, seeds and plants Samples are provided to TERI and JMI for further studies.
- Nursery technique development work is in progress.
- Prepared plants are available for further studies.

Cost of the project: Rs. 11.32 lakh (For SFRI)

Interim progress of the Project: (SFRI)-

In fresh seed, germination is varied from 62% to 90% (average 72%) without any treatment. But in one year old seed hot water treatment (24 hrs) and GA₃ 200 ppm treatment, better results are obtained.

4. Title of the Project:- Periodic observations in preservation plots established in different forest types of Madhya Pradesh

Why this Project:-

The forests are shrinking and environmental conditions are eroding day by day. In order to improve the environmental conditions, it is necessary to promote conservation, more area under forest and scientific management of existing natural forests. The national forestry policy of 1988 aims at restoring ecology balance and conservation of country's biodiversity through technically viable and ecologically sustainable management practices. The policy stresses on scientific research to reduce the

danger of environmental pollution, energy crisis, loss of biological diversity and management of natural resources due to environmental and economic development needs of human civilization.

In present scenario of climate change, the role of natural forests is being increasingly felt for diverse intangible ecosystem services than the tangible economic goods. Due to wide range of climate and corresponding diversity in the vegetation, Madhya Pradesh falls under the well known Phyto-geographical zone viz; "Central India". The characteristic tree species in this zone are Teak, Sal and miscellaneous species. The ground vegetation is dominated by grasses with number of legumes and forbs. The State is endowed with various forest types ranging from dry thorn forests to tropical dry deciduous, tropical moist deciduous, sub tropical and semi evergreen types.

As per the revised classification of Champion and Seth (1968), there are 23 major forest types occurring in the State. In order to represent different forest types of Madhya Pradesh, there are 39 preservation plots established in protected and unprotected forests areas of the state. Of these, 11 preservation plots are old and established in collaboration of Forest Research Institute, Dehradun on the recommendation of IIIrd All India Silvicultural Conference, 1929. Rest of 28 preservation plots are of recent origin and established from 1999 onwards. Preservation plots are miniature nature reserves to represent ecological models of different forest types. Preservation plots (PP) were named as 'miniature nature reserves' by S.K. Seth. According to Ghosh and Kaul (1997), preservation plots were one of the leading examples of nature reserves in the country. They emphasized the need to extend the objectives of management and protection to the flora and fauna. These permanent field laboratories provide excellent opportunity for scientific pursuits under natural conditions within such ecosystems for better understanding of resource economics and management, preservation of natural flora as gene pools in their diversity for future use and baselines for all reference points performance of other ecosystems judged. Rodgers (1991) indicated that the preservation plots covering vast range of forests types in India could play a major role in national efforts to conserve biodiversity.

Most preservation plots have retained their original structure and phytosociology. However, according to recent report the status of some preservation plots have been subjected to varying degree of biotic interferences and developmental pressure and some plots had to be abandoned. The main objective of maintaining preservation plot is to understand the successional behavior of forest biodiversity and climatic climax of the forest. Growth data of miscellaneous species occurring in natural forests have not yet been recorded. The preservation plots will serve the purpose to conduct growth study on successional change in biodiversity status, impact of climate change and carbon sequestration.

Climate change is the most important issue in current time. In the present scenario of climate change, it has become necessary to understand the role and importance of forests to counter such situation. Climate change due to planetary movement is natural and very slow while change due to biotic interference (human pressure) is very fast. The disturbance in carbon cycle is the combined effect of natural process as well as human pressure i.e. excessive exploitation of fossil fuel, deforestation, degradation, forests fire, change in land use pattern, etc.

This project is proposed to know forest composition of various forest types through measuring various parameters i.e. density, frequency, abundance, basal area, IVI and Biodiversity index. It will also help to understand the variations in vegetational associations in particular forest types which in turn provide the different stages involved in ecological succession in future. This project also provide valuable information on climate resilience species in various forest types by correlating various climatic parameters. The study will also useful for future conservation policies for different species through amendment in management plan.

Research Methodology

- a. Assessment of phyto-diversity.
- b. Assessment of impact on vegetation due to climatic variables.

For Phyto-diversity study-

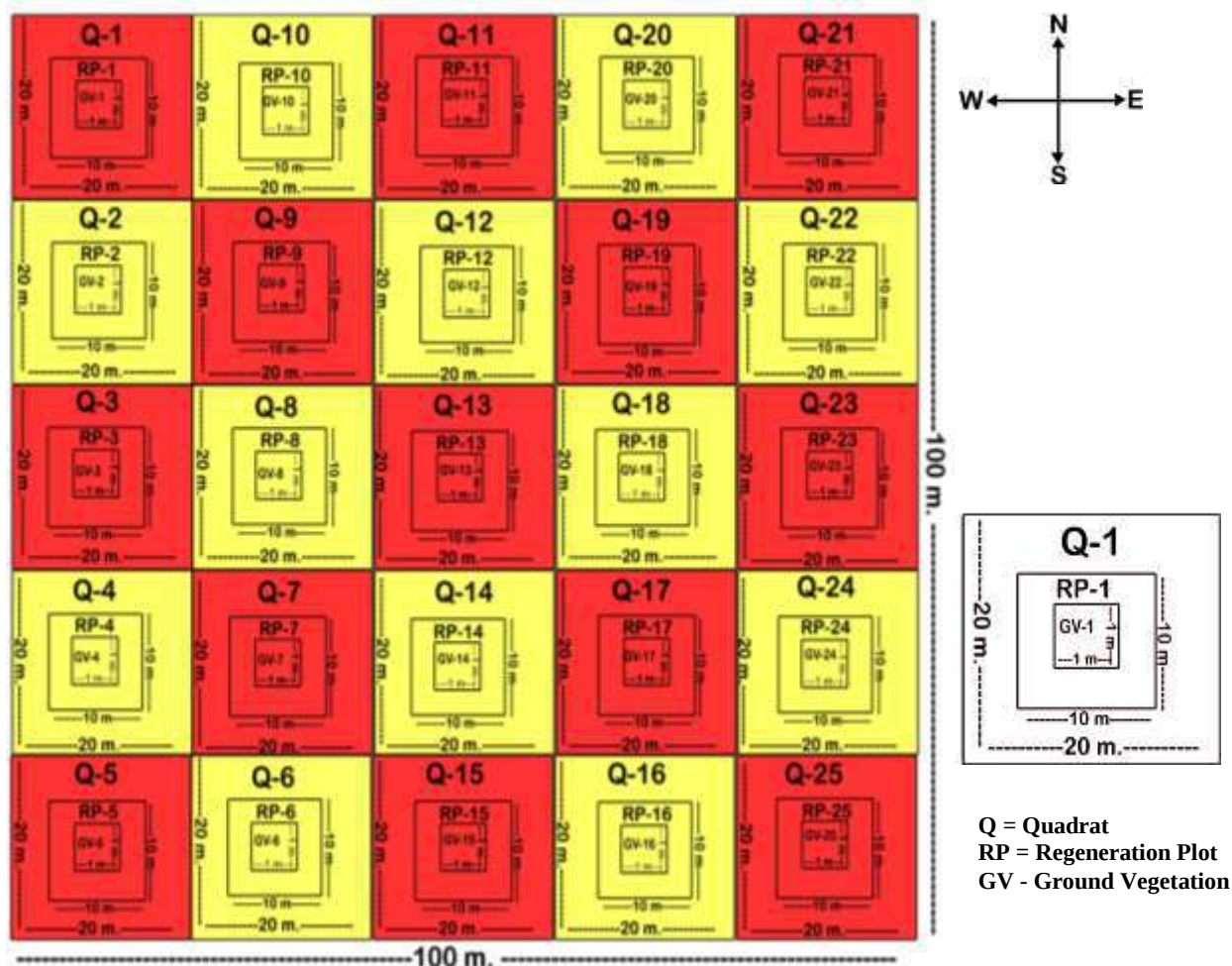
- Every preservation plot will be visited and nearly 01 ha core area of these preservation plot will be evaluated to achieve the target.
- A total of 25 plots of size 20×20 sqm will be laid in each PP for Tree species.
- For regeneration studies one plot of size 10×10 sqm will be laid in each plot.
- Herbaceous studies will be conducted in 25 plots of size 1×1 sqm respectively as per the standards of working plan.
- Litter production will be studied through standard procedure as prescribed by Ovington (1954).
- Soil samples will be randomly collected and a depth of 10-30 cm from 3 different places in each preservation plot for physic-chemical studies.

For study of Impact on vegetation due to climatic variables

For achieving the objective second the following methodology will be adopted. All the collected information viz tree species number, regeneration status, ground flora, tree association and physico chemical properties of soil will be used to assess the impact on forest by co-relating with climatic variables i.e. temperature and rainfall.

Climatic data will be collected from standard metrological observatory. These data will be used to derive the impact of climatic condition on above aforesaid vegetational parameters.. For assess the impact on vegetation due to climatic variables, previously collected growth data i.e. 2012 to 2015 and 2016 to 2019 will be used as baseline data. These baseline information will be used to compare the present collected data during project period.

Study Design:- Quadrat method



Study area- list and map

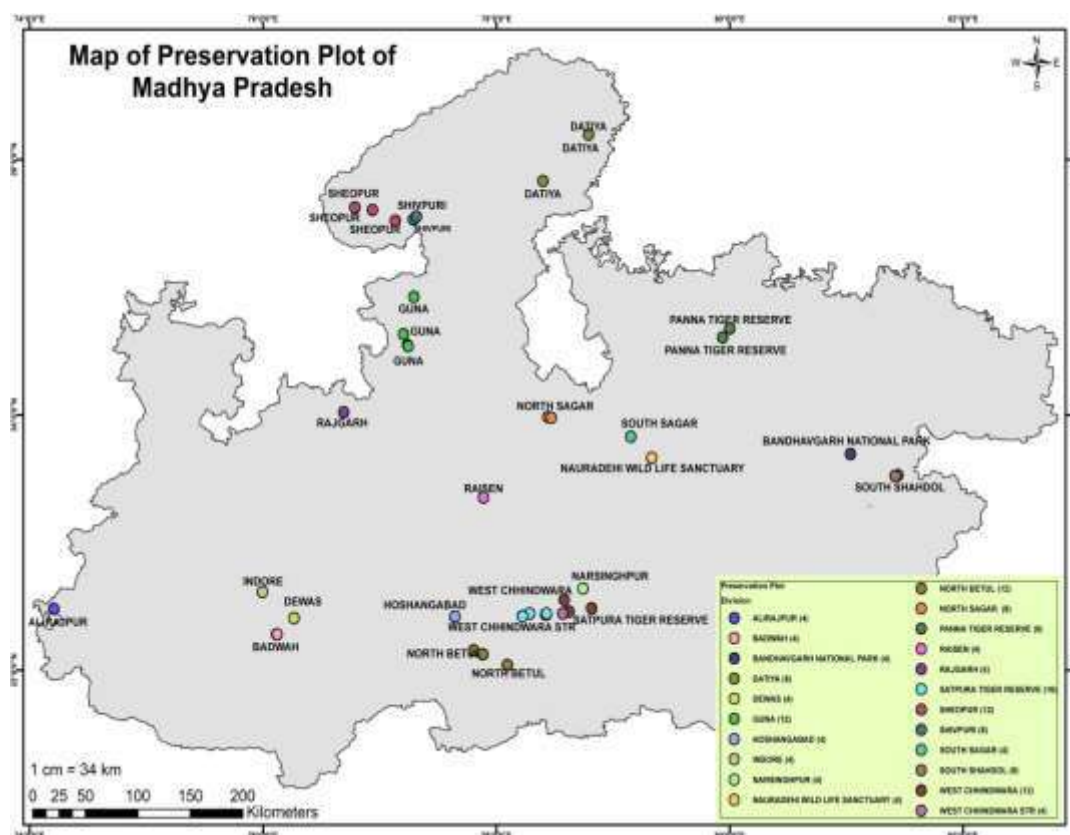
The study will be conducted in established all thirty nine preservation plots in 16 forest divisions. These selected 39 preservation plots represent 23 major forest types/degradation stages/edaphic types/ general several types (as per classification of Champion and Seth, 1968) occurring in different forest divisions/National Parks/Sanctuaries of Madhya Pradesh are shown in below table and Map-

Preservation plots in Madhya Pradesh

PP.No.	Divisions	Range	Compt. No.	Forest Type
1	Narsinghpur	Gadarwara	418(A)(old), 309 (New)	Dry peninsular sal forest (5B/C 1C)
2	Hoshangabad	Banapura	261	Slightly moist teak forest (3B/C1C)
3	N. Betul	Betul	248	Dry teak forest (5A/C1B)
4	N. Betul	Ranipur	327(old), 508 (New)	Southern moist mixed deciduous forest (3B/C2)

PP.No.	Divisions	Range	Compt. No.	Forest Type
5	Satpura Tiger Reserve	Bori	52	Southern moist mixed deciduous forest (3B/C2)
6	Satpura Tiger Reserve	Bori	45	Southern moist mixed deciduous forest (3B/C2)
7	Alirajpur	Kathiwara	137(old), 525 (New)	Southern moist mixed deciduous forest (3B/C2)
8	Badwaha	Badwaha	910/284	Southern dry mixed deciduous forest (5A/C3)
9	Dewas	Udainagar	633	Southern dry mixed deciduous forest (5A/C3)
10	W. Chhindwara	Delakhari	P157	Southern dry mixed deciduous forest (5A/C3)
11	W. Chhindwara	Delakhari	P163	Southern dry mixed deciduous forest (5A/C3)
12	W. Chhindwara	Jhirpa	35	<i>Hardwickia</i> forest (5 /E4)
13	S. Seoni	Kurai	181	Southern moist mixed deciduous forest (3B/C 2)
	Pench Tiger Reserve	Ari Buffer zone	224	
14	Bandhavgarh Tiger Reserve	Tala	324	Moist peninsular sal forest (3C/C2)
15	Satpura Tiger Reserve	Pachmarhi	302	Dry peninsular sal forest (5B/C1C)
16	Panna Tiger Reserve	Hinouta	521	Southern dry mixed deciduous forest (5A/C3)
17	Noradehi Wildlife Sanctuary	Mohli	RF 107	Northern dry mixed deciduous forest (5B/C2)
18	Panna National Park	Madla	227	Dry bamboo brake (5/E9)-
19	N. Betul	Shahpur	P419	Riparian fringe forest (4E/RS1)
20	Sheopur	Karahal	P528	<i>Anogeissus pendula</i> forest (5/E1)
21	Sheopur	Sheopur	RF 229	Dry grassland (5/DS4)
22	Datia	Goraghat	202	Ravine thorn forest (6B/C2)
23	Satpura Tiger Reserve	Pachmarhi	298	Dry peninsular sal forest (5B/C1C)
24	S. Sagar	Garhakota	896	<i>Butea</i> forest (5/E5)
25	Indore	Indore	256	Dry savanah (5/DS 2)
26	Sheopur	Badhar	213	<i>Boswellia</i> forest (5/E2)
27	N. Sagar	Khurai	RF71	Southern tropical riverain forest (5/1S1)
28	N. Sagar	Khurai	RF 69	Secondary dry deciduous forest (5/2S1)
29	N. Shahdol	Gopharu	RF281	Dry peninsular sal forest (5B/C1C)
30	N. Shahdol	Gopharu	295	<i>Boswellia</i> forest (5/E2)
31	Shivpuri	Pohri	P75/P765	Khair forest (5/1S1)
32	Shivpuri	Pohri	P69	<i>Ziziphus</i> scrub (6B/DS1)
33	Guna	Guna	404	Very dry teak forest (5A/C1a)
34	Guna	Raghavgarh	458	Khair forest (5/1S1)
35	Guna	North Guna	Old-P473 New - P481	Khair forest (5/1S1)

PP.No.	Divisions	Range	Compt. No.	Forest Type
36	Raisen	Raisen	387	Dry grassland (5/ DS4)
37	Rajgarh	Rajgarh	314	Dry deciduous scrub (5/DS1)
38	Datia	Seodha	115	<i>Anogeissus pendula</i> forest scrub (5/E1/DS 1)
39	W. Chhindwara	Delakhadi	89 A	Dillenia pp in Southern tropical dry deciduous forest (5A/C3)



Activities carried out:-

Physical Inputs:-TA/DA/POL, Wages and material for field work, Soil analysis work, Office expenses, Computer stationary, Preparation of final report and miscellaneous work

Cost of the Project:- Rs. 27.50 lakh

Expected Outcome:-

Objectively Verifiable Indicators (OVI's):- Frequency, Density, Abundance, Basal area, IVI, Biodiversity index, Litter production, Soil analysis, Standard meteorological observations.

Means of Verification (MOV's):- Lay out of plots in core area, Measurement of height and girth, counting of trees, regeneration, herbaceous plants and collection of meteorological data through standard meteorological station.

5. Title of the Project:- Preparation of quality planting material of RET and other important species.

Why this Project:-

Earlier during 2016-17 one project was sanctioned by the Research, Extension and Lok Vaniki Wing of Forest department for RET plants preparation. During this project period all nursery management works were carried out under this project. This project was stopped by the funding agency. After that Due to pandemic and unavailability of Budget the nursery is not properly maintained.

The balance amounts of Rs. 22.32 lakh were deposited in revolving fund and during 2018-to 2021 an amount of Rs. 9.2 lakh was received from plant selling. This amount also deposited in the revolving fund.

In the above project it was mentioned that the amount received from the selling of plants will be deposited in the revolving fund. The balance amount of the project and the amount received from the selling of plants will be utilised in preparation of more RET plants in subsequent years.

Thus this project is designed to prepare more plants of RET and other important species for their restoration. Amount received from selling of plants will be further deposited in revolving which will be used in maintenance of nursery and preparation of more plants in coming future.

Research Methodology:-

Following works were carried out under the project.

- a. **Collection of planting material:** Survey will be made in different forest areas for collection of seeds of RET species. Seeds and planting material will be collected or procured from the known source for mass multiplication.
- b. **Preparation of plantlets:** Plants are prepared by using suitable nursery techniques.

Study Design:-

Based on availability of seeds of RET species survey will be conducted in to collect the planting material. Nursery schedule will be followed to prepared quality planting material. Species having disposable importance will be selected for multiplication

Objectives of Research:-

1. Preparation of planting material of RET and other important species.
2. To enrich the revolving fund for making self-sustain nursery.

Activities Carried out-

- Procurement of seed material
- Filling of polybags
- Plant preparation through seeds and cuttings.
- 20000 plants of 108 different species were prepared.
- Rs. 8 lakh received from selling of plants in last two years.

Cost of the project: Rs. 9.04 lakh

Outcome of the Project : -

- Plantlets of different RET and other important species are prepared.
- This work is helpful to provide plantlets of RET and other important species to user groups.

6. Title of the Project:- Restoration of Botanical Garden of SFRI Jabalpur

Why this Project:-

Madhya Pradesh is one of the largest states of India. Vegetation diversity of the state is typical representative of India biota which includes considerable components from Africa, Europe, Eurasia, Malaya, China and even Japan. Due to wide range of climatic variation and corresponding diversity in vegetation, Madhya Pradesh falls under the well known phyto-geographical zone., "Central India". The state is endowed with various forest types ranging from dry thorn forests to tropical dry deciduous, tropical moist deciduous and sub-tropical forest types. With its large geographical area, it is a storehouse of vast flora, some of which are under threat and some others are at the verge of extinction. Madhya Pradesh is unique for topographical features, biodiversity and natural heritage. Botanical Survey of India has documented about 2500 species of angiosperms in "Flora of M.P."

As a part of conservation programme, State Forest Research Institute, Jabalpur established a Botanical Garden in 1976 over an area of 4.25 ha. The Botanical Garden harbors 112 tree species including indigenous and endangered species and those of multifarious utility. Besides, there are about 100 species of herbs, shrubs and climbers of medicinal and ethno-botanical importance. SFRI-BG is unique in terms of its scientific arrangement of plants adopting Bentham and Hooker's classification system. The objective for establishing the botanical garden was of scientific and

educational utility for various stakeholders e.g. forest officials, students, research scholars, general public etc. It also help to conserve the genetic resources of various forestry species.

The maintenance and strengthen of the botanic garden in different phases will be of vital importance for conservation. Presently botanical garden is lacking proper signage, details of species and aesthetic value. Hence, the project is proposed for the restoration of Botanical garden.

Research Methodology:- Detailed action plan:

A. Maintenance and strengthening of the Infrastructure

- **Repair of barbed wire and chain-link fencing:** The garden was fenced with chain-link fencing. The fencing damaged at several places, requires to be repaired.
- **Repair of Irrigation network:** One overhead tank of 3000 litre capacity with a network of pipes/ macro irrigation system was installed in the garden which needs to be repaired and maintained for its effective working.
- **Maintenance and Construction of Inspection paths:** Both, paver paths and murram paths have been constructed which are required to be maintained and repaired at few places. New paths are also needed to be developed for better surveillance.
- **Repair of light system:** There is need to erect electric poles and to maintain the existing light system for protection purposes.
- **Erection of signage's:** There is need to display information about the trees which can be done by erecting the signage's as a bar code.

B. Maintenance and protection of garden

Routine maintenance will be done for plants conserved in the garden by soil working, application of fertilizers, insecticides and pesticides as and when required and replacement of plants as required.

Study Design:-

- i. Civil work - Maintenance of fencing, irrigation and light system.
- ii. Proper display of information for each species in different sectors will be given in following way through Bar code-
Botanical Name`
Family
Local Name
Habit/Habitat
Characters
Flowering/Fruiting
Uses



Objectives

- To maintain and strengthen the infrastructure of the Botanical Garden.
- To Interpret existing forestry species of the garden

Activities Carried out: -

- Area cleaned.
- Protection of trees from fungus/insect by using copper sulfate is in progress.
- 50 New species are planted in Botanical Garden.
- More than 1500 visitors visited the Garden.

Cost of the Project:- Rs.14.24 lakh

Regular Activity:

1. Title of the Project:- Maintenance of Forest Herbarium, SFRI Jabalpur.

Why this Project:-

Herbarium plays a central role in authentic identification of plant material, biodiversity conservation, habitat identification of rare, endangered, threatened and endemic plants, documentation of traditional knowledge, study of molecular taxonomy, to check bio-piracy of intellectual property, environmental management etc. It is the permanent preservation and management of collections of plants/plant parts. The development of virtual and searchable herbarium database will provide taxonomic information for authentic identification and important data with regards to different species.

Research Methodology:-

1. Plant/plants parts were collected from the field probably at the time flowering and fruiting.
2. Collected samples were dried in blotting sheets for at least one week.
3. Samples were mounted on white mount board sheets with details like collection number, name of collector, locality, habit, habitat, distribution, flowering, fruiting, local name, scientific name, family, uses.
4. Specimens were disinfected and preserved by using mercuric chloride solution (0.1%) to make specimens unpalatable to insects.
5. Lamination of specimens were also done for disinfection and preservation from pathogens, insects and mites.
6. These specimens were digitized by developing herbsoft for easy identification for various stakeholders..

Study Design:

1. SFRI-Herbarium is unique in terms of its scientific arrangement of plants/plant parts adopting Bentham and Hooker's classification system.
2. Database of taxonomic information of forestry species was designed to develop virtual and searchable herbarium through herb-soft.

Objectives of Research:-

- Maintenance of old specimens and herbarium software.

Outcome of the Project: -

- SFRI has a rich forest herbarium since 1963. Presently all species which present in herbarium was digitized and can be identified through software (Herbsoft).
- Total specimens – 20364 Total family – 198 Total Genus – 1231 Total Species – 3478

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries.

- a. Developed Nursery techniques of RET species and Baobab.
- b. Development of nursery techniques of root trainers (Training given to the staff of social forestry and territorial division).
- c. Helping people by giving them knowledge about plantation.
- d. Developed Nursery techniques of Baobab (*Adansonia digitata*).
- e. Developed Nursery techniques of Salai (*Boswellia serrata*).

Other significant achievements.

S.No.	Title of the work	Achievement
1	जबलपुर वनमण्डल के कुण्डम परिक्षेत्र के कक्ष क्रमांक RF-314 के वन क्षेत्र में सूख रहे सागौन के वृक्षों की जांच एवं उनके नियंत्रण की जानकारी	Field visited and Report submitted on Sept. 2025
2	डिण्डोरी वनमण्डल के शाहपुर परिक्षेत्र के कक्ष क्रमांक 1350 के रोपण क्षेत्र में कीट प्रकोप की जांच एवं उनके नियंत्रण की जानकारी	Field visited and Report submitted on Sept. 2025
3	सतना वनमण्डल एवं मैहर वनमण्डल के विभिन्न वन क्षेत्रों में सूख रहे सागौन के वृक्षों की जांच का प्रारंभिक प्रतिवेदन।	Field visited and Report awaited from JNKVV Jabalpur.
4	अनूपपुर वनमण्डल के अमरकंटक रेंज में साल बोरर से प्रभावित साल वन क्षेत्रों का निरीक्षण प्रतिवेदन	Field visited and Report submitted on Nov. 2025.
5	डिण्डोरी वनमण्डल के पूर्व करंजिया रेंज में साल बोरर से प्रभावित साल वन क्षेत्रों का निरीक्षण प्रतिवेदन	Field visited and Report submitted on February 2026.
6	उत्पादन वनमण्डल डिण्डोरी के कूपों एवं डिपों में साल बोरर प्रभावित काष्ठ के रखरखाव हेतु जानकारी।	Compiled information submitted to DFO (Production) Dindori on February 2026.



Discussion with Hon'ble Sumitra Balmik (Member of the Parliament Rajya Sabha) and Shri Jagat Bahadur Singh (Mayer Jabalpur) regarding the Baobab plant



Training at Dhar



Members of Biodiversity Board Madhya Pradesh visited the experimental site in SFRI Nursery



Gene Bank



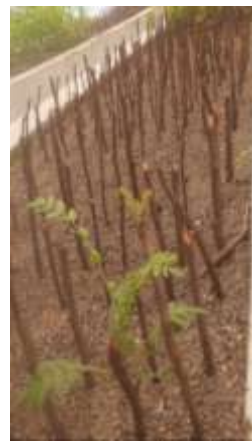
Demo plot



Students visited Gene Bank



Forest officers and staff visited SFRI Nursery



Experiment through stem cutting



Experiment through seed treatment



Seed germination

Salai Project



Botanical Garden View



Plantation of new species in Botanical Garden



Visit by Students and village committee members



Forest staff and villagers learning Nursery techniques

2.1.3 FOREST MANAGEMENT RESEARCH DIVISION

Mandate:

1. Contribution to the knowledge of silviculture of forestry species.
2. Development and standardization of nursery and planting techniques of different forestry species.
3. Evaluation of plantations raised by the state forest department and forest development corporation.
4. Evaluation of the quality and impact of various development activities of the state forest department.
5. Determination of sustainable harvesting practices of timber and bamboo species.
6. Provision of soil testing services to the SFD, FDC and other users.
7. Finding the growth development of crop stands for different species in different site quality classes and in different agro climatic zones.
8. Designing the experiments and analysis of data for preparing the conclusion from the projects for all the research branches of the institute.
9. Training on 'Establishment, maintenance and periodic measurement of sample plots to departmental personnel and students.'

List of project titles with names of funding agency

Completed Projects: 01

1. जंगल की आग का मृदा संरचना एवं मृदा नमी पर प्रभाव।

Funding Agency : अपर प्रधान मुख्य वन संरक्षक (संरक्षण), म.प्र. भोपाल

Ongoing Projects: 03

1. Training on concept of Soil Moisture Conservation and its Importance in forestry.

Funding Agency : PCCF CAMPA, Madhya Pradesh, Bhopal

2. सूक्ष्म प्रबंध योजना निर्माण हेतु प्रशिक्षण कार्यक्रम।

Funding Agency : अपर प्रधान मुख्य वन संरक्षक (संयुक्त वन प्रबंधन) मध्यप्रदेश, भोपाल

3. Study based on growth of sample plots of Teak, Sal and other species laid out in different forest areas of Madhya Pradesh.

Funding Agency : SFRI, Jabalpur

Regular Activities : 02

1. मृदा नमूनों का परीक्षण।

Funding Agency: SFRI, Jabalpur

2. Periodic measurement of sample plots laid out in different forest areas of Madhya Pradesh

Funding Agency : SFRI, Jabalpur

Project Summary:-

Completed Projects

1. Title of the project - जंगल की आग का मृदा संरचना एवं मृदा नमी पर प्रभाव।

Why this Project:-

वनों में लगने वाली आग वनस्पति एवं मिट्टी दोनों को ही प्रभावित करती है। वन भूमि पर जंगल की आग का प्रभाव बहुत जटिल है। यह मिट्टी के कार्बनिक पदार्थों, वृद्ध एवं सूक्ष्म पोषक तत्वों, मिट्टी के भौतिक गुणों जैसे बनावट, रंग पी.एच., बल्क डेंसिटी इत्यादि गुणों को प्रभावित करती है। जंगल की मिट्टी पर आग का प्रभाव विभिन्न कारकों जैसे आग की तीव्रता, ईंधन भार एवं मिट्टी की नमी पर निर्भर करता है। वन की आग के अत्यधिक तापमान एवं अधिक अवधि होने के कारण गंभीर परिणाम प्राप्त होते हैं।

इन सभी कारणों को देखते हुये अग्नि प्रभावित क्षेत्र एवं जहाँ अग्नि नहीं है उस क्षेत्र की मृदा का परीक्षण कर उनके परिणामों से अवगत होने के लिये यह परियोजना तैयार की गयी है।

Research Methodology:-

- इस परियोजना के अंतर्गत अध्ययन हेतु वनमंडल का चयन किया जावेगा।
- चयनित वनमंडल के जिन वन परिक्षेत्रों में आग लगने की घटना घटी हो, अध्ययन हेतु चयनित किया जाकर उन स्थानों से मृदा नमूनों को एकत्रित किया जावेगा।
- इसके साथ ही अग्नि प्रभावित क्षेत्र से लगे वन क्षेत्र जहाँ आग नहीं लगी, वहाँ की मृदा का नमूना भी एकत्रित किया जायेगा।
- मृदा परीक्षण में मृदा के विभिन्न भौतिक एवं रासायनिक पैरामीटरों जैसे:- मृदा नमी (Moisture), जलधारण क्षमता (WHC), मृदा का टैक्सचर (Texture), मृदा संगठन (Mechanical Analysis), बल्क डेंसिटी (Bulk density), मृदा का पी.एच. (pH), विद्युत चालकता (EC), कार्बनिक कार्बन (OC), कार्बनिक पदार्थ (OM), एवं पोषक तत्व जैसे नाइट्रोजन, फास्फोरस एवं पोटेशियम आदि का परीक्षण किया एवं परीक्षण के उपरांत प्राप्त परिणाम के आधार पर मृदा के ऊपर वन अग्नि के प्रभाव का अध्ययन कर प्रतिवेदन फंडिंग एजेंसी अ.प्र.मु.व.सं. (संरक्षण) म.प्र. भोपाल को भेजा गया।

Study Design:-

इस हेतु चयनित किए गए वनमण्डल पश्चिम मण्डला के लगभग 25% परिक्षेत्र के 10% बीट के स्थलों का Randomly चयन शोध कार्य हेतु किया गया। इसके अंतर्गत चयनित क्षेत्र में जिग जैग (zig zag) पद्धति से प्रति हेक्टेयर क्षेत्र से 5-5 मृदा नमूने अग्नि प्रभावित क्षेत्र से एवं लगे हुए बिना अग्नि

प्रभावित क्षेत्र से एकत्रित कर 1–1 मृदा नमूना तैयार किये गये। इस तरह से मृदा नमूनों की लगभग 10% सैम्पलिंग की गयी।

- Objectives of project:-** जंगल की आग का मृदा संरचना एवं मृदा नमी पर प्रभाव का अध्ययन करना।

Activities Undertaken:-

- चयनित वनमण्डल में अग्नि प्रभावित क्षेत्र चयन।
- मृदा नमूनों को एकत्र करना।
- मृदा परीक्षण प्रयोगशाला में मृदा की भौतिक एवं रासायनिक पैरामीटरों का विश्लेषण।

Cost of the project : ₹.3.82 लाख

Expected outcome of the Project:-

इस परियोजना के माध्यम से वनों में लगने वाली आग से प्रभावित स्थलों की मृदा संरचना एवं मृदा नमी पर प्रभाव का अध्ययन कर वहाँ की मृदा के पी एच, आर्गेनिक कार्बन, ई.सी., नाइट्रोजन, फॉस्फोरस, पोटेशियम, जल धारण क्षमता, टेक्सचर, मृदा संगठन (Mechanical Analysis), बल्क डेंसिटी आदि का स्तर (Status) इस क्षेत्र की मृदा में ज्ञात किया।

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries – अध्ययन उपरांत प्राप्त परिणामों के आधार पर भविष्य की रणनीति बनाने हेतु सुझाव प्रेषित किये जायेंगे।

Ongoing Projects

- Title of the project** - Training on concept of Soil Moisture Conservation and its Importance in forestry.

Why this Project:-

- Soil and moisture conservation is an important aspect for improving the forest productivity.
- So, The knowledge regarding soil moisture conservation (SMC) is essential to field foresters.
- SMC practices such as contour trenches, continuous contour trenches, gabion structures etc. is benefit for field foresters.

Research Methodology:-

- Preparation of training manual of the training programme.
- Identification of prospective trainees by DFOs of 63 forest divisions of MP.
- Organization of three days in-house training programme every month for the field foresters from various forest divisions.
- Each training programme will be participated by 30 trainees.
- 08 training programmes will be organized in a year which will be participated by trainees.
- Classroom lectures involving audio-visual aids will be used for training purpose.
- Field visits will be conducted for demonstration of various soil moisture conservation techniques.
- Feedback will be obtained on the trainees regarding the training programme and for improvisation of further training programmes.

Study Design:-

- 3 day training programme

Objectives of project:-

- Skill development and capacity building of field foresters regarding soil and water conservation techniques.

Activities Undertaken:-

- 08 training programmes will be organized in a year which will be participated by trainees.

Cost of the project : Rs. 41.40 lakh

Expected outcome of the Project:-

- Knowledge up-gradation and skill development of approx. 240 field foresters who will serve as master trainers in the field of soil and moisture conservation techniques.

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries – Forest professionals & Field foresters.

2. Title of the project:- सूक्ष्म प्रबंध योजना निर्माण हेतु प्रशिक्षण कार्यक्रम।**Why this Project:-**

वन प्रबंधन में स्थानीय समूदायों की भूमिका को अधिक सशक्त बनाने एवं सामंजस्य बनाये रखने के लिए सूक्ष्म प्रबंध योजना तैयार की जाती है। सूक्ष्म प्रबंध योजना निर्माण का कार्य ग्रामवासियों की सहभागिता एवं आपसी सामंजस्य द्वारा वन समिति विकास के लिये किया जाता है।

Research Methodology:- इस परियोजना के क्रियान्वयन हेतु निम्नानुसार कार्यवाही की जावेगी।

- ये प्रशिक्षण कार्यक्रम 63 वनमंडल के क्षेत्रीय वनकर्मी के लिये आयोजित किया जायेगा जिसमें वनरक्षक से लेकर वनक्षेत्रपाल स्तर के कर्मचारी/अधिकारी सम्मिलित होंगे। संस्थान द्वारा सूक्ष्म प्रबंध योजना निर्माण के प्रशिक्षण हेतु एक प्रशिक्षण पुस्तिका तैयार की जावेगी।
- प्रत्येक माह में एक बार तीन दिवसीय प्रशिक्षण-सह-कार्यशाला का आयोजन किया जायेगा। प्रशिक्षण-सह-कार्यशाला संस्थान में आयोजित की जावेगी जिसमें विभिन्न वन मण्डलों के क्षेत्रीय अमले को आमंत्रित किया जावेगा।
- प्रत्येक प्रशिक्षण में 30 प्रशिक्षणार्थी होंगे।
- वर्ष में कुल 10 प्रशिक्षणों का आयोजन किया जायेगा। मध्यप्रदेश के कुल 63 वनमण्डलों में से प्रत्येक वनमण्डल से 5-5 प्रशिक्षणार्थियों को प्रशिक्षित किया जायेगा इस प्रकार कुल 315 प्रशिक्षणार्थी प्रशिक्षित किये जायेंगे।
- प्रशिक्षण हेतु क्षेत्र के क्षेत्रीय अमले का चयन संबंधित वनमण्डलाधिकारी द्वारा किया जावेगा।
- प्रशिक्षण के दौरान फीड बैक के माध्यम से प्रशिक्षणार्थियों को होने वाली समस्याओं एवं उनके सुझावों को संकलित कर वित्तपोषित संस्था को भेजा जावेगा।

Study Design:-

सूक्ष्म प्रबंध योजना निर्माण हेतु तीन दिवसीय प्रशिक्षण कार्यक्रम का आयोजन किया जाएगा। सभी 10 प्रशिक्षण राज्य वन अनुसंधान संस्थान जबलपुर में वन मण्डल स्तर पर चयनित क्षेत्रीय अमले को दिये जायेंगे।

Objectives of project:-

वन विभाग के क्षेत्रीय अमले के लिये प्रशिक्षण देकर उनमें सूक्ष्म प्रबंध योजना तैयार करने की क्षमता एवं दक्षता बढ़ाना।

Activities Undertaken:-

10 प्रशिक्षण राज्य वन अनुसंधान संस्थान जबलपुर में वन मण्डल स्तर पर चयनित क्षेत्रीय अमले को दिये जायेंगे एवं प्रतिवेदन तैयार किया जायेगा।

Cost of the project : 51,75,000 /—

Expected outcome of the Project:-

- 'सूक्ष्म प्रबंध योजना निर्माण हेतु प्रशिक्षण कार्यक्रम' परियोजना के द्वारा क्षेत्रीय अमला, ग्रामवासियों की सहभागिता से अपने कार्यक्षेत्र की सूक्ष्म प्रबंध योजना तैयार करने में सक्षम हो सकेगा, जिससे उस क्षेत्र का वन संसाधन एवं ग्रामीण संसाधन संबंधी संपूर्ण विकास हो सके।
- इनमें प्रस्तावित बहुउद्देशीय कार्य-योजनायें, चहुँमुखी, ग्राम विकास की अवधारणा को मूर्तरूप देने में सफल रहेगी।

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries – प्रशिक्षण उपरांत परिणामों के आधार पर सूक्ष्म प्रबंध योजना तैयार किये जाने हेतु सुझाव प्रेषित किये जायेंगे। यह प्रशिक्षण क्षेत्रीय अमले के लिये लाभप्रद रहेगा।



सूक्ष्म प्रबंध योजना निर्माण हेतु तीन दिवसीय प्रशिक्षण कार्यक्रम एवं फील्ड विज़िट

3. Title of the Project:- Study based on growth of sample plots of Teak, Sal and other species laid out in different forest areas of Madhya Pradesh

Why this Project:-

To compile all the crop parameters and volume of the felled trees to create an initial database for forecasting

Research Methodology:-

- Collection of growth data of sample plots.
- Grouping into different site qualities, forest types and species wise.
- Estimation of future productivity.
- Final compilation and report preparation.

Study Design:-

- Compilation of all the crop parameters and volume of the felled trees from all sample plot files.

Objectives of Research:-

- To study the yield for different site qualities, forest types and species wise.
- To create an initial database for forecasting, reference.

Activities Undertaken:-

- Data entry has been completed for 33 sample plots
- Data analysis work is in progress.

Cost of the project : Rs. 2.40 lakh

Expected Outcomes of Research:-

- Compilation of all the crop parameters and volume of the felled trees to create an initial database for forecasting.

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries-

Compilation of all the crop parameters and volume of the felled trees to create an initial database for forecasting used for forest professionals, field foresters.

Regular activity :

1. Title of the Project:- **enl ueuk dk ijh{k.kA**

Why this Project :-

- विभिन्न वनमण्डलों में किए जा रहे वृक्षारोपणों को सफल बनाने के लिये।
- वृक्षारोपण स्थल की मृदा में उपलब्ध पोषक तत्वों की मात्रा ज्ञात करने।
- पोषक तत्वों की पूर्ति के लिए सिफारिश।

Research Methodology:-

- मृदा नमूनों की तैयारी
- मृदा नमूनों का भौतिक एवं रासायनिक परीक्षण

Study Design:- मृदा नमूनों का भौतिक एवं रासायनिक परीक्षण।

Objective of Research:- मृदा परीक्षण कार्य

Activities Undertaken:-

- मृदा नमूनों की तैयारी
- मृदा नमूनों का भौतिक एवं रासायनिक परीक्षण
- मृदा स्वास्थ्य कार्ड तैयार करना

Cost of the Project :- Rs. 5.00 lakh

Expected Outcome of Research : -

- विभिन्न वनमण्डलों, वन विकास निगम एवं संस्थान के विभिन्न विभागों से प्राप्त लगभग 1868 मृदा नमूनों का परीक्षण कर संबंधितों को रिपोर्ट प्रदाय किया।
- मृदा परीक्षण की रिपोर्ट के आधार पर वृक्षारोपणों को अधिक से अधिक संख्या में सफल बनाना।

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries – वन विभाग के क्षेत्रीय अमले, हितग्राहियों के लिए

2. Title of the Project:- **Periodic measurement of sample plots laid out in different forest areas of Madhya Pradesh.**

Why this Project :-

Sample plots are measured periodically for growth studies. Crop parameters are calculated for estimating growth.

Research Methodology:-

- Dia meter and height of the trees are measured for the calculation of crop parameters.

Study Design:- Dia meter and height of the trees are measured for the calculation of crop parameters.

Objective of Research:-

- Periodic measurement of sample plots laid out in different forest areas of Madhya Pradesh.

Activities Undertaken:-

- Dia and height of the trees are measured for the calculation of crop parameters.

Cost of the Project :- Rs. 7.77 lakh

Expected Outcome of Research:-

- Initial database for growth studies will be created for guidance, reference and comparison.

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries:-

- Initial database for growth studies will be created for guidance, reference and comparison for forest professionals, field foresters

Note:- Due to lack of funds this work could not be done this year but the work will be carried out under new project 'Periodic measurement of sample plots laid out in different forest areas of Madhya Pradesh' for next 5 years and sanctioned by SFRI, Jabalpur.

2.1.4 FOREST UTILIZATION RESEARCH DIVISION

Mandate

1. Timber and Fuel-wood utilization
2. Medicinal and Aromatic plants
3. Market Information System
4. Bamboos
5. Gums, resins & other NWFP's
6. Forest-based Livelihoods

List of project titles with names of funding agency

Completed Project : 01

1. Developing A New Danger Rating System.

Funding Agency: PCCF (Protection) MP, Bhopal

Project Summary

Completed Project:

1. Title of the Project:- Developing A New Danger Rating System.

Why this Project:-

- Enhanced capacity of Field staff of forest in fire danger assessment.
- Improved preparedness and response strategies to forest fires.

Research Methodology and Study Design:-

- Meteorological Data (temperature, humidity, wind speed, and precipitation) collection from Meteorological stations.
- Vegetation data collection on types of vegetation, prone to fire in selected forest areas.
- To collect vegetation data at fire-prone areas in the selected areas, for identifying the types of vegetation that are particularly susceptible to wildfires
- Collection of secondary data and compilation of records from past forest fire incidents, encompassing location, causes and impacts, for understanding the fire dynamics and inform management strategies.

Objectives of Research-

- Planning and execution of firefighting operations
- Risk reduction and mitigation
- Develop a localized Forest Fire Danger Rating System.
- Improvement in existing methodologies fire danger assessment.
- Training of staff for utilizing the Forest Fire Danger Rating System
- Division wise map will be developed on forest fire prone area
- To minimize the risk of wildfires and their destructive potential by reducing the amount and continuity of fuel load.

Activities Undertaken:- Documented information on past fire incidences. Collection of Meteorological Data, vegetation data on fire-prone areas.

Cost of the project:- Rs. 3.43 lakh

Outcome of Research:-

- Draft Report submitted to funding agency



2.1.5 FOREST PRODUCTIVITY RESEARCH DIVISION

Mandate

1. Seed collection, testing and certification.
2. Seed storage and treatment.
3. Research on seed biology, seed biochemistry, seed physiology and seed technology with regards to seed pre treatments and storage of seeds to enhance germination and longevity of seeds.
4. Plant propagation and nursery management.

List of project titles with names of funding agency

Completed Project:- 01

1. Comparative study of MP Teak Timber and Imported Teak Timber
Funding Agency: PCCF (Production), M.P. Bhopal

Ongoing projects:- 02

1. Standardization of Propagation technology for production of quality seedling of *Boswellia serrata*, *Buchanania lanzan* and *Shorea robusta*.

Funding Agency : PCCF (R&E) Bhopal

2. Standardization of species specific root trainer sizes and potting mixes of five important wild medicinal tree species.

Funding Agency : Green India Mission, Bhopal

1. Identification of seed stands for establishment of Seed Production Area of Anjan, Aonla, Bija, Haldu and Khamer.

2. Identification of seed stands for establishment of Seed Production Area of Teak.

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Regular Activity:- 01

- Funding Agency - SFRI, Jabalpur

Completed project

Why this Project:-

- ### Research Methodology:-

- Study design:** Nearly 10% traders are selected by using random number table procedure for collecting market information through prepared questionnaire.

- To compare the physical, chemical and mechanical properties of MP teak and imported teak timber.
- To analyze the price difference between MP teak and imported teak timber.
- To investigate consumer preference for local and imported teak.

- Collected MP teak and imported teak samples from Jabalpur, Bhopal, Indore and Nagpur Forest Divisions.
- Samples were collected in different sizes to know various property of MP teak and Imported teak i.e. moisture content, density of wood / specific gravity, modulus of elasticity, modulus of rupture, compressive strength (parallel to grain), compressive strength (perpendicular to grain), tensile strength (parallel to grain), hardness (a surface and b End), shear strength parallel to the grain, nail holding power (a surface and b End), screw holding power (a surface and b End), 1% NaOH solubility, hot water solubility, holocellulose, klason lignin, cellulose, cold water solubility, alcohol + acetone + toluene and pH.

- Prepared questionnaire to collect information on sale, purchase quantity of MP teak and imported teak, customer feedback etc.
- Interview of traders were conducted through survey.

Cost of the Project:- 13.90 lakh

Outcome of the project

Physical and mechanical properties:

It is observed that MP teak seems to be more durable (due to its highest modulus of elasticity (12029 N/mm^2), rupture strength (101.64 N/mm^2), and tensile strength (92.76 N/mm^2).

It is also best for load bearing property due to high compression (51.86 N/mm^2 parallel to grain and 15.22 N/mm^2 perpendicular to grain) and tensile strength (119.18 N/mm^2).

Hardness is also recorded the highest in MP teak (5372-surface; 6375-end surface) which gives more strength.

Highest screw and nail holding power at surface is observed in MP teak while highest screw and nail holding power at end is observed in Ghana Teak but it is inferior to MP teak in other mechanical properties.

Nigeria teak is least durable due to lowest values across multiple strength categories.

It can be concluded that most of the mechanical properties of MP teak is superior to other imported teak wood.

Chemical properties:

- MP teak seems to be suitable for outdoor or long term use due to its high lignin content (27.92%) indicating strong structural support and decay resistance.
- MP teak is also best for chemical stability and potential longevity due to its low solubility in cold water (3.54%) and hot water (6.08%).
- Burma teak is next to MP teak for outdoor use.
- Most of the chemical properties of MP teak is superior to other imported teak.

Price difference study indicate that sale of MP teak is decreased in comparison to imported teak because profitability is high (88.5%) per cft by sale of imported teak while it is low (48.6%) per cft through sale of MP teak. This trend is recorded due to high forest royalty and auction price & incompatibility of lot feature with market requirement.

Consumer preference study indicates that demand of imported teak product are increased as compare to MP teak product due to higher price of MP teak and availability of imported teak as per market demand with respect to sizes. Consumer rated MP teak as high quality, high utility and more durable but due to its higher price and unavailability in proper sizes as per market demand; they purchase imported teak more than MP teak.

Trader's suggested fixed and advanced auction calendar and to reduce offset price of MP teak.



Sample collection



Meeting with timber union in Jabalpur



Discussion with trader



Meeting with timber union in Indore

Ongoing Projects – 02

1. Title of the Project:- Standardization of Propagation technology for production of quality seedling of *Boswellia serrata*, *Buchanania lanzan* and *Shorea robusta*.

Why this project

In the present study three species of commercially important, i.e. *Boswellia serrata*, *Buchanania lanzan*, and *Shorea robusta* needs more attention due to its medicinal and commercial value. Natural regeneration and distribution of these species in natural forest is decreased in the past few years, due to over exploitation and poor seed germination.

Research Methodology

For development of packages of seed and nursery techniques of selected species, the systematic and scientific work will be done on following lines:

- Collection of seeds from identified superior sources by hand plucking at peak maturity.
- After collection, seeds will be stored in different containers and open conditions.
- Stored seeds will be tested at the three months intervals from the point of view of seed longevity and germination potential.
- Fresh and stored seeds will be tested with various pretreatments to enhance the germination potential.
- Seed germination capacity will be tested in different conditions and in different sowing media.
- For standardization of nursery technique, size of root trainer and different potting mixture will be tried.
- Seedling growth and survival percentage will be measured in different sizes of root trainers with various potting media.
- 10,000 plants will be prepared under the various activities of the project of each species.
- Produced plants will be distributed to the rural communities and Forest Departments in free of cost under dissemination activities.

Study design: Randomize Block Design (RBD)

Objectives:

- To standardize seed and nursery techniques for raising quality seedlings and for successful plantation of targeted species.

Activities undertaken

- Project staff is recruited.
- Review of literature were searched.
- Site survey of potential pockets was done for collection of seeds.

- Required chemicals and material are procured and experiment is laid.
- Nursery beds are prepared and seeds are sown as per study design.
- Nearly 30000 poly bags are filled for preparation of seedlings of targeted species.

Cost of project: Rs. 40.00 lakh

Expected outcome: The impact of the project is of high practical importance for production of quality planting stock of commercially and medicinally important targeted species and sustainable management through using of plants in quality plantation programme.



Buchnanianan lanzzan (fpjki th)



Shorea robusta (lky)



Shorea robusta (1ky)



Boswellia serrata (1yb)

2. Title of the Project: Standardization of species specific root trainer sizes and potting mixes of five important wild medicinal tree species.

Why this project

In present scenario on ban of polythene bags in forest nurseries, it is become necessity of alternatives of polythene bags. So, in place of polythene bags, root trainer may be an alternative of aforesaid material.

Research Methodology

Fresh seeds will be collected from identified superior trees at peak maturity of targeted species. After collection seeds will be dried in open air and will be tested for viability, moisture content and germination percentage for development of packages of nursery techniques in reference to

standardization of root trainer cell size with various potting mixture for selected species, work will be done on following lines:

- Seed collection will be done of 05 species viz. *Gmelina arborea* Roxb. (Khamer), *Madhuca longifolia* L. (Mahua), *Melia dubia* (Maha Neem), *Ougeinia oojeinensis* Roxb. (Tinsa), *Sterculia urens* Roxb. (Kullu).
- Seed testing will be done for viability, moisture and germination percentage.
- Different seed sowing media will be tried for better germination percentage.
- Seed sowing will be done in various root trainer cell size with various potting mixture.
- Seed sowing in nursery bed and germination tray.
- Experiment will be laid out in the greenhouse of the institute.
- 38 potting mixtures will be composed with various fertilizers and chemicals. Different size of root trainers will be used for standardization of root trainer cell size with potting mixture.
- Observations will be recorded on germination potential, seedling growth, survival percentage, root fiberocity, root volume, sturdiness and quality index. Potting mixture will be analyzed for its physico-chemical properties prior applied into root trainer and after the completion of experiment.

Study design: Complete Randomize Block Design (CRBD)

Objectives:

- To standardize the potting mixture of targeted species for better growth and survival of plants.
- To standardize the root trainer cell size for optimum growth of targeted species.
- To standardize the planting period of seedlings under root trainer cell size for plantation programme.

Activities undertaken

- Project staff is recruited.
- Literature is reviewing for the project activities.
- Seeds of *Gmelina arborea*, *Madhuca longifolia*, *Ougeinia oojeinensis*, *Sterculia urens* and *Melia dubia* were collected.
- After collection, germination potential of Khamer, Mahua, Kullu & Tinsa seeds are recorded. Plants of above 04 species are prepared for experiment purpose.
- Fertilizers, chemicals and other materials have been procured.
- 38 potting mixture were prepared and filled in various sizes of root trainers.
- Plants were raised in different potting mixture with different cell size of root trainers.
- After 03 months, observation on survival percentage, collar girth and height are recorded for 04 species.
- Seeds of *Melia dubia* is procured and raised in sand with various treatments for producing seedling.

Cost of project: Rs.20.94 lakh

Expected outcome

- Evaluate potting mixture for raising quality seedlings of 05 targeted species.
- Species wise root trainer size with potting mixture will be standardized.
- Standardized seedling size and period with root trainer cell size and potting mixture for plantation activities.
- Production of quality planting stock in root trainer.



Views of experiment

Newly Initiated Project – 03

1. Title of the Project:- Identification of seed stands for establishment of Seed Production Area of Anjan, Aonla, Bija, Haldu and Khmer.

Why this project

In order to raise superior plantations of important forestry species, quality planting stock raised through superior seeds is needed. The plantations raised through incorrect seed sources will not be able to meet the future requirement of timber, fuel, fodder and other forest produce. Therefore, it would be essential to select a new seed stands for qualitative and quantitative production of Anjan, Aonla, Bija, Haldu and Khmer seeds.

Research Methodology

- Before selection of seed stands, site survey work will be done for selection of superior uniform middle aged trees.
- Minimum 5 hectare area will be taken for selection of seed stands.
- The area density would be of 125 to 150 /ha superior trees.
- The survey work will be also done in Madhya Pradesh Van Vikas Nigam, Mohgaon project as per instruction of HoFF.
- Selection of seed stands will be based on the phenotype characters.
- Good genotype only can express a good phenotype.

- The factors need to be considered while selecting middle aged phenotypically superior trees viz. straightness, clear bole height, roundness, apical dominance, well developed crown and branching habit, flowering and fruiting, resistance to disease.
- The area will be of high survival percentage.
- The competition between crown should be avoided so that the number of reproductive buds and hence number of seeds is maximum.
- The age of the stand will be nearly half of the rotation age will be selected.
- The selected area divided into 2 parts – productive area and buffer area.
- Seeds will be collected from productive areas.
- The cultural operation (fertilizer application, soil working etc.) will be done to increase quality and quantity of seeds per hectare by concerning territorial division in future.
- Monitoring and supervision of cultural operation will be supervised by SFRI.
- Supervision and monitoring work will be done by SFRI at the time of seed collection and treatment process.
- Identified seed stands will be converted into seed production area by the concerning division and after conversion, those area will be maintained by the same.
- A total of 50 ha area will be selected for each targeted species. In this way, total 250 ha area will be identified during project period.
- 02 days training programme will be done to field foresters of concerning divisions on establishment and management of seed production areas. Total 05 training programme will be organized in SFRI.

Study design: Random selection

Objectives

- To collect of quality seeds for production of quality planting stock of above targeted rare endangered species.
- To establish seed production area by selection of superior seed stands in future.

Activities undertaken

- Project staff is recruited.
- Literature is reviewing to know various activities of seed production area.
- Letter is written to concerning divisions to collect information of the compartments for establishing of seed stands and conversion into SPA.
- A total of 50 ha area of Anjan species was selected as seed stand in Kantaphod range of Dewas Forest Division. The area is selected on the basis of age, clear bole height, well developed crown and branching habit, flowering and fruiting, resistance to disease of trees.

Cost of project: Proposed budget : Rs. 29.84 lakh
Sanctioned budget : Rs. 25.95 lakh



Comptt No. RF 440

Expected outcome

Collection of quality seeds for production of superior planting stock for future plantation programme.

2. Title of the Project:- Identification of seed stands for establishment of Seed Production Area of Teak.

Why this project

In the earlier established seed production areas, the capacity of seed production has reduced considerably and high quality seed is not being produced due to over age trees. Therefore, it would be essential to select a new seed stands for qualitative and quantitative production. In recent time, seed production per tree is being seen very less in the seed production area because no management work has been done in the last 20 years. So that, the demarcation and management of new seed stands should be an interim measure to meet the present requirement of better quality seeds.

Research Methodology

The following criteria will be adopted at the time of selection and management of seed stands:

- Site survey work will be done for selection of superior uniform middle aged trees.
- Selection of seed stands will be based on the phenotype characters.
- Minimum 5 hectare area will be taken for selection of seed stands.
- The area will be of high survival percentage.
- The density of superior trees would be of 150 to 200 /ha in the area.
- The age of the selected stand will be nearly half of the rotation age.
- The selected area divided into 2 parts - productive area and buffer area.
- Supervision and monitoring work will be done by SFRI at the time of cultural operation done by concerning divisions and seed collection done by concerning R&E's.
- Monitoring and supervision will be done by SFRI at the time of marking of superior and inferior trees and demarcation of pollen dilution zone by concerning divisions. This will be done when seed stands will be converted into seed production area and area will be maintained by them.

Total 1000 ha area will be identified during 02 years. After that in successive year the identification of area will be expended as per instructions of the Director. This activity will be as regular activity of the division.

Study design: Randomize Block Design (RBD)

Objectives

- To collect quality seeds for production of quality planting stock.
- To establish seed production area by selection of superior seed stands in future.

Activities undertaken

- Project staff is recruited.
- Literature is reviewing to know various activities of seed production area.
- Letter is written to concerning divisions to collect information of the forest compartments for establishing seed stands and conversion into SPA.
- A total of 95 ha area of teak species was selected as seed stand in Udaipur, Punjabura and Satwas ranges of Dewas Forest Division. The area is selected on the basis of age, clear bole height, roundness, apical dominance, well developed crown, flowering and fruiting, resistance to disease of trees.

Cost of project: Proposed budget : Rs. 36.20 lakh Sanctioned budget : Rs. 31.48 lakh

Expected outcome

Collection of quality seeds for raising quality planting stock of teak.



3. Title of the Project:- **vu|/kku ,o foLRkkj jkif.k;k dk J.khdj.k eY;kdu ,o ekU;rk dk vkdyuA**

Why this project

विभिन्न रोपणियों में स्थित अधोसंरचना, कर्मचारियों की कार्य कुशलता, पौधे तैयारी हेतु बीज श्रोत आदि के विषय में एक मापदण्ड, श्रेणीकरण एवं मान्यता के उद्देश्य से निर्धारित किया गया है, जिसके

आधार पर श्रेणीकरण एवं मान्यता विषय पर परीक्षण किया जाकर प्राप्त परिणामों का वैज्ञानिक दृष्टि से अवलोकन कर वर्ष 2022 में मूल्यांकन किया गया था।

Research Methodology

प्रदेश में स्थित विभाग की विभिन्न अनुसंधान विस्तार वृत्तों की रोपणियों का श्रेणीकरण एवं मान्यता विषय पर द्वितीय चरण में परीक्षण कर मूल्यांकन के आधार पर उत्कृष्ट एवं बहुत अच्छी श्रेणी की रोपणी लगभग 56 रोपणियों की सूची जो कि पूर्व में प्रथम चरण के समय प्राप्त हुई थी उन्हीं रोपणियों का पुनः द्वितीय चरण में वैज्ञानिक दृष्टि से विभिन्न बिंदुओं पर श्रेणीकरण एवं मान्यता हेतु मूल्यांकन कार्य किया जावेगा। मूल्यांकन कार्य नीचे दर्शित प्रमुख निर्धारित संरचनाओं को ध्यान में रखकर किया जावेगा। यह कार्य प्रथम चरण में किए गए मूल्यांकन के उपरांत प्राप्त परिणामों एवं रेटिंग को भी ध्यान में रखकर किया जाएगा।

संस्थान द्वारा किए जाने वाले मूल्यांकन कार्य के समय संबंधित जिले में स्थित रोपणी के प्रभारी सहायक वन संरक्षक भी उपस्थित रहेंगे। इसके अतिरिक्त संबंधित रोपणियों में चल रहे पौध तैयारी कार्यों के साथ-साथ लघु शोध कार्यों की वास्तविक स्थिति का आँकलन कर प्रतिवेदन प्रस्तुत किया जावेगा।

Objectives

- विभागीय स्तर पर रोपणियों के विविध कार्यों का सतत मूल्यांकन।
- उच्च गुणवत्ता के पौधे तैयारी हेतु रोपणी में स्थित प्रमुख संरचनाओं की स्थिति एवं उपयोग।
- रोपणियों में किये जा रहे कार्य का लेखा-जोखा का संधारण।
- उच्च गुणवत्ता की पौध तैयारी एवं पंजी संधारण हेतु रोपणी में संलग्न क्षेत्रीय अमले को प्रशिक्षण।

Activities undertaken

- परियोजना अमले की भर्ती।
- मूल्यांकन हेतु आँकलन प्रपत्र का निर्धारण।
- अनुसंधान विस्तार सिवनी की 07 रोपणियों का भ्रमण कर जानकारी एकत्रित की गई।

Cost of project: Proposed budget : Rs. 09.36 lakh

Expected outcome

- रोपणियों के श्रेणीकरण एवं मूल्यांकन से रोपणियों में होने वाली पौध तैयारी का मानक स्तर में सुधार होगा।
- इसके साथ ही समय-समय पर किये जाने वाले निरीक्षण से पाए जाने वाली कमियों में सुधार किया जाकर गुणवत्ता युक्त रोपणी तैयार होंगी।
- भविष्य में रोपणियों में तैयार पौधों का पूर्ण लेखा संधारण का सॉफ्टवेयर तैयार किया जा सकेगा, जिसे क्षेत्रीय स्तर पर उपयोग कर आगे की रूपरेखा तैयार होगी।





vu|/kku foLrkj oRr] flouh vrxr jki.kh dk Hke.k] Ji.khdj.k ,o ekU;rk dk vkdyu

Regular Activities - 01

1. Title of Project : Seed, collection, testing & certification.

Objectives of Research:

- Seed Collection, testing and certification.
- Provide quality seeds future plantation programme of users.

Achievements:

- 15 teak samples were tested and certified for various standard parameters. These samples received from MPRVVN, Balaghat, Seoni, Jabalpur and Umaria.
- No demands were received from Forest Department during the year, hence seeds were not collected.

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries:

Physical, chemical and mechanical properties of MP teak and Imported teak timber were analyzed under the project "Comparative study of MP teak timber and imported teak timber".

Other Significant achievement :

- 01 project was completed and final report submitted to the funding agency.
- 1086 field foresters of various forest divisions and R&E circles and college students were trained for plant preparation in root trainers and their management in nurseries, seed technology for plant production in root trainer.
- 20 plantations under FDA project were evaluated and report submitted.
- Project under Green India Mission (GIM) for the year 2021-22 and 2022-23 was evaluated and report submitted.

2.1.6 SOCIO ECONOMIC RESEARCH DIVISION

Mandate

1. SOCIOLOGICAL STUDIES

Research Priorities

- (i) Studies of changes in the pattern of dependence of tribal and other forest dwelling communities on forests.
- (ii) Studies on the role of various tree species in the religio-cultural practices of tribal and other forest dwelling communities.
- (iii) Developing models of adaptation to climate change for villages located in the vicinity of forests in order to make them climate smart village.

2. FOREST ECONOMICS

Research Priorities

- (i) Estimation of the contribution of various goods and services provided by forests in the gross domestic product.
- (ii) Estimation of the quantities of various non-nationalized NTFPs, including medicinal plants, annually collected in the state and their economic valuation.
- (iii) Estimation of demand and supply and study of value supply chains of commercially important medicinal and aromatic plant species.
- (iv) Wood balance studies.
- (v) Assessment of the demand and potential availability of raw material resource for forest based industries.

3. AGROFORESTRY

Research Priorities

- (i) Survey and documentation of currently prevailing social forestry, farm forestry bund planting and agroforestry practices, along with their economics.
- (ii) Estimation of species-wise trees outside forests (ToFs) in the state.
- (iii) Development of suitable agroforestry models for various agroclimatic zones of the state.

4. POLICY RESEARCH

Research Priorities

- (i) Impact assessment of various policies, legislations, rules, regulations, government resolutions, schemes, programmes procedures, etc. related to forestry sector, identification of problems/bottlenecks in their implementation and suggesting amendments/modifications, if required.
- (ii) Exploring possibilities of Forest Certification and facilitating the forest department in obtaining FSC certification.

List of project titles with names of funding agency

Completed Projects:- 01

1. “वन गतिविधियों के मूल्यांकन में संयुक्त वन प्रबंधन समितियों (JFMCs) की भूमिका का विश्लेषण”, विशेष रूप से वन अग्नि प्रबंधन पर ध्यान केंद्रित करते हुए।

Funding Agency: प्रधान मुख्य वनसंरक्षक अनुसंधान, (कक्ष-संरक्षण), मध्यप्रदेश वन विभाग

On-going Projects:- 02

1. मध्यप्रदेश के विभिन्न कृषि-जलवायु क्षेत्रों में कृषि-वानिकी मॉडल्स की सफलता एवं असफलता के कारकों का विश्लेषण

Funding Agency: अपर प्रधान मुख्य वन संरक्षक अनुसंधान, विस्तार एवं लोक वानिकी भोपाल म.प्र।

2. Strengthening of Market Information System (MIS) for Dissemination of Market Analysis of Minor Forest Produce in Different Agro-climatic Zones of Madhya Pradesh.

Funding Agency: M.P. State Minor Forest Produce (Trade & Dev.) Federation, Bhopal

Completed Projects

1. Title of the Project: “ou xfrfofèk; k d eY; kdu e l; ä ou çcèku lfeFr; k %JFMCs% dh Hkfedk dk fo'y'k.k?”] fo'k" : i l ou vfXu çcèku ij è; ku dīfār dīrī g, A

Why this Project:-

प्रायः गर्मियों के दौरान जंगल में आग की घटनाएँ होती हैं। स्थानीय समुदायों और वन विभाग के बीच साझेदारी को बढ़ावा देने के लिए संयुक्त वन प्रबंधन समितियाँ (JFMCs) गठित हैं जो अन्य वानिकी गतिविधियों के साथ-साथ जंगल की आग को नियंत्रित करने में अपनी भूमिका निभाती हैं। इसके बावजूद भी वनाग्नि से प्रत्येक वर्ष हानि का सामना करना पड़ता है। इसी कारण जंगल में वनाग्नि की घटना रोकने और JFMCs की भूमिका को अधिक प्रभावी बनाने के लिए वन विभाग एवं स्थानीय समितियों के मध्य समन्वय में कमियों, कारण एवं समाधान के लिए गति प्रदान करने हेतु इस अध्ययन की नितान्त आवश्यकता थी, जिसे दूर कर JFMCs की भूमिका को प्रभावी बनाया जा सके।

इस परियोजना का उद्देश्य JFMCs की वन संरक्षण, विशेष रूप से वन अग्नि प्रबंधन में प्रभावशीलता का मूल्यांकन करना है। इससे यह समझने में सहायता मिलेगी कि JFMCs किस हद तक वन अग्नि की रोकथाम और प्रबंधन में सफल रही हैं तथा इस दिशा में सुधार हेतु किन रणनीतियों को अपनाने की आवश्यकता है। इस अध्ययन से प्राप्त निष्कर्ष नीति निर्माताओं और स्थानीय समुदायों के लिए वन प्रबंधन को अधिक प्रभावी बनाने में सहायक सिद्ध होंगे।

Research Methodology & Study Design:-

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- परियोजना के अंतर्गत प्रथम चरण में महाकौशल क्षेत्र में आने वाले वनमंडलों में से डिण्डौरी वनमंडल के अंतर्गत वनों में लगने वाली आग से सम्बंधित परिक्षेत्र अथवा समूह का चयन कर अध्ययन किया गया है।
- महाकौशल क्षेत्र के वनमंडलों में से विगत पाँच वर्षों के कालखण्ड में –
 - सबसे अधिक निरंतर आग लगने की घटना वाले समूह,
 - एक या इससे अधिक वर्ष के अंतराल में लगने वाली आग की घटना वाले समूह,
 - ऐसे समूह जहाँ विगत पाँच वर्ष अथवा इससे कम या अधिक आग लगने का अंतराल हो,
 - ऐसे समूह जहाँ पूर्व में आग लगने की घटना घटी हो और इसके बाद कभी आग लगने की घटना न हुई हो को अध्ययन में सम्मिलित करते हुए उक्त क्षेत्र से सम्बंधित वन सुरक्षा समितियों के सदस्यों का साक्षात्कार एवं समूह चर्चा द्वारा आंकड़े एकत्र किया गया है।
- चयनित वनमंडल के अंतर्गत आने वाली वन सुरक्षा समिति के सदस्यों, वन अधिकारियों, स्थलीय कर्मचारियों एवं ग्रामीण लोगों से चर्चा तथा साक्षात्कार के माध्यम से क्षेत्र के वनों में आग लगने एवं इसे रोकने अथवा काबू पाने से सम्बंधित जानकारी एकत्र करने का कार्य किया गया है।
- चयनित वनमंडल के अंतर्गत वन क्षेत्रों में आग लगने की घटना पर वन समिति वार उनकी समस्त भूमिका से सम्बंधित आंकड़ों का संकलन।
- चयनित वनमंडल के अंतर्गत आग लगने की घटना में वन सुरक्षा समितियों एवं वनमंडल के स्थलीय अमले को आने वाली समस्याओं का आंकलन।
- वनों में लगने वाली आग को रोकने एवं आग बुझाने में आने वाली समस्या के समाधान हेतु संभावित उपाय की खोज।

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वनों में आग लगने की घटना एवं इससे सम्बंधित क्रिया और प्रक्रिया से सम्बंधित जानकारी एकत्र करने के लिए नेट, प्रकाशित एवं अप्रकाशित साहित्य, वनमंडलों की कार्य आयोजना से

द्वितीयक आंकड़ों का संकलन एवं अध्ययन, सरकारी रिपोर्ट्स, वन विभाग के आंकड़े, शोध पत्र और JFMCs की बैठक रिपोर्टों का विश्लेषणात्मक अध्ययन।

• **कलेक्टेड डेटा का विश्लेषण**

JFMCs के सदस्यों, वन अधिकारियों और स्थानीय समुदायों के साथ साक्षात्कार, JFMCs के सदस्यों से सामूहिक चर्चा (FGD) के माध्यम से वनाग्नि से सम्बंधित आंकड़ों का आंकलन, अग्नि प्रभावित समूह क्षेत्रों का सर्वेक्षण और प्रत्यक्ष अवलोकन।

डिण्डौरी सामान्य वनमण्डल में कुल वन सुरक्षा समिति 438 व सदस्य संख्या 5405 है। जिसमें सबसे अधिक वन सुरक्षा समिति उत्तर समनापुर में 85 है एवं सबसे कम वन सुरक्षा समिति दक्षिण समनापुर में 16 है। कुल समिति का 25 प्रतिशत से अधिक 141 वन सुरक्षा समितियों का सर्वे कर परियोजना प्रतिवेदन हेतु अधिक से अधिक जानकारी प्राप्त करने का प्रयास किया गया है।

Objectives of Research:-

1. वनों के अंतर्गत विभिन्न समूहों (क्लस्टर) में लगने वाली आग के रोकथाम में जेएफएमसी (JFMCs) की भूमिका का अध्ययन।
2. JFMCs को वनाग्नि प्रबंधन में आने वाली चुनौतियों की पहचान एवं उनके समाधान का उपाय सुझाना।

Activities Undertaken (Present Status) :-

अंतिम प्रतिवेदन तैयार कर वित्त प्रदायकर्ता संस्थान को भेज दिया गया है।

Cost of the Project:- Rs.3.979 lakh

Outcome of Research:-

प्रमुख निष्कर्ष

1. अवैध चराई
2. मानवीय भूल एवं अज्ञानता
3. महुआ संग्रहण
4. जंगल के रास्ते से आवागमन
5. पिहरी संकलन
6. शिकार
7. शहद निकासी
8. आपसी रंजिश
9. बेरोजगारी
10. स्थानीय जनप्रतिनिधियों का अनुचित हस्तक्षेप
11. अन्य कारण: लाभांश वितरण से असंतोष, परस्पर सामान्य व्यवहार में भेदभाव आदि

मुख्य निष्कर्ष

1. स्थानीय वन सुरक्षा समितियों में आग की घटना एवं अवैध कटाई के प्रति उदासीनता।
2. जंगल में आग लगने की सूचना तंत्र और स्थलीय अमले में समन्वय की कमी।
3. स्थलीय अमले का बीट से दूर शहर मुख्यालय पर रहवास
4. वन सुरक्षा समितियों के पास आग बुझाने के लिए पर्याप्त संसाधन या उपकरण की कमी।
5. वन सुरक्षा समितियों को आग बुझाने के लिए कोई पारिश्रमिक नहीं मिलता है, इसलिए जोखिम नहीं लेते।
6. अग्नि शमन यंत्रों की कमी एवं खराब हालत।
7. अग्नि शमन के समय जन हानि या ईलाज के लिए विभाग की ओर से कोई प्रावधान न होने के कारण समिति के सदस्यों में जोखिम का भय।
8. लेण्टाना झाड़ी युक्त वनों में समिति के सदस्यों को असुविधा।

9. समिति के सदस्यों में प्रशिक्षण एवं जागरूकता की कमी।
10. वनों में अग्नि की घटना काल में समिति के सदस्यों का परिवारिक उत्सव एवं मांगलिक कार्यों में संलग्नता।
11. रोजगार की तलाश हेतु स्थानीय ग्रामीणों एवं समिति के सदस्यों का शहरों में पलायन।

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1. चराई को नियंत्रित करने हेतु ग्राम वन समिति/वन सुरक्षा समिति को आवंटित क्षेत्र को चराई इकाई के रूप में गठित किया जाकर चराई हेतु निषिद्ध क्षेत्र पृथक कर प्रति वर्ष भार क्षमता निर्धारित कर चराई अनुज्ञप्ति सम्बंधित ग्राम वन समिति/वन सुरक्षा समिति के माध्यम से जारी किये जायें।
2. वन समिति को आर्थिक रूप से मजबूत करने की आवश्यकता है।
3. वन अग्नि से जंगल की सुरक्षा में संलग्न समिति सदस्यों के सामूहिक बीमा का प्रावधान।
4. वन की आग बुझाते समय कोई नुकसान पहुँचता है या जनहानि होती है तो उस नुकसान के लिए कोई भी विभाग जवाबदार नहीं होता है। अगर अग्नि सुरक्षा के दौरान किसी प्रकार का जोखिम होता है तो परिवार के लिए सहारे की व्यवस्था रहेगी, ऐसी सोच के साथ समिति के सदस्य जंगल की आग बुझाने में सहयोग के लिए आगे आएंगे।
5. फरवरी से मई माह तक के लिए समितियों को आर्थिक सहायता मिलनी चाहिए जिससे ग्रामीण सदस्यों को उक्त कार्य के लिए कुछ मानदेय दिया जा सके।
6. आग बुझाने के लिए प्रत्येक बीट में अग्नि शामक यंत्रों की पर्याप्त उपलब्धता एवं रख-रखाव।
7. समीपस्थ क्षेत्रों में वैकल्पिक रोजगार की उपलब्धता।
8. अग्नि शमन में संलग्न सदस्यों को मानदेय की व्यवस्था।
9. ग्रामीण समिति सदस्य व वन विभाग के कर्मचारियों और अधिकारियों के मध्य संवाद की निरंतरता।
9. महुआ वृक्षों का स्थानीय समिति सदस्यों में बँटवारा कर उत्तरदायित्व के लिए प्रेरित करना।
10. जंगल की आग संबंधी समस्या से बचाव के लिए बीट गार्ड को अप्रैल से मई माह के बीच बीट में ही रहना व निगरानी करना सुनिश्चित किया जाना चाहिए।
11. समितियों में काष्ठ या अन्य लाभांश की राशि वितरण जुलाई या वर्षा प्रारम्भ होने पर किया जाना चाहिए।
12. वनमंडल की कार्य आयोजना एवं वरिष्ठ अधिकारियों द्वारा जारी परिपत्रों पर अमल।
13. असामाजिक तत्वों के खिलाफ अन्य विभागों से समन्वय बनाकर कड़े निर्णय की आवश्यकता।



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On-going Projects

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Why this Project:-

प्रदेश में समय-समय पर विभिन्न कृषि वानिकी मॉडल्स का अध्ययन कर खेती से औसत आय बढ़ाने के लिए कृषकों को सलाह देकर अपनाने पर बल दिया गया है। इन समस्त प्रयासों को अपेक्षाकृत सफलता नहीं प्राप्त हो सकी है, जिसका उत्तरदायित्व समय-समय पर बदलती प्राकृतिक, मानवीय एवं सामाजिक घटनाओं को जाता है। इन समस्त घटनाओं का अध्ययन कर प्रदेश के विभिन्न कृषि जलवायु क्षेत्रों में अपनाए जाने वाले कृषि वानिकी मॉडलों का अध्ययन कर उनकी सफलता एवं असफलता के कारकों को प्रकाश में लाने की आवश्यकता है, जिस पर गहन विचार विमर्श कर असफलता के कारकों को दूर कर सर्वग्राही तकनीक प्रस्तुत करना तथा सफल कृषि वानिकी मॉडल्स की अवधारणाओं को लागू करने के लिए कृषकों को मार्गदर्शन की आवश्यकता है।

परियोजना में इन्ही उपरोक्त अवधारणाओं को मूर्त रूप देने के लिए राज्य वन अनुसंधान संस्थान, जबलपुर एवं प्रदेश के अन्य शोध संस्थानों द्वारा कृषि वानिकी मॉडल्स पर किए गये अध्ययन के आधार पर प्रदेश में प्रचलित पूर्व के कृषि वानिकी मॉडल्स की वर्तमान स्थिति का अध्ययन कर उनकी सफलता एवं असफलता के कारकों को प्रकाश में लाने का प्रयास किया जाएगा।

Research Methodology & Study Design:-

- वर्ष 2000, 2010 एवं 2014 में राज्य वन अनुसंधान संस्थान, जबलपुर द्वारा किए गये कृषि वानिकी मॉडल्स अध्ययन किया गया था। प्रस्तुत परियोजना द्वारा पूर्व के कृषि वानिकी मॉडल्स से खेती में लाभ-हानि का आंकलन करते हुए, लाभप्रद मॉडल्स के बारे में प्रतिवेदन प्रस्तुत किया जाना प्रस्तावित।
- अध्ययन क्षेत्र का चयन कर चयनित जिलों में विद्यमान प्रत्येक कृषि वानिकी मॉडल्स के कृषकों का साक्षात्कार एवं स्थल अवलोकन द्वारा संरचित अनुसूची (structured interview) में ऑकड़ों का संकलन।

- परियोजना से सम्बंधित पूर्व में स्थापित अन्य कृषि वानिकी पद्धति अपनाने वाले कृषकों का पता कर मौके पर उनको भी अध्ययन में सम्मिलित किया जाना प्रस्तावित है।
- लागत-लाभ अनुपात (Cost Benefit Ratio) का आँकलन।
- प्रदेश में संभावित आँवला, बाँस, मीलिया डूबिया, क्लोनल यूकेलिप्टस, खमेर, सागौन, चंदन एवं महुआ तथा मालवा क्षेत्र में संतरा, नीबू एवं अमरुद के साथ स्थापित कृषि वानिकी मॉडल का अध्ययन।
- प्राप्त आंकड़ों का विश्लेषण कर अन्तिम परियोजना प्रतिवेदन तैयार कर वित्त पोषक विभाग को प्रस्तुत किया जायेगा।

Objective of Research:-

- मध्यप्रदेश के विभिन्न कृषि जलवायु क्षेत्र में पूर्व में प्रचलित कृषि-वानिकी मॉडल्स की वर्तमान स्थिति का अध्ययन।
- पूर्व प्रचलित कृषि-वानिकी मॉडल्स की सफलता एवं असफलता के कारणों की पहचान।
- सफल कृषि वानिकी मॉडल्स की रूपरेखा प्रचार-प्रसार हेतु प्रस्तुत करना।

Activities Undertaken:

- मध्यप्रदेश के विभिन्न कृषि-जलवायु क्षेत्रों के अंतर्गत 27 जिलों के 94 कृषकों के 173 रोपणों का सर्वेक्षण कार्य पूर्ण कर लिया गया है।
- द्वितीयक साहित्य से प्राप्त 1991 से 2020 के मध्य कृषकों के रोपणों की सूची के अनुसार 21 जिलों में 114 गाँवों के 151 कृषकों का सामाजिक आर्थिक सर्वेक्षण का कार्य पूर्ण कर लिया गया है।
- सर्वेक्षण से प्राप्त आंकड़ों को कम्प्यूटर में फीड कर आंकड़ों के विश्लेषण का कार्य पूर्ण कर लिया गया है।
- सर्वेक्षण से प्राप्त आंकड़ों के विश्लेषण उपरांत अंतिम परियोजना प्रतिवेदन लेखन का कार्य किया जा रहा है। शीघ्र ही अंतिम प्रतिवेदन प्रस्तुत कर दिया जावेगा।

Prasent status : कार्य जारी है।

Cost of the Project:- Rs. 39.96 lakh

Expected Outcome of Research:-

- उपयुक्त कृषि वानिकी मॉडल्स से कृषकों के लिए लाभ-हानि का लेखा-जोखा उपलब्ध रहने से सुविधानुसार क्षेत्र में वृद्धि या कमी पर्याप्त अवसर उपलब्ध होगा।
- उपयुक्त कृषि वानिकी पद्धति का सुझाव अन्य कृषकों एवं शासन के लिए मार्गदर्शी अभिलेख।
- कृषि जलवायु क्षेत्रवार सफल कृषि वानिकी पद्धतियों का प्रलेख।
- कृषि वानिकी मॉडल्स से उत्पादित कच्चे माल आधारित औद्योगिक इकाइयों की वनों पर निर्भरता में कमी।
- कृषि वानिकी से सम्बंधित धरातलीय स्थिति के आधार पर नीति निर्माण में सहायक।
- भूमि की उर्वरा शक्ति का विकास।
- सामान्य पर्यावरण सुधार।

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2. Title of the Project: Strengthening of Market Information System (MIS) for Dissemination of Market Analysis of Minor Forest Produce in Different Agro-climatic Zones of Madhya Pradesh.

Why this Project:-

Medicinal and Aromatic Plants (MAPs) and Non Wood Forest Produce (NWFPs) play significant role in the livelihood of rural communities living in villages near fringe areas of forest. They are used in curing their ailments and also as a source of seasonal income. Forests of Madhya Pradesh are quite rich in medicinal plant wealth but often rural population get poor returns from MAPs and

NWFPS collected by them largely for two reasons. Firstly, they do not have market information and power to bargain for their produce and secondly, there is a lack of knowledge about acceptable standards for primary processing grading and other value adding interventions like proper storage and packaging.

To address these challenges, initiatives like the Marketing Information Systems (MIS) have played an essential role in providing reliable and timely market data. These systems have empowered rural communities to make informed decisions when marketing their medicinal plants and other Non-Timber Forest Products (NTFPs).

In 2001, a State level Market Information Project was initiated and a Marketing Information System (MIS) cell was established in SFRI for collection, analysis and dissemination of market data related to non-timber forest products. Over the past 24 years, this project has operated consistently, generating valuable data and regularly disseminating market information through the quarterly Newsletter Van Dhan Vyapar.

Research Methodology

The study will be covered in two years from the date of sanction. Survey and data collection will be done through physical and virtual modes.

Study Design/Action plan:-

- i. Survey of different markets and mandis of NTFPs
- ii. Collection of information from different traders
- iii. Collection of market rates
- iv. Collection of seasonal market arrival of MFPs in district markets.
- v. All the field data will be collected in prescribed Field Data Sheet
- vi. Scrutiny and verification of collected market data
- vii. Computation of market data
- viii. Drafting and editing of report
- ix. Finalization of report
- x. Printing and proof reading of report
- xi. Publication of Van Dhan Vyapar Newsletters

The survey and data collection as per following action plan:-

Table - 1: Action plan

S. No.	Name of Agro-climatic zones	Name of Districts	Mode of survey and data collection under different quarters							
			1 st year				2 nd year			
			1	2	3	4	1	2	3	4
1.	Chhattisgarh plains	Balaghat	P	V	V	V	P	V	V	V
2.	Northern hills zone of Chhattisgarh	Mandla, Dindori, Umaria	V	P	V	V	V	P	V	V
3.	Kymore Plateau & Satpura hills	Panna, Katni, Seoni, Sidhi	P	V	V	V	P	V	V	V
4.	Vindhayan Plateau	Sagar, Raisen, Vidisha	V	P	V	V	V	P	V	V
5.	Central Narmada valley	Hoshangabad	P	V	V	V	P	V	V	V
6.	Grid region	Gwalior, Shivpuri, Sheopur, Morena	V	V	V	P	V	V	V	P
7.	Bundelkhand zone	Chhatarpur, Tikamgarh, Niwari	V	V	P	V	V	V	P	V
8.	Satapura Plateau	Chhindwara, Betul	V	V	V	P	V	V	V	P
9.	Malwa Plateau	Neemuch, Indore, Mandsour	V	V	P	V	V	V	P	V
10.	Jhabua hills	Alirajpur	V	V	P	V	V	V	P	V
11.	Nimar Valley	Khandwa, Burhanpur	V	V	V	P	V	V	V	P
P - Physical Mode			V – Virtual Mode (Through Telephone, Whatsapp and email)							

Objective of Research:-

- To strengthen the existing market information System (MIS) for dissemination of Market Analysis of Non-Timber Forest Produce (NTFPs) at state and National Level
- Collection of Market information such as part-wise and product-wise rates (Rs./kg) of various NTFPs from different areas and mandis of Madhya Pradesh.
- Publication & dissemination of Quarterly Newsletter of Van Dhan Vyapar.

Activities Undertaken :

- Out of 27 selected districts in 11 agro-climatic zones of Madhya Pradesh, the survey has been completed in 23 districts covering 10 zones.
- 122 Minor Forest Produce (MFP) traders have been surveyed in these 23 districts.
- The quarterly newsletter “Van Dhan Vyapar” Vol. 24 (Issues 1–4) and Vol. 25 (Issues 1–4) has been published and distributed.
- Data analysis and report writing are in progress.
- The final project report will be submitted by May 2026.

Cost of the Project:- 10 lakh

Expected Outcome of Research:-

After the completion of the data analysis, report will be drafted in the form of booklet known as Van Dhan Vyapar. 4 quarterly issues for each year will be prepared and published for the dissemination of:-

- i. Mandis of NTFPs in the state
- ii. Market rate (Rs./kg) of each plant, plant part and plant products as NTFPs available in the said market/mandi
- iii. Traders survey, cataloguing of traders
- iv. Market analysis
- v. Supply chain of various NTFPs.



Meeting with MFPs trader in Shivpuri district



Collection of MFPs information from the trader of Shahpur, Betul district



Meeting with of MFPs trader in Burhanpur district



Collection of MFPs information from the trader of Chhindwara district

WILDLIFE DEPARTMENT

2.2.1 ANIMAL ECOLOGY RESEARCH DIVISION

Mandate

1. Predator and prey population monitoring *in-situ* condition
2. PHVA of locally extinct or newly introduced species in various protected areas of Madhya Pradesh
3. Re-introduction/re-wilding/translocations of carnivores and herbivores
4. Capacity building of frontline forest staff on predator and prey monitoring
5. Conservation of lac insects in central India

List of project titles with names of funding agency

Completed Project : 01

1. Network Project on Conservation of Lac Insect Genetic Resources
Funding agency :ICAR Indian Institute of Natural Resins and Gums, Ranchi, Jharkhand

Ongoing Projects:- 05

1. Ecology of Indian Wolf (*Canis lupus pallipes*) and it's conservation implication in Nauradehi Wildlife Division, Madhya Pradesh
Funding agency : PCCF (Wildlife) M.P., Bhopal
2. Estimation of Prey Population, Abundance and Dynamics in Madhya Pradesh
Funding agency : PCCF (CAMPA) M.P., Bhopal
3. Assessment of floral and faunal diversity and preparation of wildlife passage plan on the proposed constructions of 3rd railway line for the section of Itarsi-Nagpur under Narmadapuram and Betul Districts"
Funding agency : Deputy Chief Engineer (Const) Betul Nagpur cnetral Railway and Nagpur
4. Assessment of Floral Faunal bio-Diversities and Preparation of Suitable Wildlife Conservation Plan in Respect to Contraction of Sitapur-Hanumana Micro Irrigation Project
Funding agency : Vensor construction Company Ltd. Bhopal
5. Hand on experiment on kusmi lac cultivation in Bichhiya village of Umaria Forest Division of Madhya Pradesh
Funding agency : DFO, Forest Division Umaria

Newly initiated Project : 01

1. All India Tiger Estimation 2026: Training and data submission

Regular Activity:- 01

1. Maintenance of Ornamental nursery and circular rose garden using the fund of Lac project.

Funding agency : SFRI, Jabalpur

Project Summary

Completed Project

1. Title of the Project:- Network Project on Conservation of Lac Insect Genetic Resources.

Why this Project:-

Fast depleting forest cover of the country is a serious threat to the bio-diversity of lac-insects as well as their host-plants. In the absence of human intervention, the unattended species of lac-insects and their host-plants might be lost.

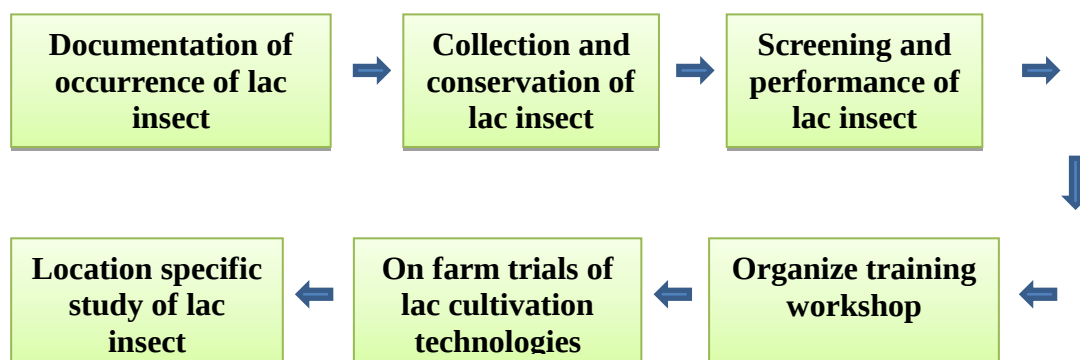
To overcome the situation the project was started to documentation the occurrence of lac insect/host plant, conserving the biodiversity of local lac insect species/races and breed which is decline due to anthropogenic activities and climate change. In this way, lac insect/host plants are needed for in-situ and ex-situ conservation. The Network project on conservation of lac insect genetic resources has a crucial role. Training on scientific method of lac cultivation can increase capacity and knowledge level of farmers on lac cultivation. It can lead to improve productivity of lac and can provide stability in their income.

In this project, there were 8 network Co-operating centres and 3 voluntary centre throughout in India with one lead centre ICAR-NISA, Ranchi, under network project on conservation of lac insect genetic resources. There are Four states; Madhya Pradesh, Maharashtra, Chhattisgarh and Goa, and one union territory Daman & Diu given, under State Forest Research Institute, Jabalpur, Madhya Pradesh.

Research Methodology:-

- **Collection and conservation of lac insect-** Brood lac samples were collected from different districts of Madhya Pradesh/Maharashtra and conserved on different host plants under *ex-situ* condition. Screening and performance of collected lac samples also doing in gene bank by selected parameter.
- **Training of farmers / resource persons:** Lac cultivation training workshops were organized in selected sites of Madhya Pradesh to create awareness and promotes lac cultivation on different host plants.
- **Study of socio economic status of lac growers-** Random sampling technique will employed to select lac growers. All the relevant information was collected from the lac producers by personal interview through a pre-tested questionnaire

Study Design:-



Objectives of Research:-

- In-situ and ex-situ conservation of the biological diversity of lac-insect of the country
- To develop the lac insect field gene bank of the institute as centre of excellence on lac biodiversity.
- To transfer the lac cultivation technologies in the in-situ conservation areas.

Activities Undertaken:-

- Survey of lac insect/host plants was done in 18 blocks of 04 districts viz., Bijapur, Sukma, Dantewada, Jagdalpur of Chhattisgarh state in which lac occurrence found in 18 sites of 07 blocks of all 04 districts on Kusum & Ber host plants.
- Lac insect settlement was also recorded in the pipal (*Ficus religiosa*) for the first time in Khargone Block of Khargone District, Ujjain district on pipal host plants and Naveli village Bhanpura, Garoth block of Mandsaur on Pipal
- Studied income generation among 11 lac-growing farmers in Jagdalpur and Bakawand blocks of Bastar district, Chhattisgarh.
- To promote lac cultivation, we encouraged and guided a farmer, Mr. Mahendra Solanki, from Naharkhodra village of Manpur block of Indore district. We provided him with regular guidance on the cultivation techniques for Kusmi lac on *F. semialata* plants. For these efforts he produced 80 kg kusmi brood lac in his farm field.
- Additionally, more than 210 *Flemingia semialata* and *Calliandra* plants were planted in four different farmer fields—Sangrampur (Mandla), Sagona (Katni), Ajwar (Dindori), and Salaiya (Jabalpur)—for on-farm trials of lac cultivation techniques.
- On the occasion of “4th National Lac Insect Day”, organized a day-long Rangeeni lac cultivation training workshop at Silua of Sihora range of Jabalpur in 16/5/2025.
- To promote Rangeeni lac cultivation, five training workshops were organized in Jabalpur, Indore, Anuppur, and Mandsaur (Madhya Pradesh), along with one ex-situ workshop at SFRI Jabalpur for farmers from Dhamtari district (Chhattisgarh). A total of 210 farmers and Van Samiti members were trained.
- Participated in the Kisan Mela 2025 (18 Feb, ICAR–DWR, Jabalpur), briefing over 500 visitors on sustainable livelihoods through modern lac cultivation.
- Participated in the 11th International Herbal Fair, Bhopal (17–23 Dec 2025), showcasing lac research and cultivation to over 1,000 visitors and receiving the Best Stall (Live Demonstration) award.
- Participated in the International Herbal Fair (Mahakal Van Mela), Ujjain 2026 (11–16 Dec), where the SFRI lac stall was awarded Third Prize in the Live Demonstration category.
- Specialized lectures were delivered to more than 1000 participants, including forest officials, trainee forest guards, rangers, students, and farmers, at SFRI’s Regional Field Gene Bank, where participants from Madhya Pradesh, Maharashtra, Jharkhand, Chhattisgarh, Telangana, and Odisha learned about scientific lac cultivation techniques, lac processing, and insect conservation.”
- Submitted Short Progress Report (2025-2026) to funding agency ICAR-NISA, Ranchi
- Made presentation of Annual progress of the project in-front of funding agency on dated 11 February 2025.
- Presented final outcome of FY 2025-26 in front of funding agency.
- Submitted year wise details of survey information from 2014 to 2026 to funding agency ICAR-NISA
- Submitted Annual Progress Report (2025-2026) to funding agency ICAR-NISA, Ranchi

Cost of the Project:- Rs. 64.86 lakh (2021-2026)

Expected Outcome of Research (for ongoing and newly initiated project):-

- In-situ and Ex-situ conservation of lac insect genetic resources
- Identification of best performing lac insect -host plants combination for sustainable yield in diverse conditions.
- A cadre of master trainers shall be generated for promoting, knowledge sharing and capacity building of the adopted/ selected farmers of lac cultivation.
- Documentation of the impact of lac cultivation for increasing farmers’ income in different areas of Madhya Pradesh and Maharashtra

Outcome of research (for completed project)

Survey for lac insect occurrence

- **Madhya Pradesh:** Survey of lac insect and host plants was done in 320 blocks of all 52 districts in which lac insects were found in 48 districts, specifically across 150 blocks at 291 different sites on 19 different host plant species.
- **Maharashtra:** Survey of lac insect and host plants was done in 251 blocks across all 36 districts in which lac insect occurrences were identified at 112 sites within 73 blocks across 29 districts on 10 different host plant species.
- **Chhattisgarh:** Survey of lac insect and host plants was done in 155 blocks across all 33 districts of Chhattisgarh in which lac insect occurrence were identified at 185 sites of 30 districts on 08 different host plants species.
- **Goa and Daman & Diu:** Surveys were conducted in 11 blocks across 2 districts of Goa and 1 block in 1 district of Daman & Diu; however, no lac insect occurrences were found in these areas.

Organise lac cultivation training workshop in different parts of Madhya Pradesh and Maharashtra

- **Madhya Pradesh:** A total of 34 training sessions were organized across 17 districts viz., Panna, Shahdol, Umaria, Hoshangabad (Narmadapuram), Damoh, Mandla, Seoni, Balaghat, Narsinghpur, Chhindwara, Katni, Sheopur, Jabalpur, Dindori, Dewas, Indore, Anuppur, Mandsaur of MP. In these sessions, 1300 farmers and members of Van Samiti (Forest Committees) were trained in scientific lac cultivation methods
- **Maharashtra:** Seven trainings on scientific method of lac cultivation were conducted in 3 districts viz., Gondia Bhandara, Gadchiroli of Maharashtra in which 268 farmers and van samiti members were trained.

Suitable Lac Insect–Host Plant Combinations for Different Regions

- A region-specific assessment was carried out by the SFRI, Jabalpur to identify suitable host plant combinations for lac insect cultivation across different states. The findings highlight the variability in host plant suitability based on ecological and geographical conditions.
- In **Madhya Pradesh**, a diverse range of host plants was identified as suitable for lac insect rearing. These include Palash (*Butea monosperma*), Kusum (*Schleichera oleosa*), Ber (*Ziziphus mauritiana*), Pipal (*Ficus religiosa*), Rain tree (*Samanea saman*), Ghont, Semialata (*Flemingia semialata*), Pakud (*Ficus infectoria*), Safed Siris (*Albizia procera*), Jangli Jalebi (*Pithecellobium dulce*), and Peela Gulmohar (*Peltophorum pterocarpum*).
- In **Maharashtra**, the suitable host plants identified include Palash (*Butea monosperma*), Kusum (*Schleichera oleosa*), Ber (*Ziziphus mauritiana*), Pipal (*Ficus religiosa*), Rain tree (*Samanea saman*), Jangli Jalebi (*Pithecellobium dulce*), and Gular (*Ficus racemosa*).
- In **Chhattisgarh**, the assessment revealed that Palash (*Butea monosperma*), Kusum (*Schleichera oleosa*), Ber (*Ziziphus mauritiana*), Semialata (*Flemingia semialata*), Calliandra (*Calliandra calothyrsus*), and Galwang are suitable host plants for lac insect cultivation.
- Overall, the study indicates that while certain host plants such as Palash, Kusum, and Ber are commonly suitable across regions, other species exhibit region-specific suitability, emphasizing the importance of localized planning in lac cultivation practices.

Socio-Economic Survey of lac growers:

A detailed socio-economic survey was conducted for 335 lac growing farmers/ collectors of 10 districts of Madhya Pradesh & 158 lac growing farmers of 2 districts of Maharashtra and 63 lac growing farmers of 6 districts of Chhattisgarh to know impact of lac cultivation on their livelihood.

Distinguished visitors in RFGB-SFRI Jabalpur:

Total 4000 visitors learnt various techniques on lac cultivation. Visitors belonged to college, University students, and trainee forest guards from various forestry training school, IFS probationers and Senior Forest officials.

- I. **Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries**
 - Identify suitable lac insect-host plant combination for higher and sustained yield for lac growing farmers of Madhya Pradesh and Maharashtra.
 - Enhancement the capacity on lac cultivation through training of master trainers and farmers and Transfer of lac Cultivation technologies in the *in-situ* conservation areas of Madhya Pradesh and Maharashtra.



On-going projects

1. Title of the Project:- Ecology of Indian Wolf (*Canis lupus pallipes*) and it's conservation implication in Nauradehi Wildlife Division, Madhya Pradesh

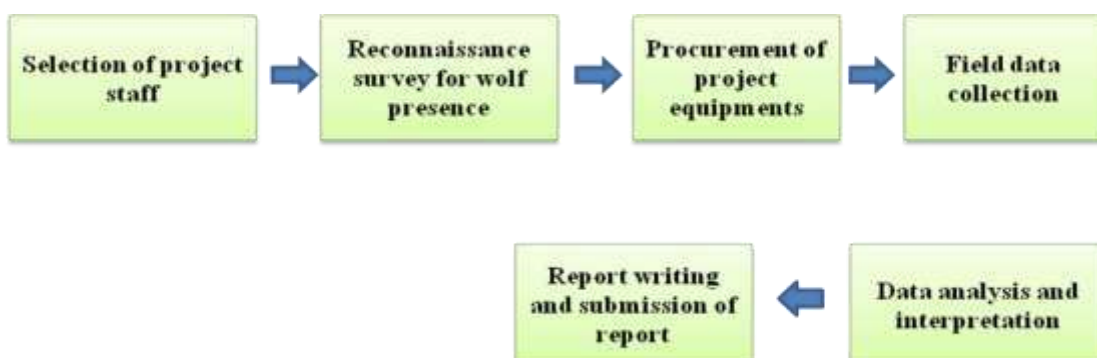
Why this Project:-

- Before re-introduction of tigers in 2018, wolf was considered as the largest predators in Nauradehi Wildlife Division (Veerangana Durgavati Tiger Reserve, M.P.)
- It is essential to study the present ecological status of wolf and it's co-existence pattern in this tropical forest after re-introduction of tigers
- No study on this issue so far conducted in Madhya Pradesh
- It will help to develop conservation strategy on wolf in this landscape especially to support State Wildlife Action Plan

Research Methodology:-

- Movement and ranging pattern- following radio-collared wolves (n=3) and their pack members (Habib et al. 2021)
- Prey availability- by line and vehicle transects to entire Nauradehi Wildlife Division (Khan et al. 1996)
- Food habits- by analysis of scats and kills (Jethva and Jhala 2003; Maurya et al.2011)
- Ecological niche separation- with other large carnivores- two species occupancy modeling (Mackenzie et al. 1995)
- Perception study- by questionnaire survey and psychological analysis of data (Williams et al 2002)

Study Design:-



Objectives of Research:-

- To study ecology – feeding, ranging movement and breeding of wolf in Nauradehi Wildlife Division
- To study ecological niche separation of wolf with other larger carnivores
- To study perception of local communities on coexisting with wolf
- To develop suitable conservation strategy on wolf

Activities Undertaken:-

Wolf Capture Operation Report (June–July 2025)

- The operation began with surveys by forest staff to identify probable wolf movement areas. Cage I was installed near Pipla Camp (Singhpur Range) on June 15 and later shifted to Doomar Tigadda on June 17 based on fresh field evidence.
- As efforts expanded to Mohli, Jhapan, and Sarra ranges, Cage II was deployed in the Bhutal area on June 25. The veterinary team inspected the equipment, confirmed its suitability, and provided safe bait for capturing wolves.
- Regular monitoring was carried out from a distance to avoid disturbance. Wolf activity was recorded near Cage II, though non-target species (a monitor lizard and a domestic dog) were also accidentally captured and safely released. Camera traps were used continuously for observation.
- Due to heavy monsoon rains, flooding, and poor road conditions, the operation was suspended on July 15, 2025. It will resume once conditions improve.

Data collection for Prey base estimation

Data was collected from all the beats within these ranges through the line transect method. In total 90 line transects were walked from the 10th of April to the 29th of April 2025 as per the All India Tiger Estimation protocol. Observations were recorded using the M-stripes ecological app for all visible species within the set observation zone, including their position relative to the transect line.

Density estimation of principal prey species

A total of 89 line transect walks were conducted, cumulatively covering a distance of 201.02 kilometres. During these surveys, direct sightings included 203 Nilgai, 263 Hanuman Langurs, 28 Chinkara, 39 Chital, and 19 wild pigs. The estimated prey densities (individuals per square kilometre) were as follows: Nilgai – 6.4 ± 1.1 , Hanuman Langur – 8.3 ± 1.7 , Chinkara – 1.05 ± 0.36 , Chital – 1.1 ± 0.36 , and wild pig – 0.9 ± 0.4 .

Food habits of Wolf

1st Interim report finding: During the first phase of the project, 171 scat samples from four species, namely the wolf, the jackal, the tiger, and the fox were gathered from all six ranges of Nauradehi Wildlife Division between May and June 2024. Each species' scats were identified based on their diameter, size, shape, odour, and color. From the laboratory analysis of the scat samples, Indian Gray Wolf preferred Nilgai as their primary prey species followed by Chital, Hare, Sambar, Barking Deer, Chinkara, Blackbuck, Langur and Goat.

Work done during this phase

From January – June 2025, 101 scat samples were collected from four carnivore species, namely the wolf, the jackal, the hyena, and the fox, during perception studies in January 2025, Line transect in April 2025 and capturing effort for wolves carried out in June 2025. The scat samples were dried (in case of fresh scat collection) and carefully stored in zip-lock bags after marking with GPS coordinates and date of collection. The scat samples are under analysis.

Perception of local communities on wolf

A structured interview was conducted for 2170 households in 71 villages of the Nauradehi Wildlife Division. This structured questionnaire survey was conducted from December 2023 to January 2025 through a door-to-door survey to obtain data on people's perception on wolf

movements and the challenges involved in their conservation, which may help in outlining the mitigation strategies.

Capacity building of staff on identification of carnivore signs in Veerangana Durgavati Tiger Reserve

- A training workshop on identification of carnivore signs (pugmarks and scat of tiger, leopard, wolf, hyena, and golden jackal) was conducted on 06 July 2025 at Mohli Rest House.
- Participants were Frontline forest staff of this reserve.

Training and Capacity Building on Radio telemetry and Tracking of Tigers in Veerangana Durgavati Tiger Reserve

- A training workshop was jointly conducted on Uses of Radio-Telemetry for frontline forest staff of Veerangana Durgavati Tiger Reserve on 23rd February 2026 at Moholi Training Center.
- More than 60 participants, including Range Officers, Beat Guards, frontline workers, and other staff, attended the workshop under the supervision of the SDO, Raheli.

Interim report submission:

- 1st Interim report and UC of 1st instalment were submitted to PCCF (Wildlife) & DFO Nauradehi.
- 2nd Interim report and UC of 2nd instalment were submitted to PCCF (Wildlife) & DFO Nauradehi.

Cost of the project: Rs. 45.35 lakh

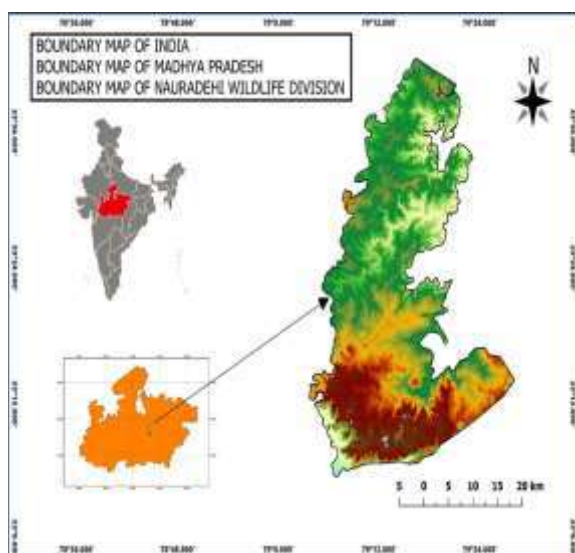
Expected outcome of Research (for ongoing and newly initiated project):-

- Distribution pattern of wolf in Nauradehi Landscape
- Breeding habitats (den sites)
- Foraging pattern of wolf and their niche separation with other large carnivores
- Perception of local communities on wolf conservation
- Suitable Conservation strategy for long term survival of wolf in Nauradehi and adjacent area

Outcome of research (for completed project): Nil

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries

- This project will help to develop baseline information on various ecological aspects of wolf in Nauradehi and its adjoining area.
- Findings of the present study shall help the management to develop suitable conservation strategy to minimize human wolf interaction.
- Conservation Action Plan on wolf in a human dominated landscape





2. Title of the project: Estimation of Prey Population, Abundance and Dynamics in M.P.

Why this project:

The office of Principal Chief Conservator of Forest (Wildlife) has sent a letter to State Forest Research Institute for preparing project proposal on Prey population estimation across various forest habitats in Madhya Pradesh (vide letter No Prabandha/13/8055 dated Bhopal 13/9/23). To comply this, a project proposal has been developed entitled as “Estimation of Prey Population, abundance and dynamics in MP” for submitting it to PCCF (Wildlife) for financial Assistance. This project may help to create data base of prey population in and outside forest areas. It may help to wildlife wing to address issues related to over and low prey base situations.

Research methodology

- Line transect data collected under Phase I shall be received from all 83 forest Divisions of Madhya Pradesh and Phase IV shall be obtained from tiger bearing divisions and Protected Areas.
- In addition to that, prey abundance data shall be also collected from revenue lands of conflict bearing divisions using direct and indirect methods.
- A combination of line transect and occupancy based block count shall be done to estimate population outside PAs.
- All data will be analyzed and compared with older data base (2018 and 2022) to assess population dynamics and report writing

Study design

Objectives of research

- To estimate prey population and abundance from all Forest units of Madhya Pradesh.
- To estimate prey abundance from revenue lands of Madhya Pradesh.
- To assess the prey population dynamics- growth rate, population structure, age sex ratios in and outside the forest area of Madhya Pradesh.
- To develop suitable conservation implication.

Activities undertaken-

Training Workshop on Prey Base Estimation & camera trap installation at Satpuda Tiger Reserve (28-29 June 2025)

On June 28–29, 2025, SFRI Jabalpur conducted a two-day wildlife monitoring and camera trap installation training workshop for over 270 field staff from Satpura Tiger Reserve and Narmadapuram. The sessions, held at Matkuli and Bhimkund Training Centres, focused on strengthening ground-level monitoring of herbivorous and carnivorous species.

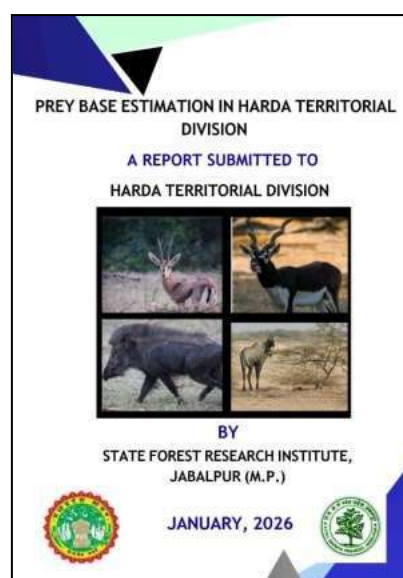
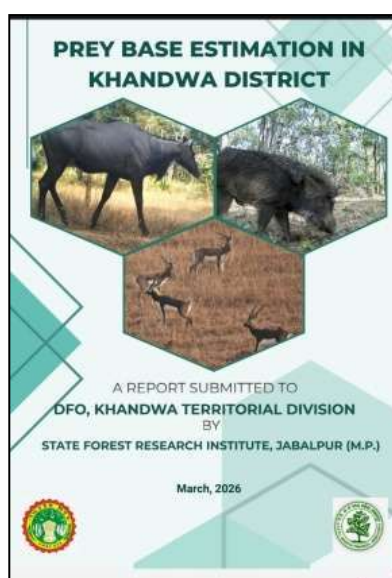
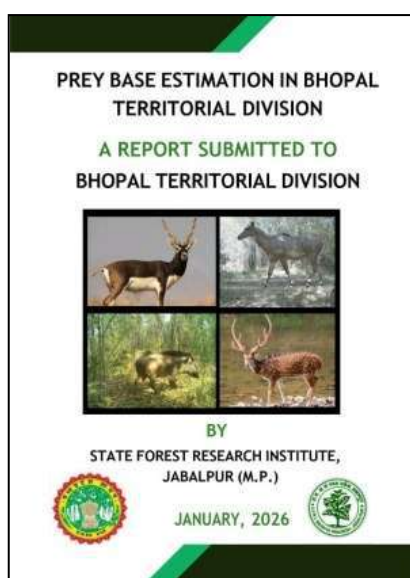
Training Workshop on wildlife estimation techniques in Amarkantak Training School, Anuppur (22–23 August 2025)

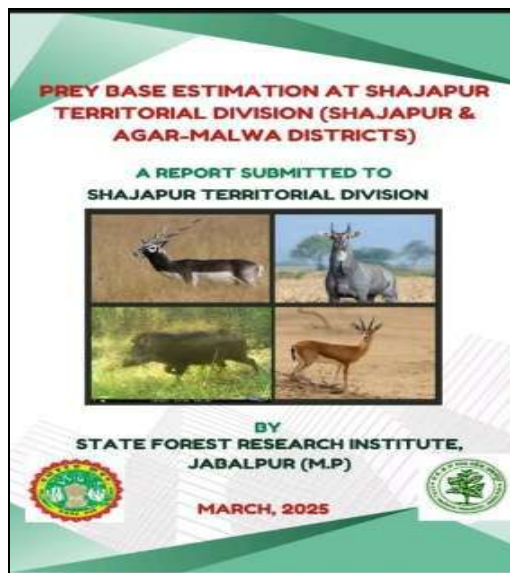
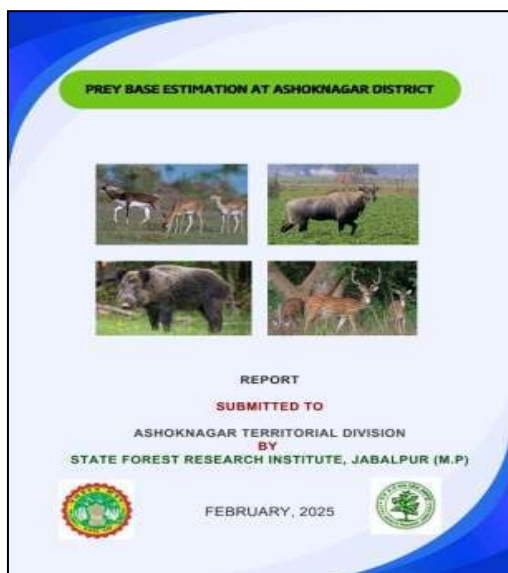
A Training Workshop on Wildlife Estimation Techniques was organized at the Amarkantak Forestry Training School on 22–23 August 2025. During the workshop, the SFRI team provided training to more than 100 trainee forest guards on advanced wildlife monitoring skills, including herbivore and carnivore estimation methodologies, field deployment of camera traps, and hands-on training using M-STRIPES.



Prey density estimation in different forest Division of Madhya Pradesh

- Prey base estimation report for Ashoknagar District was submitted to DFO Ashoknagar and PCCF (Wildlife).
- Prey base estimation report for Shajapur and Agar Malwa Districts was submitted to DFO Shajapur and PCCF (Wildlife).
- Prey base estimation report for Bhopal District was submitted to DFO Bhopal and PCCF (Wildlife).
- Prey base estimation report for Harda District was submitted to DFO Harda and PCCF (Wildlife).
- Data collection Completed in Burhanpur, Sagar, Khandwa District. Data analysis completed & report writing is ongoing.
- Fund received for 2nd Instalment from the funding agency.





Cost of the project:- Rs.60.61 lakh

Expected outcome of Research:-

- Quality database of prey base shall be generated.
- A division wise and entire state wise comprehensive report on prey population can be prepared.
- Division wise prey population shall be compared with previous (2018 and 2022) estimates to study their growth rate and dynamics.
- Abundance of herbivores outside forest area shall be estimated and probable conflict zones can be identified based on prey

Outcome of research (for completed project): Nil

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries

Submitted prey base estimation report of concerned forest division



3. Title of the Project:- Assessment of floral and faunal diversity and preparation of wildlife passage plan on the proposed conduction of 3rd railway line for the section of Itarsi-Nagpur under Narmadapuram and Betul Districts.

Why this Project:-

- Growing Impact:** The rapid rise in human population and demand for resources is having a dramatic impact on the natural world.
- Conservation is Key:** Protecting endangered species and their natural habitats is crucial for ecosystem balance and stability.

- **Project Trigger:** A request from Central Railway to address ecological concerns raised by the Divisional Forest Officer regarding the 3rd railway line expansion.
- **Core Need:** A detailed study is required to understand the impact and prepare mitigation measures to reduce negative wildlife-train interactions.

Research Methodology:-

Methodology floral survey

- The study was conducted on the both side of the proposed and existing railway track.
- Study shall be conducted in the 10 km buffer area of all three intensive study sites. It is planned to take points in each kilometer along with the track.
- Vegetation composition will be evaluated by analyzing the frequency, density, abundance and Importance value index (IVI) according to Curtis & McIntosh (1951) and SFRI Report 2022.

Methodology of Faunal Survey

- **Study Area Delineation & Sampling Design:** The faunal survey begins with defining habitat types, preparing GIS-based maps, and stratifying the landscape into representative sampling units such as transects, grids, or plots to ensure systematic coverage.
- **Field Survey Techniques:** Standardized techniques such as line transects, point counts, camera trapping, pitfall traps, live traps, and sweep-net sampling are used depending on the target taxa (mammals, birds, herpetofauna, insects).
- **Indirect Evidence & Sign Surveys:** Recording indirect signs—pugmarks, scats, calls, pellets, nests, burrows, feeding marks—helps in detecting cryptic, nocturnal, and low-visibility species.
- **Species Identification & Documentation:** Each observation is noted with date, time, GPS location, habitat details, photos, and identified using taxonomic keys, field guides, and expert validation.
- **Data Analysis & Diversity Indices:** Collected data are analysed using diversity indices such as Shannon–Wiener, Simpson’s, species richness, and encounter rates, and mapped to assess spatial distribution and ecological patterns.

Study Design:-

Objectives of Research

- To collect the baseline data on existing flora and fauna of the area.
- To prepare a wildlife passage plan and develop suitable mitigation measures for the conservation and protection of existing flora and fauna.

Activities Undertaken

Institutional Collaboration

- A MoU was signed between the State Forest Research Institute (SFRI), Jabalpur, and the Indian Institute of Technology (IIT), Indore, on 11/08/2025.
- The collaboration focuses on the application of Artificial Intelligence (AI) in wildlife management and mitigation of railway-related wildlife conflicts.

Floral Survey and Vegetation Analysis

- Floral diversity assessment was conducted along both sides of the proposed and existing railway tracks.
- Vegetation composition was analyzed using frequency, density, abundance, and Importance Value Index (IVI).
- A preliminary checklist of common floral species across three study segments was prepared.

Faunal Survey

- Faunal surveys were carried out using direct and indirect methods.
- Evidence such as sightings, pugmarks, scat, and calls were recorded for various wildlife species.
- A preliminary checklist of fauna recorded in the study area was compiled.

Transect-Based Assessment

- A total of 25 line transects (each 2.5 km long) were conducted.
- These were used to estimate prey abundance (e.g., deer and wild boar) and to assess avifaunal diversity.

Underpass and Overpass Assessment

- A total of 89 railway underpasses and overpasses were assessed.
- Evaluation included structural suitability, dimensions, and current usage by wildlife.
- Findings are being used to guide the design of new wildlife passages and improvement of existing structures.

Wildlife Monitoring and Data Collection

- Camera traps are being deployed using a systematic grid-based approach to study wildlife movement patterns.
- Data collection is being conducted in alignment with the All India Tiger Estimation (AITE) 2026 exercise across Narmadapuram and Betul districts.

Cost of the Project:- Rs.27.69 lakh

Expected outcome of Research (for ongoing and newly initiated project)-

Outcome of research (for completed project) -

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries-



Railway underpasses assessment in 3rd railway line in Narmadapuram and Betul



MoU between SFRI Jabalpur and IIT Indore

4. Title of the Project:- Assessment of Floral Faunal bio-Diversities and Preparation of Suitable Wildlife Conservation Plan in Respect to Contraction of Sitapur-Hanumana Micro Irrigation Project

Why this Project:-

- **Growing Water Demand:** Increasing dependence on agriculture and irregular rainfall has created water scarcity and livelihood instability in the region.
- **Development Need:** The Sitapur–Hanumana Micro Irrigation Project has been proposed to improve irrigation facilities, enhance agricultural productivity, and ensure efficient water resource utilization.
- **Ecological Sensitivity:** The project area lies near the Son River and Son Gharial Wildlife Sanctuary, supporting important aquatic and riverine biodiversity.
- **Environmental Concern:** Construction of barrage and canal systems may alter river flow, habitats, and wildlife movement patterns.
- **Core Requirement:** A detailed ecological assessment is essential to evaluate impacts and develop suitable mitigation measures for sustainable project implementation.

Research Methodology:-

Secondary Data Collection

- Collected data on biodiversity, ecology, maps, and meteorology from concerned departments and published studies.

Primary Data Collection

- Field-based data collection for environmental and biodiversity assessment during the study period.

Floral Biodiversity Assessment

- Vegetation analysis using standard methods (National Working Plan Code, 2014).
- Trees: 0.1 ha quadrats; all trees >20 cm GBH recorded.
- Shrubs/Climbers: 3×3 m subplots for regeneration and shrub diversity.
- Ground Vegetation: 1×1 m plots for herbs and seedlings.
- Parameters analyzed: frequency, density, abundance, and IVI.

Environmental Pollution Assessment

- Soil, water, air, and noise pollution assessed using CPCB standard methods.

Air & Noise Quality Assessment

- Air and sound monitored within 10 km radius using CPCB/MoEF guidelines.
- Air parameters: PM₁, PM_{2.5}, PM₄, PM₁₀, TSP (AEROCET 831).
- Noise monitored using Sound Level Meter (SLM-100).

Water Quality Assessment

- Water samples collected from multiple locations within 10 km radius.
- Analyzed for physical, chemical, and biological parameters (APHA, CPCB, BIS, WHO standards).

Soil Quality Assessment

- Soil samples analyzed for pH, EC, moisture, nutrients (N, P, K), and organic matter.

Plankton Diversity Study

- Sampling using standard plankton collection methods.
- Identification using taxonomic keys and biodiversity indices.

Faunal Biodiversity Assessment

a) Fish Survey

- Seasonal sampling using nets and fishermen data.
- Biodiversity indices (Shannon, Simpson, etc.) and environmental parameters recorded.

b) Crocodile, Gharial & Turtle Survey

- Boat-based transects during post-monsoon.
- Visual observations, GPS recording, and secondary data comparison.

c) Zooplankton Survey

- Multi-season sampling; lab analysis and biodiversity index calculation.
- Correlation with physico-chemical parameters.

d) Terrestrial Fauna Survey

- Camera trapping, sign surveys, and transect methods.
- Assessment of mammals, birds, and butterflies using direct and indirect methods

Study Design:-



Objectives of Research:-

- To document baseline floral and faunal diversity within the project impact area
- To identify important habitats and wildlife species, especially riverine fauna of the Son River.
- To assess potential environmental and ecological impacts of the proposed irrigation project.
- To study aquatic and terrestrial biodiversity distribution using field surveys and analysis.
- To evaluate socio-economic conditions and human–wildlife interactions in nearby villages.
- To develop suitable mitigation and conservation measures for sustainable project implementation

Activities Undertaken:-

1. Line Transect Survey

- A total of 10 line transects, each of 2.5 km length, were conducted across forest and adjoining habitats within the 10 km impact zone of the project area.
- Each transect was surveyed with three replicates to ensure reliable documentation of terrestrial faunal diversity.

2. Boat Transect Survey

- Boat-based surveys were carried out along the Son River covering one upstream stretch of 20 km and one downstream stretch of 7 km from the proposed dam line.
- Each stretch was surveyed with two independent replicates to document aquatic fauna such as gharial, mugger crocodile, turtles, and riverine birds.

3. Aquatic Sign Survey

- Aquatic sign surveys were conducted along sandy riverbanks covering a 10 km downstream stretch from the dam line.
- Two replicates were carried out to record basking sites, nesting sites, movement traces, and other indirect evidences of aquatic fauna.

4. Zooplankton Survey

- Zooplankton sampling was conducted at six sites, including three upstream and three downstream locations along the Son River.
- The survey aimed to assess aquatic productivity and ecological condition of the river system.

5. Floral Survey

- A systematic vegetation survey is being conducted within the project impact zone along both banks of the Son River and adjoining terrestrial habitats.
- Quadrat-based sampling methods are being used to assess species composition, abundance, and vegetation structure across different impact zones.

6. Faunal Survey

- Comprehensive faunal surveys are being carried out across forest, riverine, and agricultural habitats.
- Both direct sightings and indirect evidences are being recorded to document species presence, distribution, and habitat utilization.

7. Wildlife Conflict (Socio-economic) Survey

A total of 650 households across 24 villages were surveyed within the 0–5 km and 5–10 km impact zones to assess livelihood dependency, resource utilization, community interaction with the river ecosystem, and human–wildlife interactions.

The draft report of the Sitapur–Hanumana Micro Irrigation Project has been completed and is ready for submission.



Preliminary Site Visit of
Sitapur–Hanumana Micro
Irrigation Project

Boat transect

Zooplankton sample collection

Cost of the Project:- Rs. 35.40 lakh

Expected Outcome of Research:-

- Baseline data on flora and fauna of the study area will be generated.
- Biodiversity Impact Assessment of the project will be carried out.
- A Wildlife Conservation Plan will be prepared.
- Connectivity and wildlife passage plans for aquatic and terrestrial species will be developed.
- Water, air, soil, and noise quality will be assessed.
- Diversity of fish, plankton, and other fauna will be studied.
- Mitigation measures to minimize environmental impacts will be suggested.
- Scientific reports and recommendations will be provided for policy and decision-making.

5. Title of the Project:- Hand on experiment on kusmi lac cultivation in Bichhiya village of Umaria Forest Division of Madhya Pradesh

Why this Project:-

- The forest areas of Nowrozabad range of Umaria forest division of Madhya Pradesh are suitable for kusmi lac cultivation, particularly on Kusum which are quite abundant now. However lack of knowledge on cultivation techniques is found to be the main obstacle. Through lac production in the area, the livelihood of forest committee members and farmers living in forest areas can be strengthened hand holding experiment of lac cultivation.
- Previously SFRI Jabalpur organized one day kusmi lac cultivation training workshop in Bichhiya village of Umaria Forest Division on dated 06/09/2023 in which 40 van samiti members and local farmers participated. The above project proposal is proposed for hand holding experiment of kusmi lac cultivation after conducted training workshop.
- Looking at the need of local, capacity workshop is proposed in Umaria Forest Division of Madhya Pradesh. We assume hand holding experiment of kusmi lac cultivation shall enhance awareness and improve quality of cultivation techniques to generate sources of income.

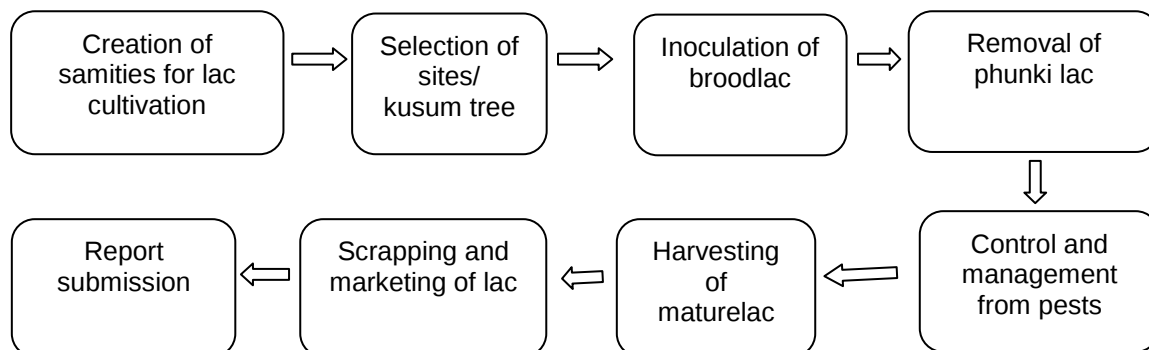
- With this purview DFO, Umaria has sought technical assistance from SFRI, Jabalpur for hand holding of Lac Cultivation to the local communities of Bichhiya village under Umaria Territorial Division vide letter No. 1478/ Umaria Dated 27/09/2023 .

Research Methodology:-

- Hand holding exercise of kusmi lac cultivation technologies- Different hand holding techniques of lac cultivation viz., selection of suitable host tree, Inoculation of lac insect, Removal of Phunki lac, control and pest management of lac cultivation, harvesting and scrapping practices of mature lac will be demonstrate to van samiti members and local communities. The following activities will be supervised by the scientific team of SFRI Jabalpur.

Study Design:-

Flow Chart of lac cultivation



Objectives of Research:-

- To conduct hand holding exercise on lac cultivation by scientific tools and technologies in Bichhiya village of Umaria Forest Divisions of Madhya Pradesh.
- To monitor the implementation of hand holding exercise.

Activities Undertaken:-

- SFRI Jabalpur and the Umaria Forest Division jointly adopted Bichhiya village for hand-holding experiments on Kusmi lac cultivation in which Funding was obtained from DFO Umaria.
- In January 2025, the project recorded an initial harvest of 1.5 quintals of broodlac, followed by approximately 1 quintal of sticklac harvested by trained Van Samiti members in June 2025.
- By November 2025, field observations confirmed successful lac insect settlement on 45 Kusum trees, with densities categorized from high to very low. (High settlement-5, Medium-19, low- 19 and very low 2).
- Additional broodlac will be inoculated for commercial lac production.



Cost of the Project:- Rs. 4.99 lakh

Expected Outcome of Research:-

- Generation of additional source of income of farmers and van samiti members through lac cultivation.
- To know potentiality of lac production on *Schleichera oleosa*

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries

- Van samiti members gained knowledge on scientific techniques of lac cultivation
- Sustainable livelihood opportunities were generated to farmers, van samiti members through lac cultivation in Bichhiya village of Umaria Forest Divisions of Madhya Pradesh.

Newly initiated projects

1. Title of the Project:- All India Tiger Estimation 2026: Training & Data submission

Why this Project:-

This activity was undertaken to ensure accurate, efficient, and standardized data management for the All India Tiger Estimation (AITE) 2026. It aimed to build the technical capacity of computer operators in using the M-STrIPES software for data entry, validation, and analysis, thereby improving data quality and reliability.

The project also focused on systematic data collection, thorough checking, and scrutiny of Phase I and Phase III datasets to minimize errors and maintain consistency. Additionally, it ensured the timely submission of validated data to the Tiger Cell at the Wildlife Institute of India (WII), supporting effective monitoring, informed decision-making, and the successful completion of the tiger estimation process.

Objectives of Research:-

- Organization of a training workshop for computer operators on the M-STrIPES software under the All India Tiger Estimation 2026.
- Data collection, checking, and analysis for Phase I and Phase III of the estimation process.
- Scrutiny of Phase I and Phase III data and submission to the Tiger Cell at the Wildlife Institute of India (WII).

Activities Undertaken:-

AITE 2026 Computer operators training workshop

- A one-day training workshop for computer operators was conducted on 25th and 26th November 2025 under the 6th cycle of AITE by SFRI, Jabalpur.
- A total of 169 participants from 83 Forest Divisions, Tiger Reserves, Protected Areas, and Forest Corporations of Madhya Pradesh attended.
- The training focused on building capacity for data handling and reporting under AITE 2026. Participants were trained on the M-STrIPES desktop application, including data entry and validation, with hands-on sessions for practical understanding





Online Review Meeting on AITE 2026

- An online review meeting was organized on 24/03/2026 to review updates and progress of AITE 2026, along with the expenditure under various budget schemes.

Agenda:

- Updated status of Phase I and Phase III data submission.
- Update on ongoing camera trapping status.
- Status of expenditure under various schemes.
- All Field Directors (FDs) of Tiger Reserves, the DFO of Veerangana Durgavati, the DFO of Ratapani Tiger Reserve, and the Director of the Cheetah Project joined the meeting with the concerned details.

Cost of the project- Rs. 8.50 lakh



Expected outcome of Research (for ongoing and newly initiated project)-

- Enhanced technical capacity of computer operators in using the M-STRIPES software efficiently and accurately.
- Accurate and systematic data collection and verification during Phase I and Phase III, ensuring high data quality.
- Reliable data analysis and error-free datasets through proper checking and scrutiny processes.
- Timely and accurate submission of validated data to the Tiger Cell at the Wildlife Institute of India (WII).

2.2.2 HABITAT ECOLOGY RESEARCH DIVISION

Mandate

- Monitoring and evaluation of wildlife and their habitats.
- Capacity building of front line forest staff for data collection and handling of advanced equipment and software
- Ecological study of forest, grassland and wetland ecosystems of Madhya Pradesh
- Preparation of wildlife management/Habitat improvement plan for wildlife displaced due to various developmental activities
- Habitat management studies in core and buffer areas of tiger reserve
- Impact of wildlife on human habitation and vice versa
- Monitoring of Re-introduced Tigers in new habitats of Madhya Pradesh
- Serve as nodal agency to compliment management authorities for scientific inputs.

List of project titles with names of funding agency

Completed Projects: - 03

1. Assessment of Impact of Forest Fire on Vegetation of Madhya Pradesh. (Component B)
2. Assessment of Impact of Forest Fire on Invasive Plant Species of Madhya Pradesh. (Component C)
3. Assessment of Impact of Forest Fire on Fauna of Madhya Pradesh. (Component D)

Funding agency : Principal Chief Conservator of Forests (Protection) Bhopal, Madhya Pradesh

Regular Activity : 01

1. Maintenance of Monitoring and Evaluation Facilities and Database of Predators Prey in M.P.

Funding Agency: Internal (Initially funds received from PCCF (Wildlife) & Chief Wildlife Warden, MP Bhopal)

Project Summary

Completed Projects:

1. Title of the Project: **Assessment of Impact of Forest Fire on Vegetation of Madhya Pradesh. (Component B)**

Why this Project:-

Fire significantly affects forest ecosystems by altering their structure, composition, and function. Uncontrolled wildfires cause severe damage to vegetation, soil, and wildlife habitats. Forest fire can cause notable impacts on vegetation; it may be negative as well as positive. These impacts depend on intensity and frequency of fire along with the type of vegetation. Tropical dry deciduous forests are more vulnerable to forest fire than any other forest.

Research Methodology:-

- **Collection of Secondary Data**

Secondary data was collected from different authenticated online and offline sources i.e. Jabalpur forest division, IT wing, Madhya Pradesh Forest Department, Bhopal, MODIS & SNPP (FSI, Forest fire alert system 3.0) satellite data and Satellite imageries were explored from USGS website <https://earthexplorer.usgs.gov>.

- **Reconnaissance survey:-** Pilot survey of study area was done for site selection for primary data collection.

- **Collection of Primary data**

Primary data has been collected from 28 sampling sites of 14 beats of Jabalpur Forest Division and Kundam Pariyojna Mandal.

14 beats of study area and calculated fire affected area

S.No	Division	Range	Beat	Calculated Fire affected Area (ha)
1	Jabalpur	Patan	Patan	13.7
2		Panager	Gadheri	13.1
3		Jabalpur	Banderkola	3.0
4	Kundam Pariyojna	Cherapondi	Pati	4.6
5		Cherapondi	Kalapatar	2.3
6	Jabalpur	Shahpura	Belkheda	12.4
7		Sihora	Goureha	5.2
8		Sihora	Serda	6.9
9		Shahpura	Kohali	13.8
10		Shahpura	Bijori	4.6
11		Bargi	Maraphata	4.5
12		Jabalpur	Banderkola2	8.7
13		Panager	Umariya	0.4
14		Kundam	Padariya	15.3

- **Observations were collected on following points**

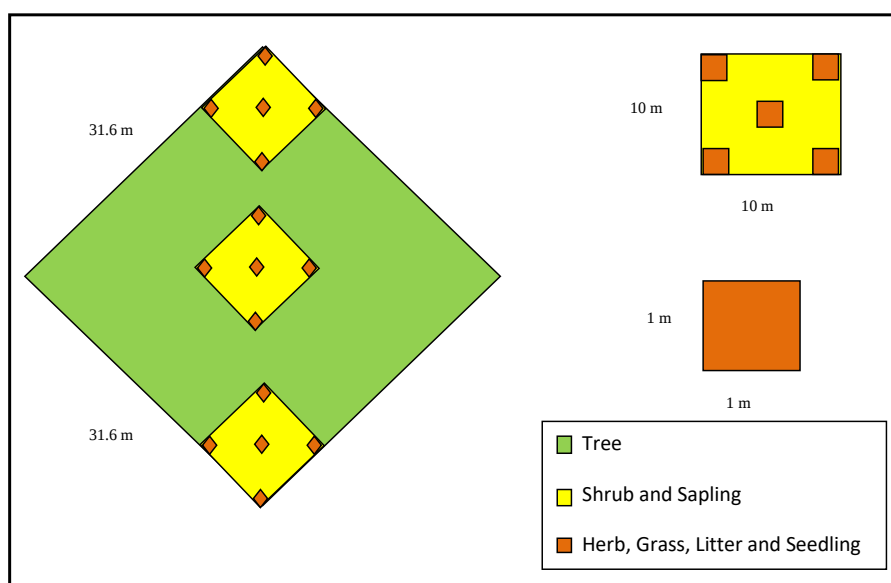
- **Tree layer**- All the species in tree layer (all vegetation > 2 m height, including bamboo) have been recorded within the 0.1 ha plot.
- **Shrub layer** - All the species in shrub layer (all vegetation in between 40 cm to 2.0 m height) have been recorded within the 10 m x 10 m plot.
- **Herb layer**: All the species in herb layer (all vegetation < 40 cm in height) have been recorded within the 1 m x 1 m plot.
- **Litter Cover**: The percentage of litter cover have been recorded within the 1 m x 1 m plots.
- **Regeneration status**: All the saplings of different plant species have been recorded within the 10 m x 10 m plot. The seedlings of different plant species have been recorded within the 1 m x 1 m plot along with their name and numerical counts.

- **NDVI (Normalized Difference Vegetation Index) value Analysis**

NDVI is a remote sensing technique that utilizes light reflection in the visible and near-infrared (NIR) spectra to assess the quantity and vitality of vegetation in a given area. During present study Pre-fire & Post-fire NDVI of fire affected area in various beats of Jabalpur Forest Division has been assessed and analysed.

Study Design:-

For vegetation data collection, quadrat method was used. At both the sites (fire affected area and adjoining non-fire areas), 0.1 ha (31.62m x 31.62m) plots have been laid out along with its GPS location at the centre and observation taken as given above in primary data collection.



Quadrat design for vegetation sampling

Objectives of Research :

- To study the impact of fire on vegetation and its composition.

Activities Undertaken :-

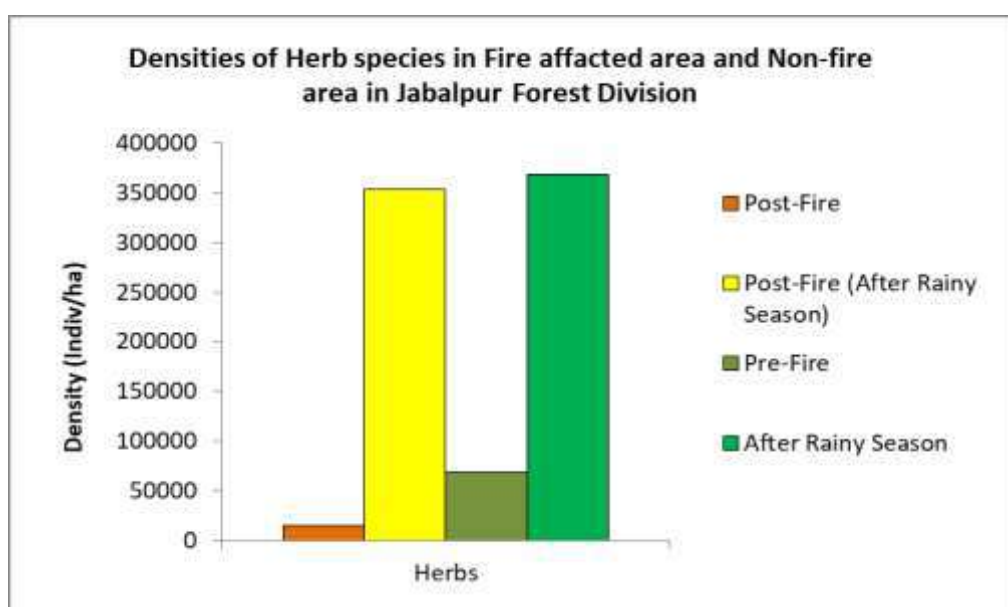
- Field data collected was done immediate after fire incidents and after rainy season in all the selected sites.

Cost of the project- Rs. 2.93 lakh

Outcome of research :-

- This study focused at finding out the impact of fire on various facets of vegetation in the study area. In the study area, mostly surface fire has been observed and litter layer of that area got damaged. Major loss was not seen anywhere. At few places, tree trunk and crown was also found affected by fire.

- Fire incidences in Madhya Pradesh observed from January to July and the peak months for fire are recorded to be March and April. Overall fire incidences found to be increased since past ten year. In the year 2025 there were 221 forest fire alerts in Jabalpur Forest Division.
- Fire has impacted both the structural and compositional aspects of different plant layer. The present study examined significant change on plant species composition in herb layer before and after the fire. The findings indicate a distinct change in species composition following the fire, implying that fire had a negative impact on species diversity. But after rainy season the fire-affected area showed prominent recovery. It increased from almost no species at post fire to a much higher density afterwards. This implies that while density and growth may be bounced quickly following a fire if its intensity is not high.
- Fire damages the regeneration of tree species found in that area due to surface or ground fire. Ground fire destroys organic matter. Sapling and Seedling destroys completely hence imparting regeneration process.
- Forest fire's impact on species composition and diversity is significant. It affects forest regeneration and growth. In present scenario, after the rainy season plant growth and fast recovery indicates towards the positive effect of fire. The study suggests the negative and beneficial both impact of fire when fire amount is not high.



View of Fire Affected sites in Jabalpur Division



Sarda Beat



Chhitri Beat

View of field visit during vegetation survey



2. Title of the Project: **Assessment of Impact of Forest Fire on Invasive Plant Species of Madhya Pradesh. (Component C)**

Why this Project:-

One of the biggest dangers to natural wildlife is invasive species. Invasive species pose a hazard to a number of threatened or endangered species. In a new area where it is not native, invasive species affect the ecosystem or the economy. Biological invasions represent one of the most significant threats to the conservation of biological diversity, with exotic terrestrial plants responsible for extensive and widespread changes on the structure and functioning of natural ecosystems.

The current research intends to investigate the effects of fire on invasive plant species, and its pattern in the affected region, compared to adjacent area that did not experience the fire incident

Research Methodology:-

- **Collection of Secondary Data**

Secondary data was collected from different authenticated online and offline sources i.e. Jabalpur forest division, IT wing, Madhya Pradesh Forest Department, Bhopal, MODIS & SNPP (FSI, Forest fire alert system 3.0) satellite data and Satellite imageries were explored from USGS website <https://earthexplorer.usgs.gov>.

- **Reconnaissance survey:-** Pilot survey of study area was done for site selection for primary data collection.

- **Collection of Primary data**

Primary data has been collected from 28 sampling sites of 14 beats of Jabalpur Forest Division and Kundam Pariyojna Mandal.

- **Data collection on Invasive Species**

To collect primary data on invasive plant species, sampling was performed in fire-affected zones and the adjoining non-impacted areas. The quadrat method was employed for data collection. At each site three 10 m x 10 m quadrats were laid (Figure-1). Five 1 m x 1 m quadrats were organized within a single 10 m x 10 m quadrat (four were placed in the directions of East, West, North, and South, with one positioned at the centre). Plant number and cover in each plot were visually evaluated by observers.

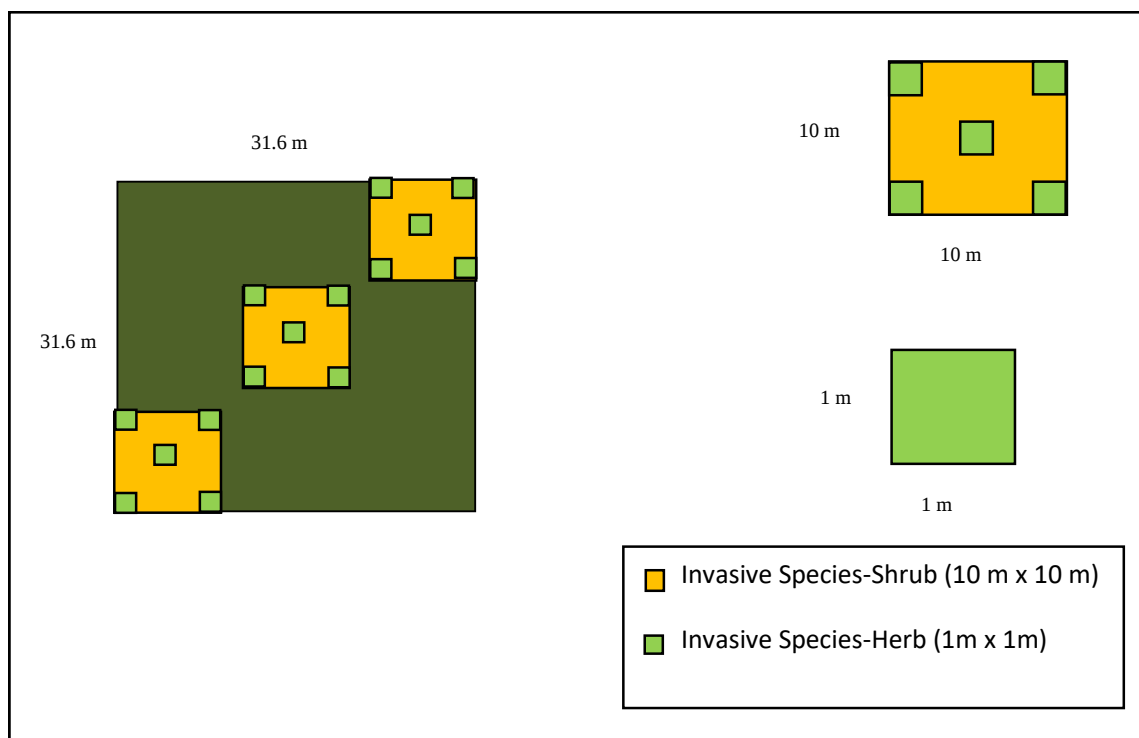
Visual Estimation: Visually estimate the percentage of the quadrat covered by a species. Estimating the percentage cover of bushy plant species (shrubs) involves measuring the vertical projection of their canopy onto the ground and ocular estimation within quadrats.

- **10 m x 10 m plot** - All the Invasive species in this plot have been recorded with their cover percentage. Generally bushy species recorded in this plot.

1 m x 1 m plot - All the Invasive species in this plot have been recorded with their cover percentage. Generally small herb species recorded in this plot.

Study Design:-

The quadrat method was employed for data collection. At each site three 10 m x 10 m quadrats were laid. Five 1 m x 1 m quadrats were organized within a single 10 m x 10 m quadrat (four were placed in the directions of East, West, North, and South, with one positioned at the centre). Plant number and cover in each plot were visually evaluated by observers.



Quadrat design for sampling of Invasive Plant Species

Objectives of Research :

- To study the impact of fire on invasive plant species and its growth pattern.

Activities Undertaken :-

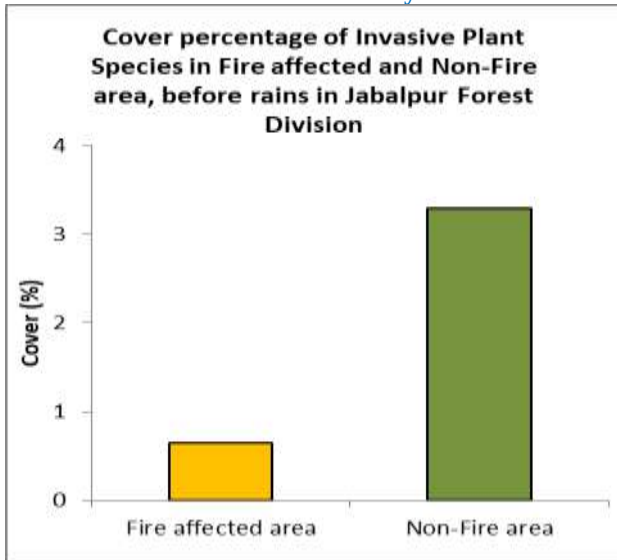
- Field data collected was done immediate after fire incidents and after rainy season in all the selected sites.

Cost of the project:- Rs. 2.93 lakh

Outcome of research :-

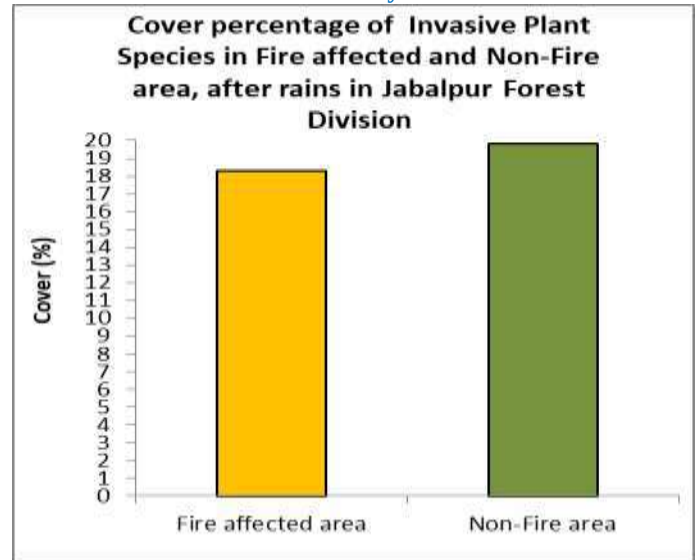
- Invasive alien plant species have posed significant risks to the stability of ecosystems globally. They impact not just the diversity of native species in these ecosystems but also jeopardize their biological health.
- It may be concluded here that the cover percentage and density of major invasive species found to be affected by fire. Significant impact of fire on invasive plant species was recorded. The *Lantana camara* and *Hyptis suaveolens* are found to be the main invasive species which can be considered the successful and established invader in the study area.
- In addition to this, *Chromolaena odorata* was recorded in the Gaurha beat during sampling. It was also seen in Chhitari, Surmava, Chhattarpur and Kaladehi beats during the pilot survey. This invasive species is very aggressive in nature and one of the 100 worst world's invasive alien species.

- Before the Rainy Season

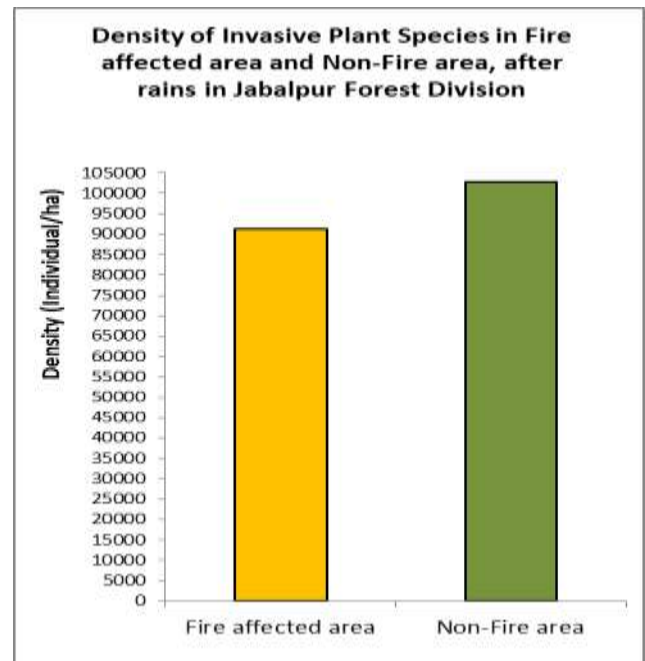
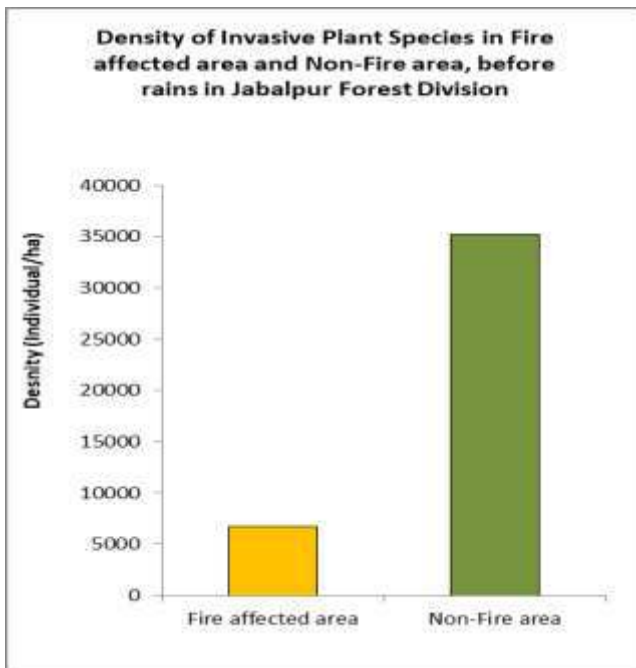


Before the Rainy Season

After the Rainy Season



After the Rainy Season



Impact of fire on plant species in the area





View of field survey on invasive species





3. Title of the Project: Assessment of Impact of Forest Fire on Fauna of Madhya Pradesh. (Component D)

Why this Project:-

Fire has a considerable effect on animal populations, both through direct injuries and mortality, as well as indirectly by altering habitat structure, food availability, and predator-prey dynamics. The intensity and rapidity of a fire influence the immediate impact on wildlife. Despite the dangers, post-fire conditions can be favourable for some species, as the fire creates habitat variation, supports the growth of new plants, and opens up feeding areas. However, frequent or intense fires can lead to population fragmentation, reduced reproduction rates, and long-lasting habitat degradation for certain species that are sensitive to fire and have specific habitat requirements. Forest fires can cause harm to larger creatures, but smaller taxonomic groups are better able to adapt to the flames. This research is aimed at finding out the impact of fire on indigenous wildlife with reference to the fire severity in the affected region.

Research Methodology:-

- **Collection of Secondary Data**

Secondary data was collected from different authenticated online and offline sources i.e. Jabalpur forest division, IT wing, Madhya Pradesh Forest Department, Bhopal, MODIS & SNPP (FSI, Forest fire alert system 3.0) satellite data and Satellite imageries were explored from USGS website <https://earthexplorer.usgs.gov>.

- **Reconnaissance survey:-** Pilot survey of study area was done for site selection for primary data collection.

- **Collection of Primary data:-** Primary data has been collected from 28 sampling sites of 14 beats of Jabalpur Forest Division and Kundam Pariyojna Mandal.

- **Wildlife data:-**

Trail and transect methods were used for data collection of herbivore and carnivore species in each beat including fire affected area and adjoining non fire area. data were collected on following points -

- **Sign Survey:-** After mapping the fire affected area a trail was marked in fire affected area and adjoining non-fire area. Different types of signs like pugmarks/pugmark trail, scats, scrapes, scent, rake marks, voice and direct sighting was recorded during field survey. GPS coordinate of the start and end point of each trail was recorded. GPS coordinates was also recorded after every 20 minutes during trail walk.

- **Sampling for Ungulate species**

After the mapping of fire-affected area, one transect line was laid in it and in adjoining non-fire affected area. A total of 28 transects were surveyed for sampling. For each transect the beginning and end point coordinates were recorded. A record was kept of all herbivores seen during the walk and other indirect sign in the prescribed format.

- **Sampling for Ungulate Pellets:**

Apart from the direct encounter, pellet counting was also done for the ungulate species. The same line transect that has been sampled for ungulate encounter rate was used for this exercise. Along transect at every 400 m an area of 2 m x 20 m was sampled for quantifying ungulate pellets. The plot was placed alternately to the right and left of transect at every 400 m. At each plot GPS coordinates were also recorded.

Installation of Camera traps:

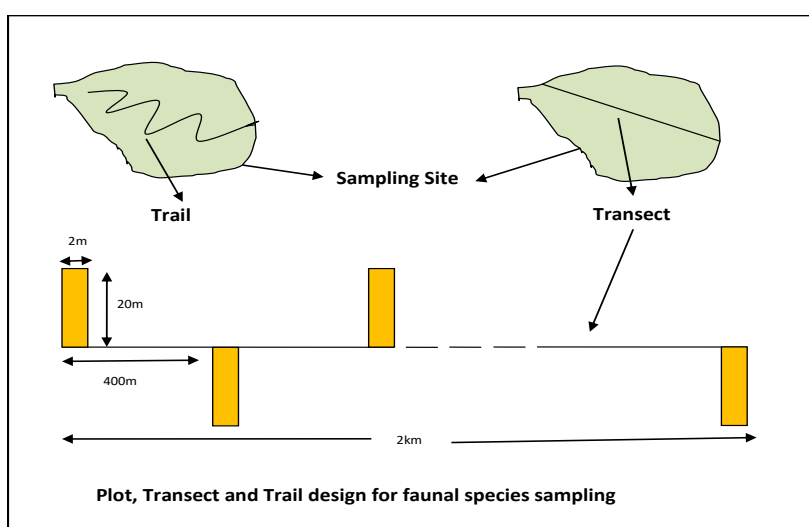
Camera traps were deployed at the potential locations during the field survey in the study area in order to record the animal occurrence and species abundance in the area.

Assessment of Normalized Burn Ratio (NBR): -

The Normalized Burn Ratio (NBR) is a satellite-derived index to assess the fire severity by measuring the difference in reflectance between near-infrared (NIR) and shortwave-infrared (SWIR) bands. High NBR values (near +1) indicate healthy green vegetation, while low or negative values indicate recently burned, bare, or non-vegetated areas.

Study Design:-

Transect and trails were laid out for data collection on ungulate species and carnivore species in fire affected and adjoining non fire area. 2 x 20 meter plots were used for assessment of pallet density.



Trail, transect and plot design for sampling of Faunal Species

Objectives of Research:-

- To study the impact of fire on displacement and abundance of wild animals.

Activities Undertaken:-

- Field data collected was done immediate after fire incidents and after rainy season in all the selected sites.

Cost of the Project:– Rs. 2.93 lakh

Outcome of research:-

- Forest fire may result into immediate habitat loss, food source depletion, ecosystem conversion, species displacement and death, soil and environmental damage.
- The difference in NBR based on the pre-fire event and post-fire event for the different beats of Jabalpur division was analyzed and the severity level was classified as low to medium, from which it is concluded that here fire severity was not high.

- Overall it may be revealed that there is no relative pattern observed in animal distribution. As fire intensity of the surveyed area was not high, no such significant impact was observed on herbivore species of the area.
- In fire-affected areas termite mounds and animal burrows were found burnt. Insects, reptiles and small mammals may be able to hide underground, and animals that live in trees can move to treetops and escape low-to-moderate intensity fires. Birds are least impacted by fire as they can fly away, but chicks and eggs can be impacted depending on the season of the fire. In this regards, further study needs to be done to better understand the extent of these impacts and their implications for species survival and ecosystem dynamics.

Field data collection during trail and transect survey



Animal species recorded during camera trapping



Spotted Deer (*Axis axis*)



Wildpig (*Sus scrofa*)



Pea Fowl (*Pavo cirstaus*)

Pugmarks Recorded during field survey



Spotted Deer (*Axis axis*)



Wildpig (*Sus scrofa*)



Sloth Bear
(*Melursus ursinus*)

Regular activity:**1. Title of the Project:- Maintenance of Monitoring and Evaluation Facilities and Database of Predators Prey in Madhya Pradesh.****Objectives of Research:-**

- Providing data of predators and prey species as desired by Department / Working Plan Division time to time.
- Organization of training / workshop programme as per the need.
- Maintenance of wildlife data base.
- Annual renewal of Radio Collar license and their activation.

Activities:

- Data analysis of herbivore and carnivore species as per requirements of forest divisions.
- Renewal of Radio Collar activation charges.
- Maintenance of tiger data base since 2016, 2017, 2018, 2019, 2020 and 2021 (Hardcopy and Softcopy).

Cost of the Project:- Rs. 68.20 lakh

Expected Outcomes:

- Proper maintenance of monitoring, evaluation facilities and past years data base of the state would be supportive for authorities of forest department.

Other significant achievements:-

Guided Srishti Mishra St. Aloysius' College, Jabalpur for her M.Sc. Internship. Title "Recording Activity Hours of Butterflies during winter season at Dumna Nature Reserve, Jabalpur (M.P.)".

2.2.3 WILDLIFE MANAGEMENT RESEARCH DIVISION**Mandate**

1. PA Network
2. Wildlife Management
3. Man - Animal interactions
4. Landscape-level planning and management
5. Corridor management
6. Genomic studies in tigers and other important wild species

Research Priorities

1. Planning a network of Protected Areas (PAs)-National Parks, Wildlife Sanctuaries, Conservation Reserves & Community Reserves to provide an umbrella for long term conservation and sustainable management of wildlife diversity in the state
2. Identification of suitable areas for establishment of new and expansion of existing PAs, their viability studies and preparation of DPRs
3. Management effectiveness evaluation in the existing PAs
4. Focus Group Discussions (FGDs) with various stakeholders and affected communities to elicit their feedback for mitigation of their problems and ascertaining their willing cooperation and participation in protection and conservation of wildlife
5. Standardization of model set of prescriptions for sustainable management of buffer zones of PAs
6. Study of the protection status of wildlife outside PAs – Identification of hot spots, site-specific threat factors and suggestions for their mitigation
7. Standardization of provisions to be included in the working plans of territorial forest divisions related to wildlife protection and conservation and habitat improvement
8. Studies on population trends of various wildlife species outside PAs

9. Identification of species-specific pockets of sizeable abundance outside PAs and their habitat suitability modelling through RS/GIS mapping
10. Identification of pockets of frequent man-wildlife conflicts and study of socio-economic aspects related to the conflicts in these pockets
11. To devise suitable measures for mitigation and adaptation for man-wildlife conflicts
12. To conduct wild health care monitoring programmes of zoonotic diseases
13. Genomic studies in tigers and other important species at landscape level
14. Study of landscape level source-sink dynamics of wild populations
15. Development of land scape level climate change adaptation model keeping into consideration the human-wildlife interface
16. Delineation of wildlife corridors between various tiger reserves of Madhya Pradesh
17. Corridor functionality assessment in the identified wildlife corridors
18. Preparation of guidelines for the habitat improvement and management of corridors

List of project titles with names of funding agency

Completed Projects:

1. Estimation of Tiger Occupancy Under the Project titled- AITE-2022 Evaluation of Wild Animals Population and Habitat in Madhya Pradesh.

Ongoing Projects:- 02

1. Study project on wild elephant habitat use and mitigation measures to minimize man-elephant conflict: With special reference to Sanjay-Bandhavgarh habitat linkage of central highlands landscape.

Funding agency : PCCF (Wildlife) M.P., Bhopal

2. A Scientific Study on Ecological Impacts and Sustainability of Aerial Firefighting in Forests of South Panna Division.

Funding agency : CEO, FDA, South Panna Division

Project Summary

Completed Project

1. **Title of the Project: Estimation of Tiger Occupancy Under the Project titled- AITE-2022 Evaluation of Wild Animals Population and Habitat in Madhya Pradesh.**

Why This Project

Tigers (*Panthera tigris*) remain one of the most threatened large carnivores globally, with survival dependent on maintaining viable populations within increasingly human-dominated landscapes. Central India, and particularly Madhya Pradesh, represents a critical stronghold. However, conservation planning requires robust estimates of occupancy and an understanding of the ecological and anthropogenic factors influencing both persistence and detectability.

Methods

We conducted a large-scale occupancy survey across 106,700 km² of forested habitat in Madhya Pradesh, stratified into 1,067 grid cells of 100 km² each, with replicates set at 5 km intervals. Tiger presence was assessed through sign surveys, yielding detection–non detection data analyzed in PRESENCE software. Competing models were evaluated using Akaike Information Criterion (AIC) to identify the most informative covariate structures influencing occupancy (ψ) and detection probability (p) for two major landscapes: Vindhyan and Satpura–Maikal.

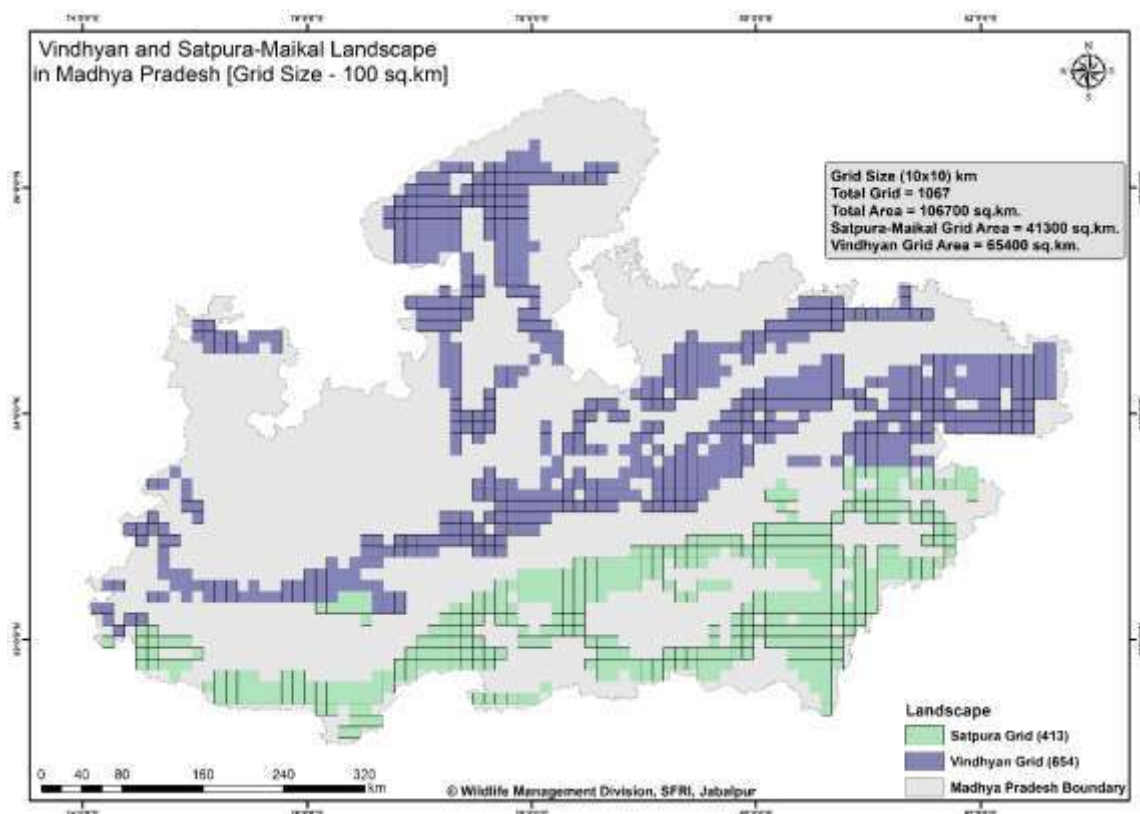


Figure 1: Vindhyan and Satpura-maikal Landscape

Results

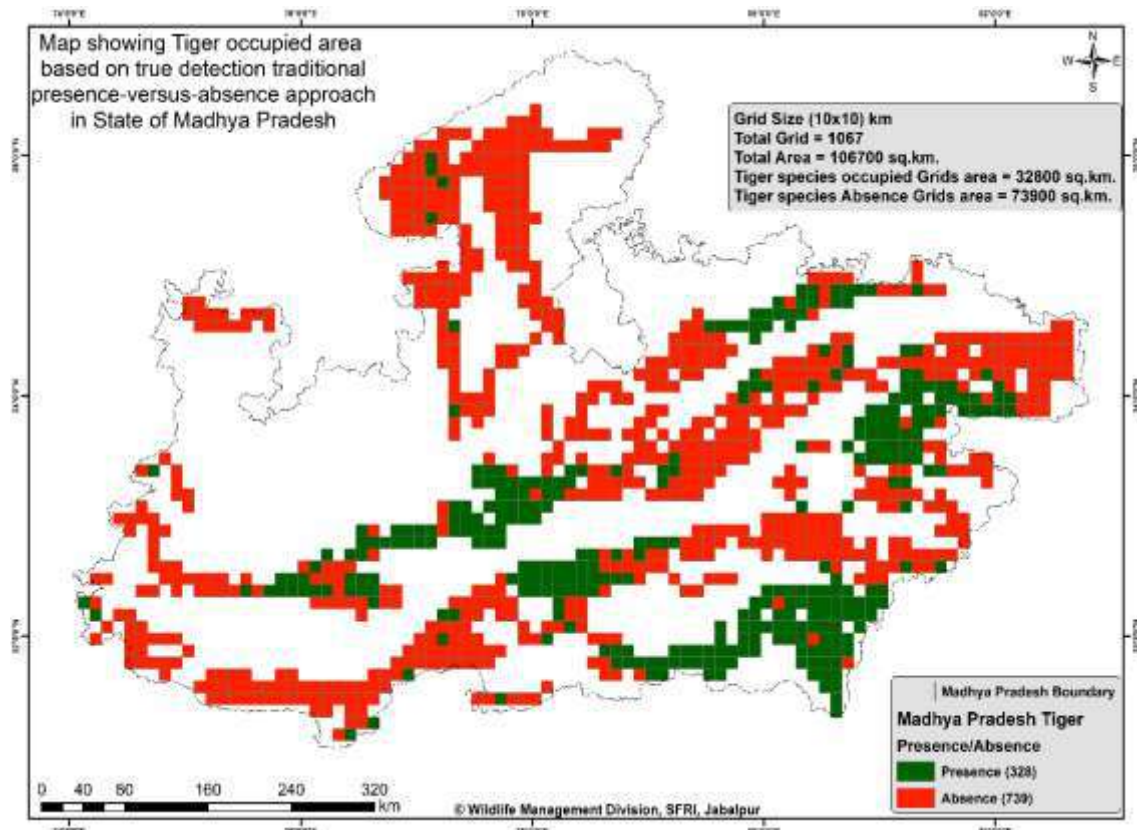
In the **Vindhyan Landscape**, tiger signs were recorded in 172 of 654 grid cells. The best-fitting model [$\psi(\text{MTWM}+\text{ANP}+\text{Water}+\text{AP})$, $p(\text{ANP}+\text{HFP}+\text{FC}+\text{AP})$] produced a naïve occupancy of 0.2629, corresponding to 17,194 km² of occupied habitat. Occupancy was positively influenced by annual precipitation, prey availability, and proximity to water, and negatively influenced by maximum temperature of the warmest month. Detection probability increased with precipitation, forest cover, human footprint, and prey diversity, though the negative baseline coefficient suggests heterogeneity in detectability across sites.

In the **Satpura–Maikal Landscape**, detections occurred in 155 of 413 grid cells. The best model [$\psi(\text{MTWM}+\text{ANP}+\text{FC}+\text{Water})$, $p(\text{MTWM}+\text{ANP}+\text{HFP}+\text{FC})$] yielded a naïve occupancy of 0.3777, equivalent to 15,599 km². Occupancy was positively associated with precipitation and forest cover, but negatively influenced by higher maximum temperatures and greater distance from water sources. Detection probability increased with temperatures, precipitation, and forest cover, but declined with human footprint, reflecting reduced detectability in disturbed areas.

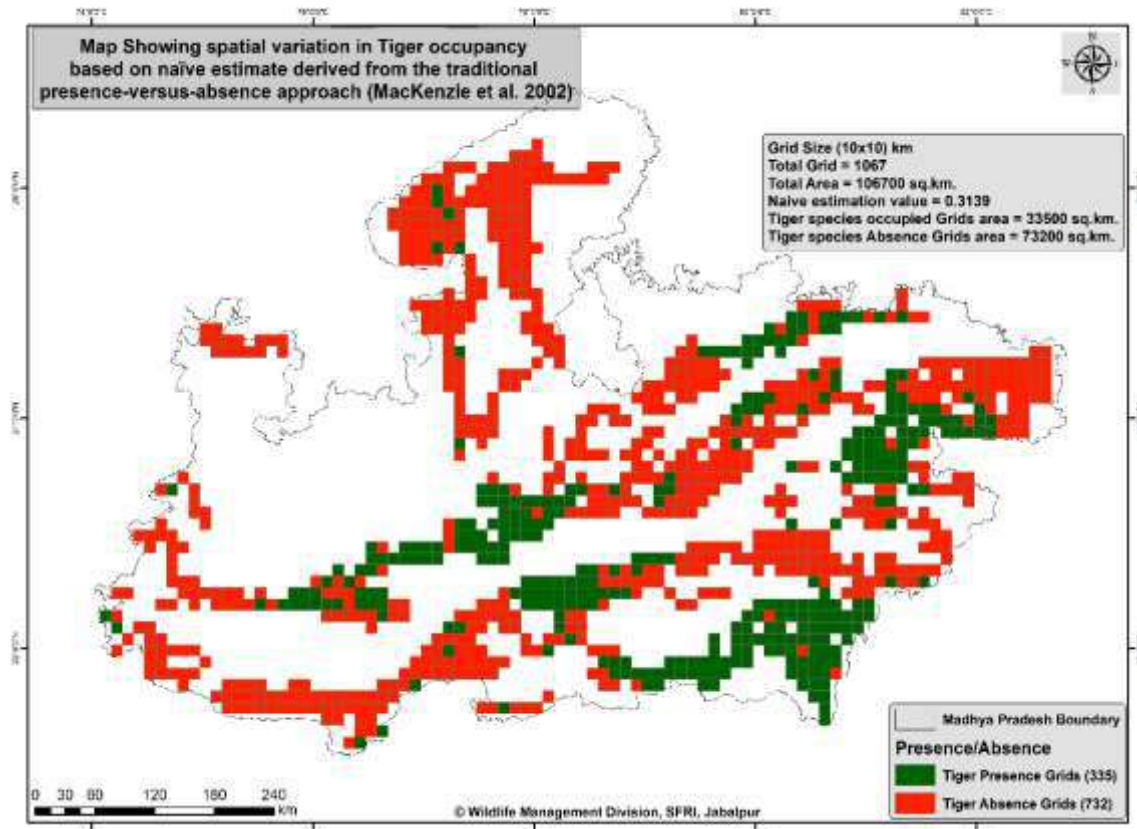
Across Madhya Pradesh, combining both landscapes ($n = 1,067$ sites), the overall naïve occupancy was estimated at **0.31**, corresponding to an occupied area of approximately **33,077 km²**. In contrast, the model-based occupancy that accounts for imperfect detection was slightly higher at **0.35**, translating into an occupied area of about **37,345 km²**. This difference demonstrates how naïve estimates can underrepresent true occupancy by nearly **4,300 km²**, emphasizing the importance of incorporating detection probability when assessing large carnivore distribution at landscape scales. The small 4% gap indicates strong detection efficiency but underscores the importance of detection-corrected models for accuracy. Findings suggest tiger habitat is nearly saturated, requiring focused conservation to manage pressure and mitigate conflict.

Occupancy models

Traditional Presence Versus Absence approach for occupancy estimation:

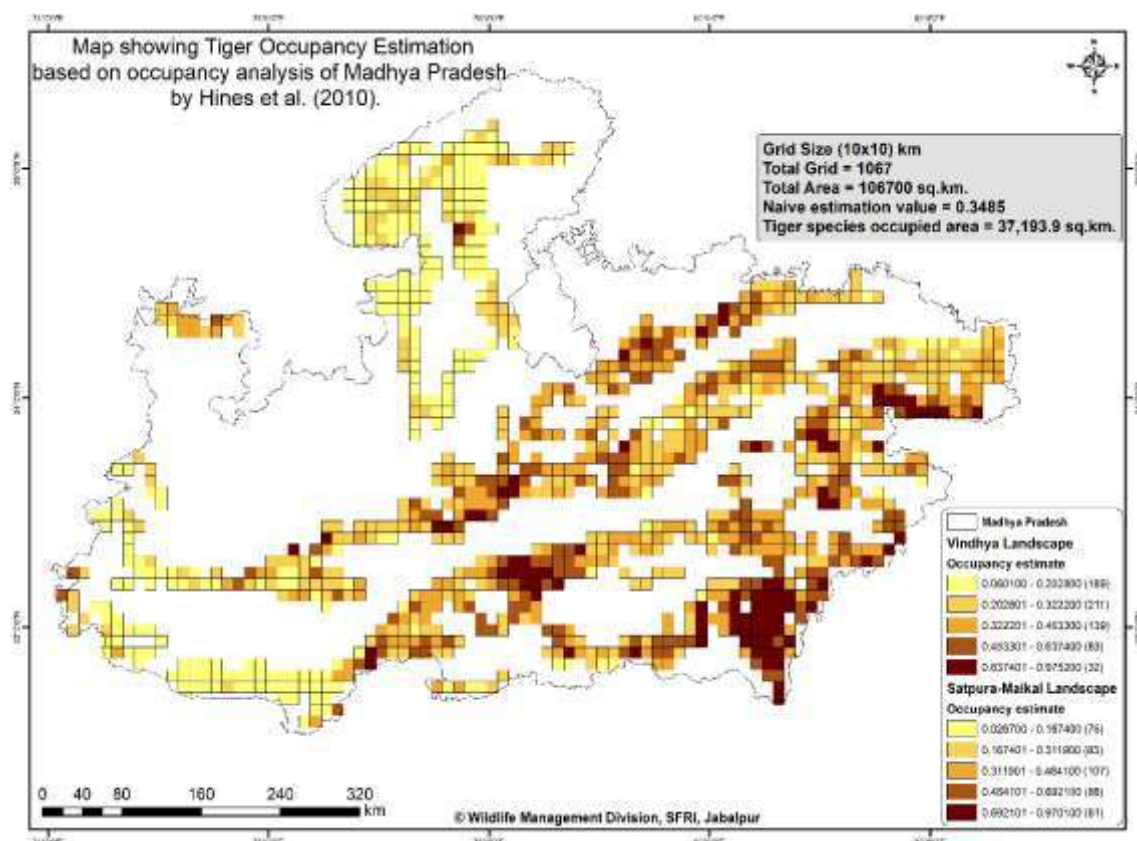


Map 1: Map of Tiger occupancy based on true detection traditional Presence vs Absence Approach
Naïve Occupancy model based on traditional Presence–Absence approach

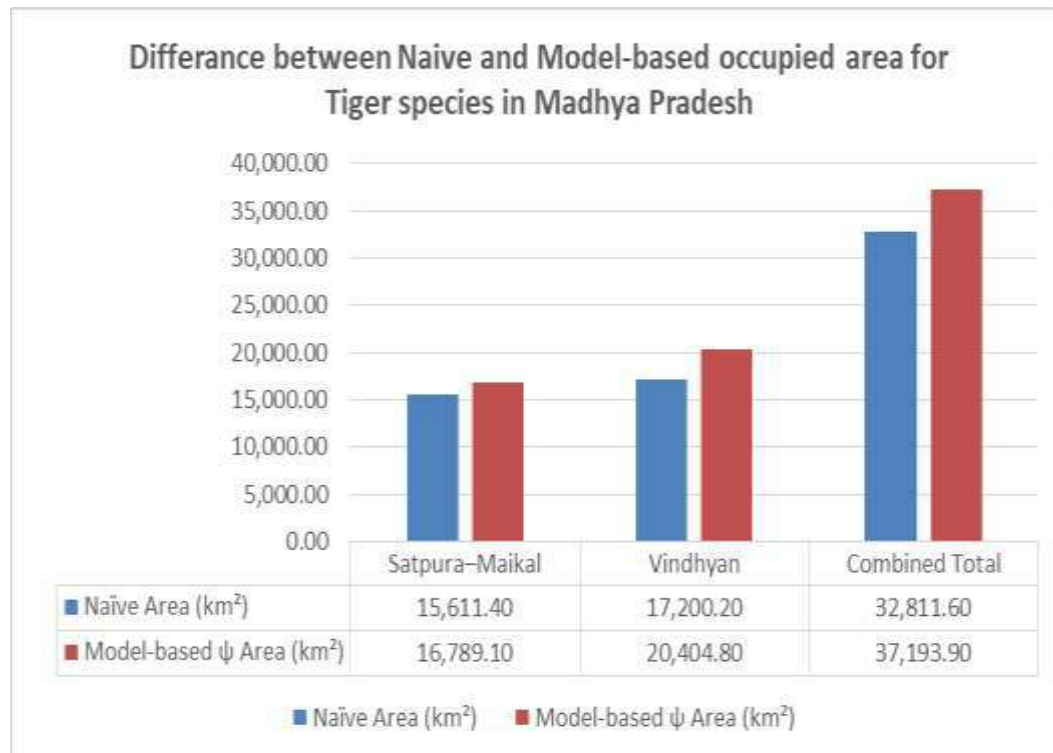


Map 2: Presence/Absence map of Tiger species derived from naïve estimation occupancy (MacKenzie et al. 2002)

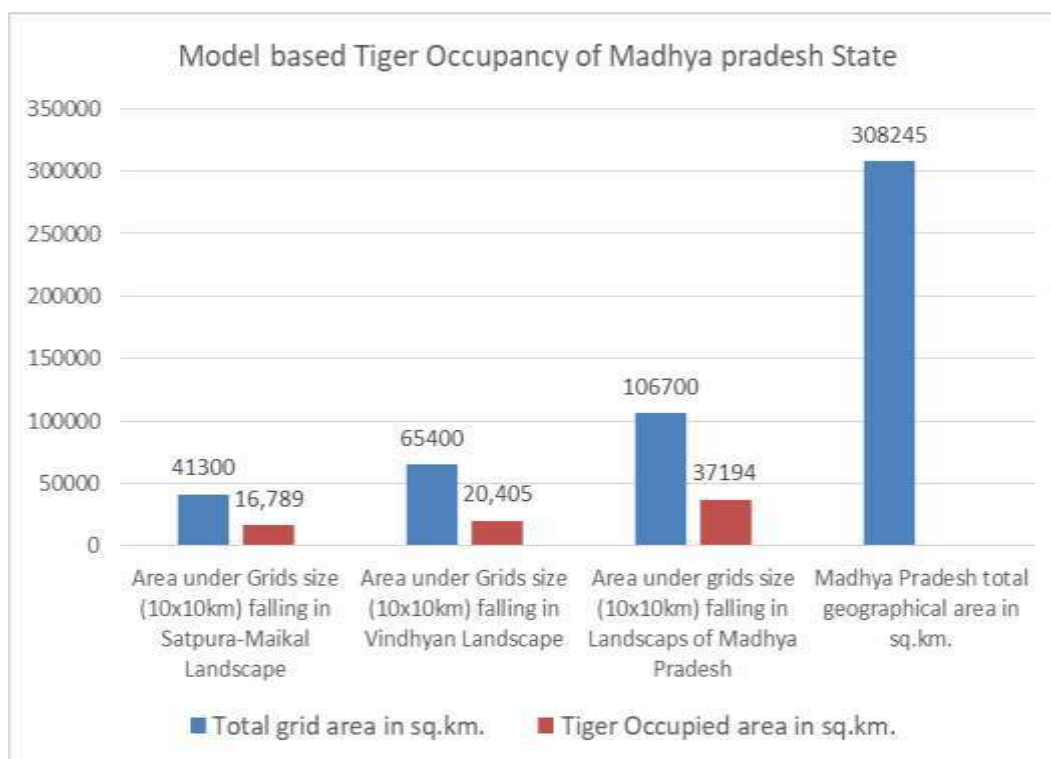
Simple Single Season Custom Model output:



Map 3: Map of occupancy estimation of tiger species in Madhya Pradesh landscape



Graph 1: Naive and Model-based Tiger occupancy of Madhya Pradesh State



Graph 2: Graph showing details of Tiger occupied area in km² in Landscapes of MP

Findings

Interpretation of Occupied Area Estimates in Madhya Pradesh

This study assessed tiger occupancy across two major landscapes in Madhya Pradesh—Satpura–Maikal and Vindhyan—using both naïve and model-based approaches. Each landscape was divided into 100 km² grid cells, totaling 1,067 sites.

- **Naïve occupancy**, calculated as the proportion of grids with at least one detection, estimated that tigers occupy approximately 32,812 km² across the state.
- **Model-based occupancy (ψ)**, which accounts for imperfect detection, yielded a higher estimate of 37,194 km² of occupied habitat.

Landscape	Grids (Grid Size 100 km ²)	Naïve Occupancy	Naïve Area (km ²)	Model-Based ψ	ψ Area (km ²)
Satpura–Maikal	413	0.378	15,611.4	0.407	16,789.1
Vindhyan	654	0.263	17,200.2	0.312	20,404.8
Combined Total	1067	0.31 (Avg.)	32,811.6	0.349 (Avg.)	37,193.9

This difference of ~4,382 km² highlights the added precision of detection-corrected models, which reveal tiger presence in areas where signs may have been missed during field surveys. The relatively small gap between the two estimates (just 4%) reflects the high detection efficiency achieved through rigorous fieldwork by trained personnel and the use of large grid sizes.

Importantly, the model-based occupancy of 0.349 (**SE** - ± 0.0442) suggests that approximately 35% of the surveyed landscape, **37,194 km²** area is currently occupied by tigers, indicating that suitable habitat is approaching ecological saturation. With only a small margin remaining for further expansion, the findings imply that the tiger metapopulation in Satpura–Maikal and Vindhyan may be nearing the landscape's carrying capacity under current habitat conditions.

This has critical implications for conservation planning. As tiger populations grow, limited space may lead to increased dispersal into human-dominated areas, elevating the risk of human–tiger conflict. Therefore, strategic interventions—such as habitat enhancement, corridor restoration, and conflict mitigation—are essential to support long-term population viability and ecological resilience.

Policy Summary

Tiger occupancy across Madhya Pradesh is strongly supported by higher precipitation, forest cover, prey availability, and water sources, while rising temperature, water scarcity, and human disturbance negatively affect habitat use. In the Vindhyan landscape, tigers persisted even in human-modified areas where ecological integrity and prey base were maintained, whereas in Satpura–Maikal, human footprint reduced detection probability. The findings indicate that tiger habitats are nearly saturated and require focused conservation to reduce pressure and conflict. Protecting forest cover, water resources, prey abundance, and landscape connectivity is essential for ensuring long-term tiger persistence and human coexistence.

Ongoing Project

1. Title of the Project:- Study project on wild elephant habitat use and mitigation measures to minimize man-elephant conflict: With special reference to Sanjay-Bandhavgarh habitat linkage of central highlands landscape

Why this Project:-

Over the past century, Madhya Pradesh has been devoid of resident Asian elephant (*Elephas maximus*) populations and the associated management frameworks. However, beginning in 2018, wild elephants began migrating westward from Chhattisgarh into Bandhavgarh Tiger Reserve (BTR), inaugurating a novel colonization front. This unexpected range expansion has precipitated a suite of conservation challenges, from unanticipated human–elephant conflict in local communities to gaps in reserve management capacity. Understanding the drivers, pathways, and implications of this westward movement is therefore essential for developing proactive strategies to accommodate elephant populations and mitigate emerging conflicts in a landscape unaccustomed to their presence.

This development has triggered escalating human–elephant conflict (HEC) in the region, where both forest managers and local communities are ill-prepared to respond. The project was thus conceived to address two major gaps: the lack of spatially explicit habitat modelling for elephants in the Central Indian landscape, and the absence of comprehensive documentation of the socio-ecological dynamics of conflict. The dual aim was to inform strategic corridor conservation and provide data-driven recommendations for mitigating conflict and fostering coexistence in a landscape that is new to elephant presence.

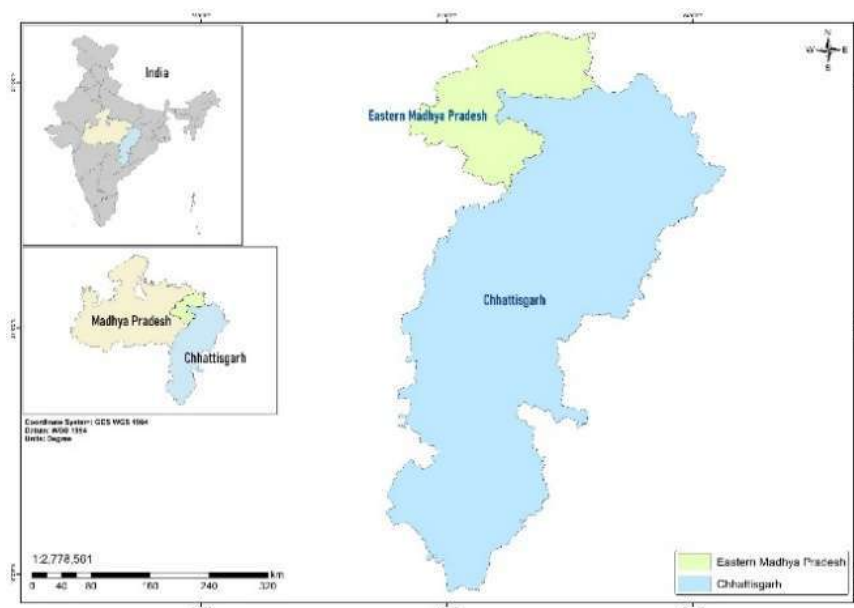


Figure 1 : Study area map

Research Methodology:-

To understand and predict elephant distribution and associated conflict patterns, we adopted a mixed-methods approach combining ecological modeling with socio-economic field surveys. For habitat suitability analysis, we used Max Ent version 3.4.4, implementing two complementary modeling frameworks. The first was a split-sample model applied to the broader Eastern Madhya Pradesh–

Chhattisgarh landscape, using 15 replicated runs with 75% of presence records for training and 25% for testing. This approach achieved a high mean test AUC of 0.803 with a low standard deviation of 0.007, indicating consistent and reliable model performance. The most influential environmental predictors were minimum temperature of the coldest month (Bio6), which contributed 22.8% to the model with 23.3% permutation importance, followed by forest cover (20.2% | 15.0%), maximum temperature of the warmest month (Bio5: 14.3% | 16.0%), and proximity to sandbeds (14.2% | 16.0%).

To complement this broad-scale model and quantify local-scale uncertainty, a second Max Ent model was developed using a bootstrap framework in a subregion of Eastern MP. This model was based on 15 replicates using resampling with replacement and achieved a mean training AUC of 0.794 with a standard deviation of 0.005. In this framework, forest cover (32.3%) and human population density (31.2%) emerged as the top contributors, with significant permutation importance values of 9.4% and 25.0% respectively. Other notable variables included Bio5 (10.4% | 13.5%), Bio6 (7.9% | 17.1%), and bamboo presence (6.3% | 5.2%). Jackknife tests consistently identified Bio6 and human population density as strong independent predictors in both modeling strategies.

Parallel to the habitat modelling, a detailed socio-ecological survey was conducted across 140 villages, covering 744 respondent interviews in Bandhavgarh Tiger Reserve (BTR), Sanjay Tiger Reserve (STR), Chhattisgarh–Madhya Pradesh elephant entry points, and their connecting landscape linkages. A total of 744 individuals were interviewed using a semi-structured questionnaire covering topics such as crop and property damage, human casualties, elephant foraging behavior, seasonal patterns of conflict, mitigation strategies, cultural attitudes, and experiences with compensation claims. These insights were essential in interpreting the human dimension of the elephant expansion and identifying factors driving local conflict intensity.

Study Design:-

Data Processing; Potential Vegetation Map Land Use and Land Cover Map (Current scenario); Species Distribution Modelling; Multi Collinearity—Variance Inflation Factor; Maximum Entropy Modelling (MaxEnt); Preference and Impedance Rasters; Least Cost Path Analysis; Preparation of mitigation plan to minimize man-elephant conflict

Questionnaire and Secondary data: Based on the questionnaire survey the tolerance level of the villagers living in the periphery of the forest will be understood.

- The secondary data from the forest department and the villagers will help in studying the previous year's Elephant movement and crop-raided villages.
- Villages will be identified based on the number of Elephant visits in the past years and suitable conflict mitigation measures will be suggested.

GIS-based proactive management strategy formulation

- The data acquired and processed in GIS will produce the probability of past and future movement of Elephants which will help in identifying previous historic corridors.
- Ecorestoration activities and securing these identified corridors are necessary for habitat management purposes.
- Conflict hotspots will be identified based on HEC level and Elephant movements which will help in the use of HEC mitigation methods based on different hot spots and levels of conflict

Objectives of Research:-

1. To identify the elephant movement historical passage.
2. To model potential elephant habitats & corridors in central highlands landscape for present and past.
3. To estimate the path followed by elephants in Sanjay-Bandhavgarh habitat linkage.
4. To identify the potential conflict land use areas & suggest site-specific mitigation in the Sanjay-Bandhavgarh habitat linkage.

Activities Undertaken:-

- Elephant sign mark survey completed in Sanjay–Bandhavgarh habitat linkage.
- The sign mark survey carrying out in eastern Madhya Pradesh falling forest area of Dindori

forest division, East and West Mandla forest division and Phen sanctuary of Kanha Tiger Reserve.

- Occupancy estimation completed for elephant presence in Bandhavgarh Tiger Reserve and Sanjay Dubri Tiger Reserve.
- Habitat suitability modelling carried out using MaxEnt in Eastern Madhya Pradesh (MP) and Chhattisgarh (CG).
- GIS-based mapping and connectivity analysis using Linkage Mapper and Circuitscape identified habitat suitability, corridors, stepping stones, movement pathways, and conflict hotspots for *Elephas maximus*.
- Activities completed in relation to the project “Understanding Human–Elephant Conflict in Bandhavgarh Tiger Reserve, Sanjay Dubri Tiger Reserve, and the Associated Elephant Corridors of Eastern Madhya Pradesh: Perception, Crop-Raiding Patterns, and Conflict Dynamics.”
- Socio-ecological survey conducted to assess community perception, conflict patterns and mitigation practices in Noth and south Shahdol, Singrauli, Sidhi, Anuppur forest Divisions, Bandhavgarh and Sanjay-Dubri Tiger Reserve of eastern Madhya Pradesh.
- Ground verification of predicted corridors and elephant movement zones carried out through field observations.
- The interim report has been submitted to PCCF Wildlife Bhopal.

Results and Discussion:

The study surveyed 744 respondents across corridor, STR, and BTR villages, predominantly male, tribal, low-income, and forest-dependent. Most lived near forest edges in kaccha houses, had low educational attainment, and limited awareness of elephants. While over half supported coexistence, willingness to relocate or adopt alternative crop patterns remained low, and nearly half resided in high-conflict zones.

Chi-square analyses revealed that awareness of human–elephant conflict (HEC) was significantly associated with education, age, and direct experience of property damage, but not with crop loss alone. Seasonal patterns strongly influenced conflict dynamics: crop damage peaked in winter and year-round elephant presence areas, while property damage was highest in summer and perennial-use zones. Herds dominated in winter and monsoon, whereas tusked were more active in +summer and caused greater property damage. Crop raiding occurred mainly at night, particularly during reproductive crop stages.

Conflict intensity significantly shaped attitudes and responses. Households in high-conflict areas showed greater awareness, higher willingness to coexist under separation strategies, and increased relocation willingness. However, adoption of crop changes remained limited. Education also influenced mitigation preferences, with less-educated respondents favoring compensation and more-educated individuals supporting preventive measures.

Mitigation effectiveness varied significantly. Chili-based deterrents were widely reported as most effective in corridor villages, while fire and electric fencing were preferred in BTR villages. Traditional methods such as light and sound were generally considered ineffective unless combined. Overall, integrated approaches proved more successful than single techniques.

Logistic regression identified key predictors of coexistence willingness. Village location, tribal status, distance from forest, elephant group type, and awareness levels significantly influenced attitudes. Households farther from forests and those with higher awareness were more likely to support coexistence, whereas exposure to tusked or mixed groups reduced tolerance.

Spatial analysis using the Probability of Coexistence Presence Index (PCPI) revealed substantial variation across 140 villages, ranging from low (0.18) to high (0.91) coexistence probability. High-probability clusters indicated stronger tolerance, while low-probability villages were concentrated in conflict-prone zones.

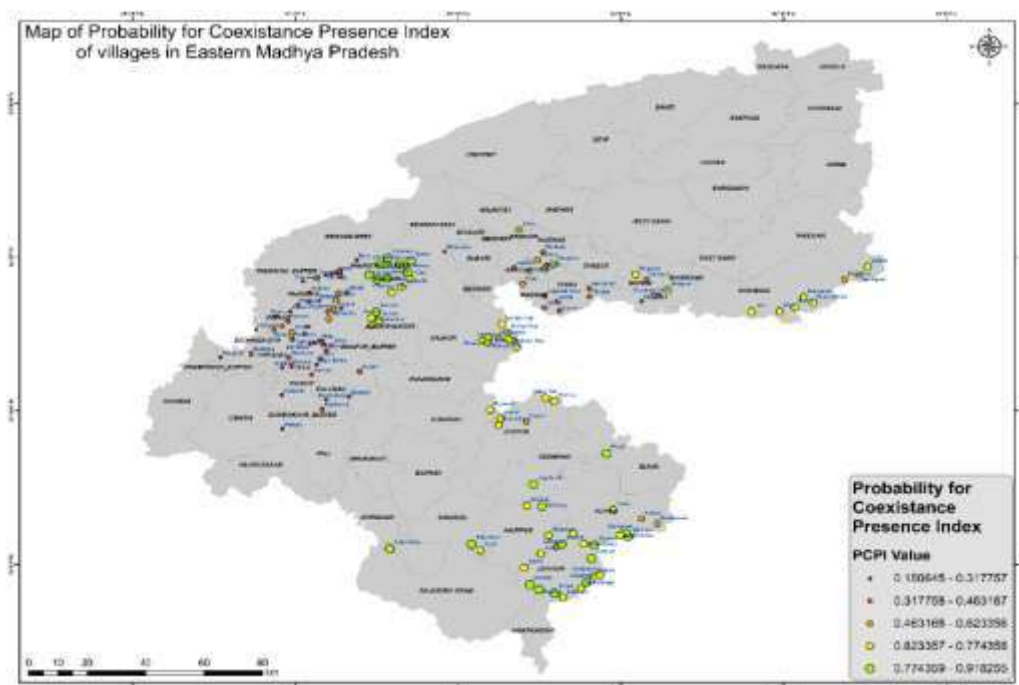


Figure 2: Map of Probability for Coexistence Presence Index in eastern Madhya Pradesh

Table 1 Probability of Coexistence Index table village-wise.

FID	Village Name	Probability of Coexistence Presence Index	BEAT	RANGE	Division/TR
1	Badwahi	0.180645	BADWAR	DHAMOKHAR_BUFFER	BTR
2	Ghaghau	0.181355	DAMANA	TALA	BTR
3	Bijhariya	0.185926	TALA	TALA	BTR
4	Pathari	0.189695	PATHARI	UMARIA	UMARIA
5	Kumhai	0.211562	MAGDHI_N	MAGDHI	BTR
6	Umariya	0.220067	KARAUNDIYA	PANPATHA_BUFFER	BTR
7	Mala	0.220692	MALA	MANPUR_BUFFER	BTR
8	Sejwahi	0.224077	GANGITAL	PANPATHA	BTR
9	Karchchatola	0.228117	MEHANWAH_N	KALLWAH	BTR
10	Kaseru	0.232625	KASERU	PATAUR	BTR
11	Bara	0.243969	BARAGHATITOLA	PANPATHA_BUFFER	BTR
12	Majhau	0.249281	PATREI	DHAMOKHAR_BUFFER	BTR
13	Chansura	0.252894	PALJHA_N	PANPATHA_BUFFER	BTR
14	Harrwah	0.261281	JAGUA	PANPATHA_BUFFER	BTR
15	Kusamaha	0.265103	PANPATHA	PATAUR	BTR
16	Pataur	0.266569	PATEHARA_A	MANPUR_BUFFER	BTR
17	Guruwahi	0.268049	KUCHWAHI	MANPUR_BUFFER	BTR
18	Majh Kheta	0.275192	MAJHAKHETA	MANPUR_BUFFER	BTR
19	Bagdari	0.280704	CHECHARIYA	DHAMOKHAR_BUFFER	BTR
20	Chhapraud	0.282328	CHHAPRAUR	MANPUR_BUFFER	BTR
21	Gohadi	0.285958	MARDARI	DHAMOKHAR_BUFFER	BTR
22	Hardi	0.287117	HARDI	PANPATHA	BTR
23	Saidol	0.297548	Saidol South	Pondi	Sanjay National Park

24	Bhadaura	0.298312	Bhaiswahi	Mohan	Sanjay National Park
25	Chitraw	0.299984	CHITRAWAN	PANPATHA	BTR
26	Rakhi Amodar	0.300595	MALA	MANPUR_BUFFER	BTR
27	Bhamraha	0.30156	Bhamraha	Beohari Buffer	Sanjay National Park
28	Majh Tola	0.307862	CHITRAWAN	PANPATHA	BTR
29	Majhauri	0.314742	PALJHA_S	PANPATHA_BUFFER	BTR
30	Mardari	0.317757	MARDARI	DHAMOKHAR_BUFFER	BTR
31	Lurghuti No.2	0.325469	Lurghuti	Madwas Buffer	Sanjay National Park
32	Lawahi	0.331176	Lawahi	Bastua	Sanjay National Park
33	Khari Badi	0.336926	KHARIBADI	PANPATHA_BUFFER	BTR
34	Bhamrahatola	0.336926	KHARIBADI	PANPATHA_BUFFER	BTR
35	Badwahi	0.340771	BAMERA	PATAUR	BTR
36	Gata	0.354435	DAMNA	MANPUR_BUFFER	BTR
37	Sarsai	0.358933	Kundaur	Madwas Buffer	Sanjay National Park
38	Goli phari	0.360994	Agarjhiria East	Pondi	Sanjay National Park
39	Kudari	0.363371	KHOHARI	MANPUR_BUFFER	BTR
40	Basa	0.365521	DAMNA	MANPUR_BUFFER	BTR
41	Phulwa	0.367774	Fulwa	Pondi	Sanjay National Park
42	Bagdara	0.369443	MIDRA	PANPATHA_BUFFER	BTR
43	Lakhumar	0.375111	KATHLI	TALA	BTR
44	Mahaman	0.377036	MAHAMAN	TALA	BTR
45	Bagaiha	0.377754	SALKHNIYA	PATAUR	BTR
46	Bamera	0.382842	BAMERA	PATAUR	BTR
47	Kothiya	0.384703	PANPATHA	PATAUR	BTR
48	Kumharra	0.387935	GORAIA_A	DHAMOKHAR_BUFFER	BTR
49	Duhukuriya	0.38832	Pondi	Madwas Buffer	Sanjay National Park
50	Ranchha	0.393039	GURWAHI	MANPUR_BUFFER	BTR
51	Sehra	0.411978	SEHRA'A'	PANPATHA	BTR
52	Kathali	0.425597	MALA	MANPUR_BUFFER	BTR
53	Medhaki	0.431925	South Medaki	Madwas Buffer	Sanjay National Park
54	Chitrauli	0.441109	Chitrauli	Mohan	Sanjay National Park
55	Kundaur	0.443125	Kundaur	Madwas Buffer	Sanjay National Park
56	Lakhnauti	0.462378	PATEHARA_B	MANPUR_BUFFER	BTR
57	Puraindol	0.463167	South Amrola	Bhuimand Buffer	Sanjay National Park
58	Dobha	0.468603	GURWAHI	MANPUR_BUFFER	BTR
59	Baghado	0.474608	NAVGAMA	MANPUR_BUFFER	BTR
60	Harrai	0.491681	South Amrola	Bhuimand Buffer	Sanjay National Park
61	Jhalwar	0.495502	JHAL-JHALWAR	PANPATHA_BUFFER	BTR
62	Chhapra Tola	0.504495	MAHUATOLA	AMJHOR	NORTH_SHAHDOL
63	Patharwar	0.512791	CHARHET	AMJHOR	NORTH_SHAHDOL
64	Urdana	0.518504	CHHAPRAUR	MANPUR_BUFFER	BTR
65	Bastua	0.524443	Bastua	Pondi	Sanjay National Park
66	Pondi	0.529735	Pondi	Madwas Buffer	Sanjay National Park
67	Kathar	0.554803	NAVGAMA	MANPUR_BUFFER	BTR
68	Barahpan	0.556682	BARAHPAN	WADHAN	SINGRAUL
69	Bhathisarai	0.56423	TAANKI	KOTMA	ANUPPUR
70	Kuthuliya	0.570197	PATEHARA_B	MANPUR_BUFFER	BTR

71	Gijohar	0.575664	Gijohar	Bastua	Sanjay National Park
72	Kota	0.576503	Kota	Madwas Buffer	Sanjay National Park
73	Dhondha	0.600315	URTI	WAIDHAN	SINGRAUIL
74	Khodri	0.604821	BHATIYA	JAITPUR	SOUTH SHAHDOL
75	Joba	0.608656	Gaddaha	Beohari Buffer	Sanjay National Park
76	Laharpur	0.616678	DHANGAWA	JAITHARI	ANUPPUR
77	Nimha	0.623356	MALGA	KOTMA	ANUPPUR
78	Gobha	0.63472	SUIDEEH	WAIDHAN	SINGRAUIL
79	Rasmohani	0.645054	RASMOHNI	JAITPUR	SOUTH SHAHDOL
80	Barutara	0.645382	BARUTARA	GOHPARU	SOUTH SHAHDOL
81	Lukam Tola	0.646447	KUDRI	AMJHOR	NORTH_SHAHDOL
82	Amgaon	0.650278	Pondi	Madwas Buffer	Sanjay National Park
83	Vynkatnagar	0.651874	VENKATNAGAR	JAITHARI	ANUPPUR
84	Nand Tola	0.654069	BAIRAG_NAGPURA	JAITPUR	SOUTH SHAHDOL
85	Malgotola	0.660772	MALGO	MADA	SINGRAUIL
86	Kukar Goda	0.661498	DHANGAWA	JAITHARI	ANUPPUR
87	Baigawa	0.672871	Baigava	Mohan	Sanjay National Park
88	Simaudh	0.678117	GHORSA	GODAWAL	NORTH_SHAHDOL
89	Amgawan	0.681696	SONEMAUHARI	ANUPPUR	ANUPPUR
90	Bhamarkhoh	0.684293	BHAMARKHOH	MADA	SINGRAUIL
91	Dhari	0.69077	DHARI	MADA	SINGRAUIL
92	Charkidol	0.692417	KUDRI	AMJHOR	NORTH_SHAHDOL
93	Rohila Kachhar	0.699677	QUONTAR	JAITHARI	ANUPPUR
94	Mahua Tola	0.709862	MAHUATOLA	AMJHOR	NORTH_SHAHDOL
95	Patera Tola	0.71515	KUDRI	AMJHOR	NORTH_SHAHDOL
96	Pateriya Tola	0.7189	PONDI	GODAWAL	NORTH_SHAHDOL
97	Khalbahra	0.721147	GATHIYATOLA	JAITHARI	ANUPPUR
98	Kunda Tola	0.725766	CHARHET	AMJHOR	NORTH_SHAHDOL
99	Bagdumara	0.728162	PONDI	KOTMA	ANUPPUR
100	Kudra Tola	0.728758	CHARHET	AMJHOR	NORTH_SHAHDOL
101	Mithul	0.730784	DHARI	MADA	SINGRAUIL
102	Sikta Tola	0.73107	MAHUATOLA	AMJHOR	NORTH_SHAHDOL
103	Lahsuna	0.731401	PONDI	JAITHARI	ANUPPUR
104	Gobri	0.733624	GOBARI	JAITHARI	ANUPPUR
105	Tanki	0.733681	KALYANPUR	KOTMA	ANUPPUR
106	Khohra	0.736158	BAIRAG_NAGPURA	JAITPUR	SOUTH SHAHDOL
107	Amanar	0.73985	BANCHACHR	JAISINGHNAGAR	NORTH_SHAHDOL
108	Thehi	0.74539	AUDHERA	ANUPPUR	ANUPPUR
109	Munda	0.746425	GATHIYATOLA	JAITHARI	ANUPPUR
110	Antoli	0.748653	BANCHACHR	JAISINGHNAGAR	NORTH_SHAHDOL
111	Banchachar	0.749834	BANCHACHR	JAISINGHNAGAR	NORTH_SHAHDOL
112	Amha	0.754794	RASMOHNI	JAITPUR	SOUTH SHAHDOL
113	Khanda	0.760237	PONDI	ANUPPUR	ANUPPUR
114	Jeer	0.762798	KOLHUA	MADA	SINGRAUIL
115	Belgaon	0.763438	North Amrola	Bhuimand Buffer	Sanjay National Park
116	Khoh	0.771808	KHOH	BURHAR	SOUTH SHAHDOL
117	Tihki	0.774358	GHORSA	GODAWAL	NORTH_SHAHDOL

118	Chhidmidi	0.778822	PONDI	KOTMA	ANUPPUR
119	Hartala	0.780644	BANCHACHR	JAISINGHNAGAR	NORTH_SHAHDOL
120	Jariyari	0.790345	UMARIA	JAITHARI	ANUPPUR
121	Katurdona	0.792054	TANKITOLA	AHIRGAWA	ANUPPUR
122	Pondi	0.795472	KERHA	JAITHARI	ANUPPUR
123	Dhaneda	0.809659	DHANERA	GODAWAL	NORTH_SHAHDOL
124	Bhelma	0.811898	BHELMA	JAITHARI	ANUPPUR
125	Cholna	0.815913	PONDI	KOTMA	ANUPPUR
126	Ghori Ghat 171	0.82605	PATHRAHTA_NORTH	GODAWAL	NORTH_SHAHDOL
127	Kadamsara	0.833878	VENKATNAGAR	JAITHARI	ANUPPUR
128	Sikarpur	0.847432	PONDI	KOTMA	ANUPPUR
129	Chhateni	0.849141	CHHATAINI	GODAWAL	NORTH_SHAHDOL
130	Bedra	0.849893	KUTHIYA	GODAWAL	NORTH_SHAHDOL
131	Bilai Kher	0.850652	KHOH	BURHAR	SOUTH SHAHDOL
132	Chatuwa	0.853061	BHOLGARH	ANUPPUR	ANUPPUR
133	Kothiya	0.861465	KUTHIYA	GODAWAL	NORTH_SHAHDOL
134	Pondi	0.864004	DULHIBANDH	BIJURI	ANUPPUR
135	Jogibandh	0.864112	GIRWA	KESHWAH	SOUTH SHAHDOL
136	Takduli	0.870642	DHANGAWA	JAITHARI	ANUPPUR
137	Pathrahta	0.880071	PATHRAHTA_NORTH	GODAWAL	NORTH_SHAHDOL
138	Basahi	0.882517	HIDWAR	GODAWAL	NORTH_SHAHDOL
139	Khursa	0.907411	THODIPANI	JAITHARI	ANUPPUR
140	Malauti	0.918255	GHORSA	GODAWAL	NORTH_SHAHDOL

Overall, HEC in the Bandhavgarh–Sanjay corridor is shaped by seasonal crop availability, elephant movement patterns, and socio-economic vulnerability. Paddy cultivation, grain storage, and proximity to forests increase risk, while cultural tolerance in tribal communities supports coexistence. Effective mitigation requires season-specific strategies, night-time vigilance, solar-based street lights, solar-based electric fencing subsidy schemes, priority in Pakka ghar schemes and community-based interventions.

The MaxEnt analysis was carried out to identify Elephant Conservation Prioritization Units (ECPUs), stepping stones, and Linkage Mapper analysis derived the least-cost path as corridors for supporting elephant movement and habitat connectivity in Eastern Madhya Pradesh. For that purpose, the continuous habitat suitability raster generated from the MaxEnt model was converted into binary classes using a 50% threshold value, where 1 represented suitable habitat and 0 represented non-suitable habitat. Small fragmented and isolated patches were removed to retain only ecologically meaningful habitat patches.

From the remaining habitat patches, areas greater than 90 km² were classified as Elephant Conservation Prioritization Units (ECPUs), while patches between >10 and <90 km² were considered as stepping stones. Based on this classification, a total of 10 ECPU's were identified as major core habitat patches and 20 stepping stones as intermediate habitat patches. These habitat units were further used for Linkage Mapper and other connectivity analyses. Additionally, the MaxEnt suitability output was inverted and used as a resistance surface, where low suitability represented high resistance and high suitability represented low resistance for elephant movement.

The linkage analysis identified 78 linkage corridors (Least-Cost Paths) connecting these habitat units. The ECPU's represent priority conservation areas where habitat suitability and elephant use are highest, while stepping stones act as supporting patches between core habitats and help elephants move safely across fragmented landscapes. The linkage corridors show the most suitable and least resistant movement paths between these habitats.

The results indicate that areas with low cost-weighted distance have strong habitat connectivity and are highly suitable for elephant movement, while high-cost corridors are affected by mining, roads, settlements, and agricultural disturbances. Pinch point analysis also identified bottleneck zones where elephant movement becomes restricted, increasing the risk of human-elephant conflict in nearby villages. These findings highlight the need for protecting both core habitats and connecting corridors for long-term elephant conservation.

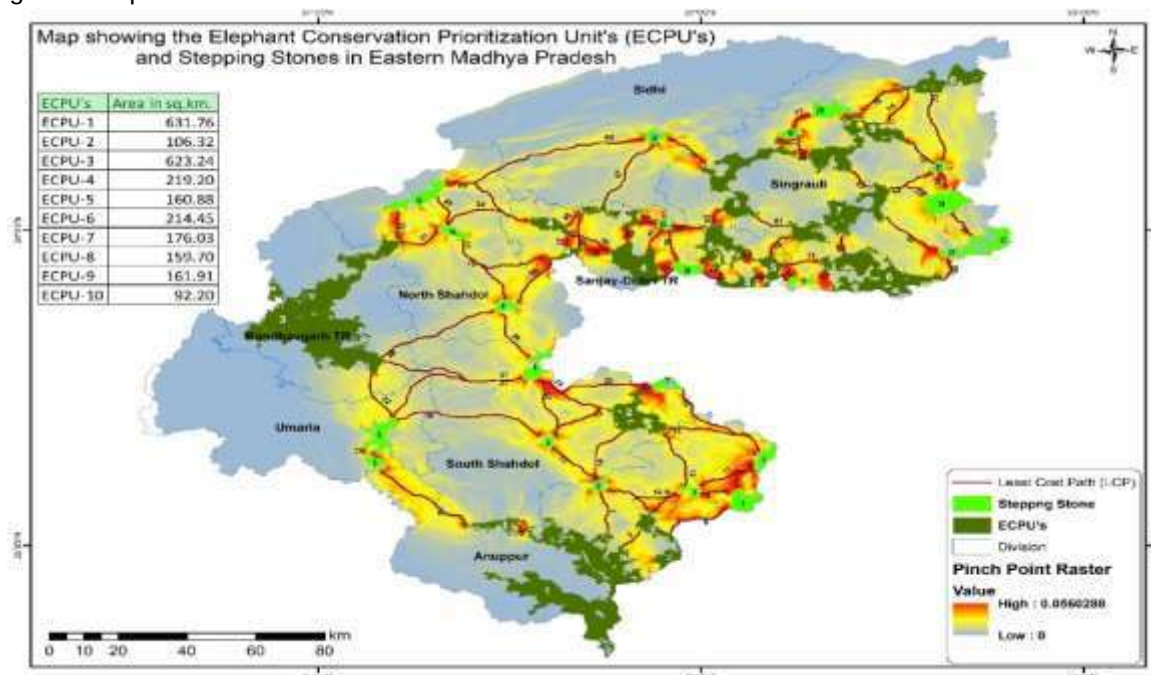


Figure 3 : Map of detail of ECPU's with area and LCP between the ECPU's and stepping stones

ECPUs		S. No.		Stepping Stones	Area (in km2)
ECPU-1	631.76	1	SS-1		46.13
ECPU-2	106.32	2	SS-2		12.41
ECPU-3	623.24	3	SS-3		10.51
ECPU-4	219.2	4	SS-4		27.91
ECPU-5	160.88	5	SS-5		68.36
ECPU-6	214.45	6	SS-6		10.34
ECPU-7	176.03	7	SS-7		19.08
ECPU-8	159.7	8	SS-8		32.07
ECPU-9	161.91	9	SS-9		18.04
ECPU-10	92.2	10	SS-10		28.61
		11	SS-11		14.15
		12	SS-12		76.75
		13	SS-13		11.02
		14	SS-14		18.34
		15	SS-15		51.66
		16	SS-16		72.60
		17	SS-17		10.34
		18	SS-18		17.80
		19	SS-19		14.67
		20	SS-20		42.29

Table 2: Table showing the area of Elephant Conservation Prioritization Unit (ECPUs)

Table 3: Table showing area of Stepping Stone

Table 4: table showing the number of Linkage corridor bewtween the habitat patch.

OID	Habitat_1	Habitat_2	CW_Dist	LCP_Length (km)
1	ECPU_1	ECPU_1	22.73	0.97
2	ECPU_1	ECPU_1	136.11	6.15
3	ECPU_1	SS_5	401.58	14.78
4	ECPU_1	SS_4	733.71	32.30
5	ECPU_1	SS_1	438.1	20.38
6	ECPU_1	SS_2	231.6	9.04

OID	Habitat_1	Habitat_2	CW_Dist	LCP_Length (km)
7	ECPU_1	SS_3	339.99	15.00
8	SS_1	SS_2	230.26	8.58
9	SS_1	SS_4	302.33	10.39
10	SS_2	SS_3	519.94	20.96
11	SS_2	SS_4	478.28	17.02
12	SS_2	ECPU_2	661.37	21.37
13	SS_3	SS_6	537.19	17.13
14	SS_3	ECPU_2	604.24	21.53
15	SS_4	ECPU_2	849.28	29.91
16	SS_4	SS_7	1055.8	34.34
17	SS_5	SS_5	21.25	1.02
18	SS_5	SS_6	1445.62	43.61
19	SS_6	ECPU_2	443.92	16.98
20	SS_6	SS_8	783.38	22.12
21	SS_5	SS_8	1109.2	46.01
22	SS_5	ECPU_3	389.61	17.94
23	ECPU_2	SS_7	39.09	1.94
24	ECPU_2	SS_8	685.01	20.90
25	SS_7	SS_8	955.66	32.33
26	SS_8	SS_9	594.74	18.39
27	SS_8	ECPU_3	1006	42.16
28	ECPU_3	SS_9	969.74	37.23
29	SS_9	SS_14	764.17	25.70
30	SS_9	ECPU_4	460.78	17.74
31	ECPU_3	SS_14	333.26	12.69
32	ECPU_3	SS_15	226.36	9.49
33	SS_14	ECPU_4	956.59	30.45
34	SS_14	ECPU_4	703.65	25.38
35	SS_14	SS_15	323.17	10.90
36	ECPU_4	ECPU_4	122.49	5.68
37	ECPU_4	ECPU_4	52.62	2.40
38	ECPU_4	ECPU_4	232.19	10.99
39	ECPU_4	SS_10	78.34	3.21
40	ECPU_4	ECPU_4	271.99	11.90
41	ECPU_4	SS_13	246.72	8.16
42	ECPU_4	ECPU_4	81.26	3.54
43	SS_10	ECPU_5	111.32	5.31
44	SS_10	ECPU_5	20.93	0.93
45	SS_10	SS_13	336.06	11.40
46	ECPU_5	ECPU_5	21.21	1.01
47	ECPU_5	ECPU_5	65.27	2.90
48	ECPU_4	ECPU_4	120.91	5.00
49	ECPU_4	SS_15	793.96	29.13
50	ECPU_5	SS_11	55.93	2.14
51	ECPU_6	ECPU_5	265.7	9.18
52	ECPU_5	ECPU_7	219.08	9.16
53	ECPU_5	ECPU_5	22.61	0.93
54	SS_11	ECPU_6	58.37	2.86
55	ECPU_6	SS_12	242.48	7.83
56	ECPU_6	ECPU_7	119.23	5.79
57	SS_12	SS_16	393.72	10.50
58	SS_12	ECPU_7	477.19	18.66
59	SS_16	ECPU_7	360.18	11.48
60	SS_16	SS_17	253.15	6.49
61	ECPU_7	ECPU_8	305.65	9.79

OID	Habitat_1	Habitat_2	CW_Dist	LCP_Length (km)
62	ECPU_7	SS_17	485.84	13.34
63	ECPU_7	ECPU_9	182.88	7.96
64	ECPU_5	SS_13	215.04	9.10
65	ECPU_5	ECPU_8	116.14	5.82
66	SS_13	ECPU_4	113	4.52
67	ECPU_4	SS_18	984.43	28.29
68	SS_18	SS_15	1625.33	59.70
69	ECPU_8	ECPU_9	33.39	1.43
70	ECPU_8	SS_19	23.18	1.02
71	ECPU_8	SS_18	349.37	13.29
72	SS_17	ECPU_9	451.71	11.31
73	SS_17	ECPU_10	736.07	25.85
74	ECPU_9	SS_19	183.27	6.70
75	ECPU_9	SS_20	18.49	0.83
76	ECPU_9	ECPU_10	253.26	12.33
77	SS_19	SS_20	198.5	7.28
78	SS_20	ECPU_10	295.47	13.17

Cost of the Project: Rs. 50.00 lakh

Expected Outcome of Research:

This integrated study has generated several significant outcomes for wildlife management and conservation planning in the Central Indian landscape. First, habitat suitability modelling produced high-resolution spatial maps of potential elephant habitats and movement corridors across the Eastern Madhya Pradesh–Chhattisgarh (MP–CG) landscape, providing a scientifically robust basis for landscape-level conservation planning.

Second, village-level socio-ecological assessments identified high-risk zones of human–elephant conflict, particularly around corridor entry points and forest–agriculture interfaces in and around Bandhavgarh Tiger Reserve (BTR). These insights enable targeted, location-specific mitigation interventions.

Third, the study provided a detailed understanding of elephant behavioural ecology, including seasonal crop preferences and distinct conflict patterns between herds and solitary tuskers, which are critical for designing context-specific management strategies.

Fourth, the findings highlighted systemic gaps in existing mitigation and compensation mechanisms, with widespread dissatisfaction among affected communities, especially in non-tribal regions where tolerance levels are relatively low. This underscores the need for improving institutional response systems.

Finally, the integration of geospatial modelling (MaxEnt, Linkage Mapper, Circuitscape) with socio-ecological data demonstrates that human–elephant conflict in newly colonized landscapes is a complex, multi-dimensional issue. The study emphasizes that standardized mitigation approaches provide an important foundation, while adaptive, landscape-specific strategies are essential to strengthen long-term conflict management and coexistence.

Recommendations :

1. Corridor Protection and Habitat Restoration

Conservation planning should prioritize the protection, restoration and legal recognition of identified elephant corridors, particularly high suitability zones derived from MaxEnt modelling. Special attention should be given to riparian sandbeds, forest mosaics and identified linkage zones, ensuring continuity of habitat and reducing fragmentation.

2. Seasonal Conflict Mitigation Measures

Mitigation strategies should be season-specific and location-specific:

- Deployment of solar/electric fencing during peak crop seasons (post-monsoon)
- Promotion of secure grain storage systems (metal bins, raised granaries) during summer
- Strengthening early warning and rapid response systems in high-risk villages

3. Strengthening Compensation Mechanism

The compensation process should be streamlined and digitized to improve accessibility and transparency:

- Introduction of a Digital Claim Management System (DCMS)
- Use of pre-filled forms and mobile-based reporting tools
- Real-time tracking of claims to ensure timely disbursement
- The existing compensation application system (Van Suvidha app) of the Madhya Pradesh Forest Department should be upgraded to include a dedicated module for human–elephant conflict, enabling standardized reporting, real-time tracking and efficient disbursement of compensation for crop damage, property loss and human casualties.

4. Community-Based Awareness and Coexistence Strategies

Awareness programmes should be context-specific and culturally aligned:

- In tribal areas: integrate conservation messaging with religious and cultural beliefs
- In non-tribal or conflict-prone areas: emphasize economic security, risk reduction and safety measures
- Capacity building for villagers on elephant behaviour and safe response strategies

5. Priority in the Subsidised schemes

- Priority in Pakka house construction under PMAY subsidised schemes
- Solar street light promotion is essential in HEC-sensitive villages
- Subsidised Solar fence for crop protection

6. GIS-Based Monitoring and Decision Support System

A real-time GIS-based monitoring framework should be developed integrating:

- Habitat suitability maps (MaxEnt)
- Corridor networks (Linkage Mapper)
- Connectivity analysis (Circuitscape)
- Conflict incident database

This system will support rapid decision-making, hotspot identification and proactive management.

7. Long-Term Monitoring and Adaptive Management

Establish a continuous monitoring system for:

- Elephant movement patterns
- Corridor functionality
- Conflict trends

Adaptive management should be periodically updated using field feedback and spatial analysis.

8. Strengthening Corridor Functionality

Previously identified corridors (2008–2019 planning period) should be re-evaluated and categorized into:

- Functional corridors
- Partially functional corridors
- Non-functional corridors

Restore degraded and non-functional corridors through targeted interventions.

9. Integration into Policy and Working Plans

All identified corridors, conflict hotspots and mitigation strategies should be integrated into forest working plans and landscape-level conservation policies to ensure long-term sustainability.

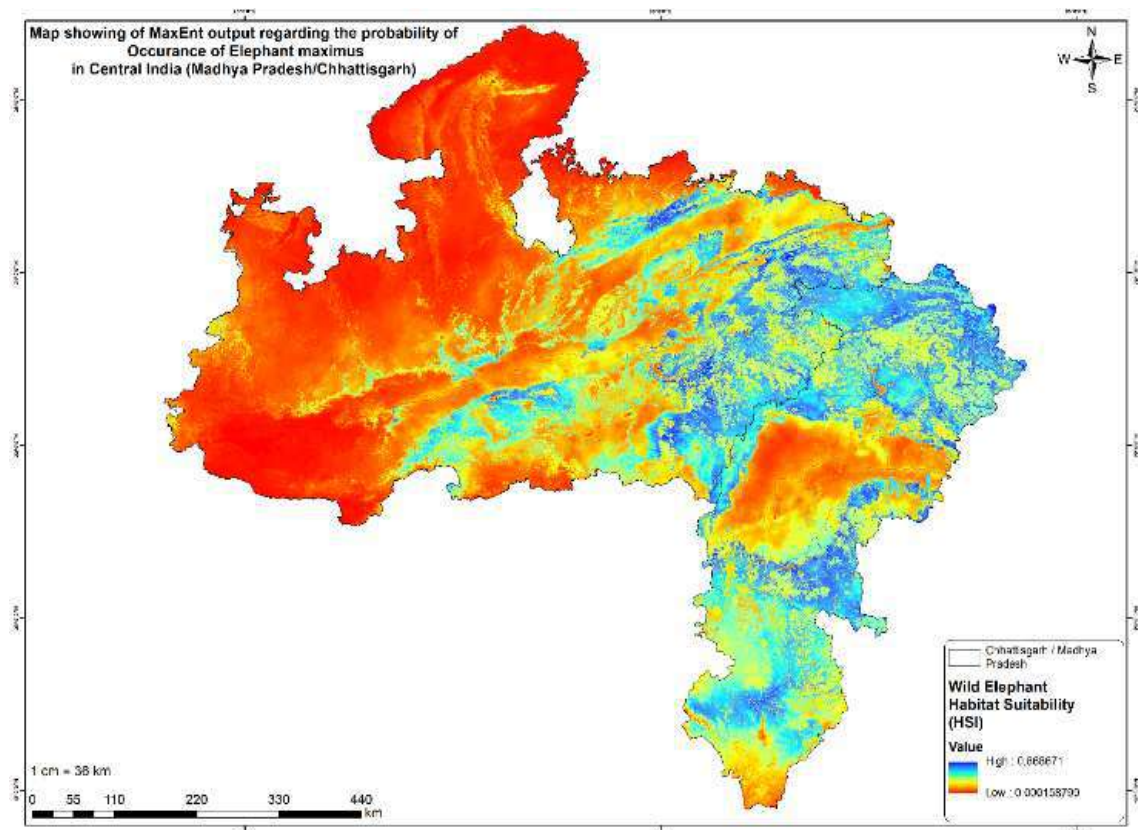


Figure 4: Map showing the MaxEnt output of Elephant probability of occurrence

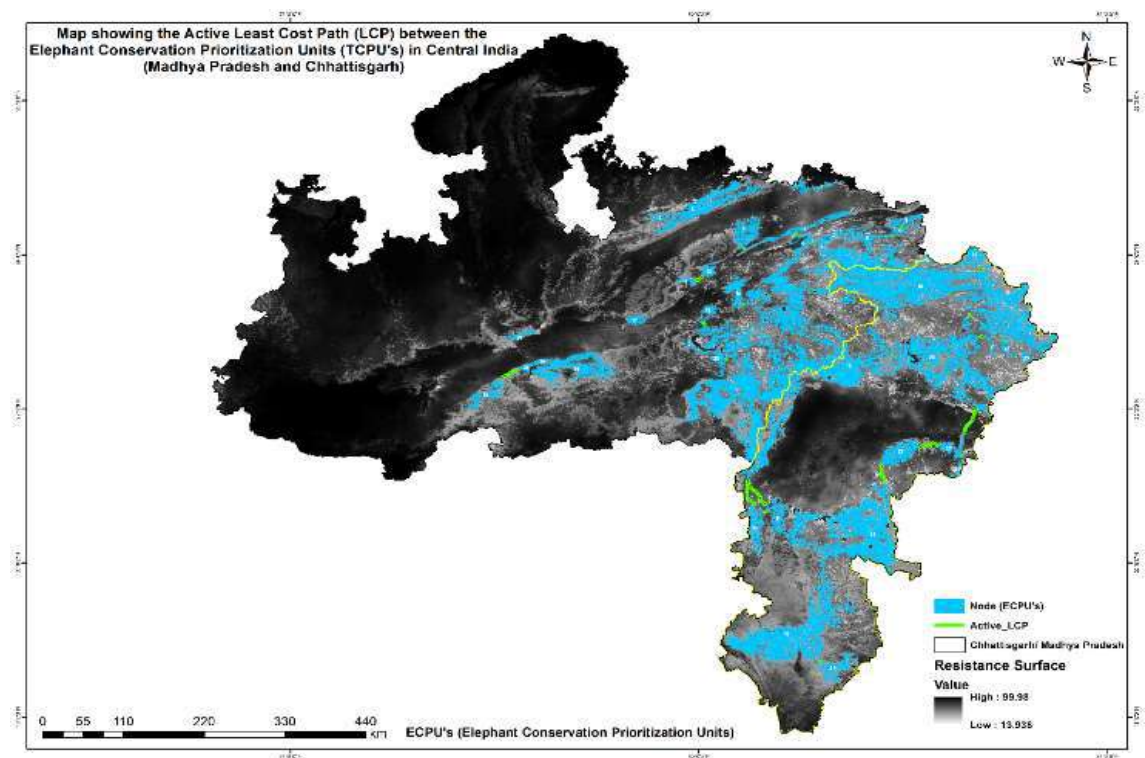


Figure 5: Map showing the Active Least Cost Path (LCP) between Elephant Conservation Prioritization Unit's (TCPU) in Central India

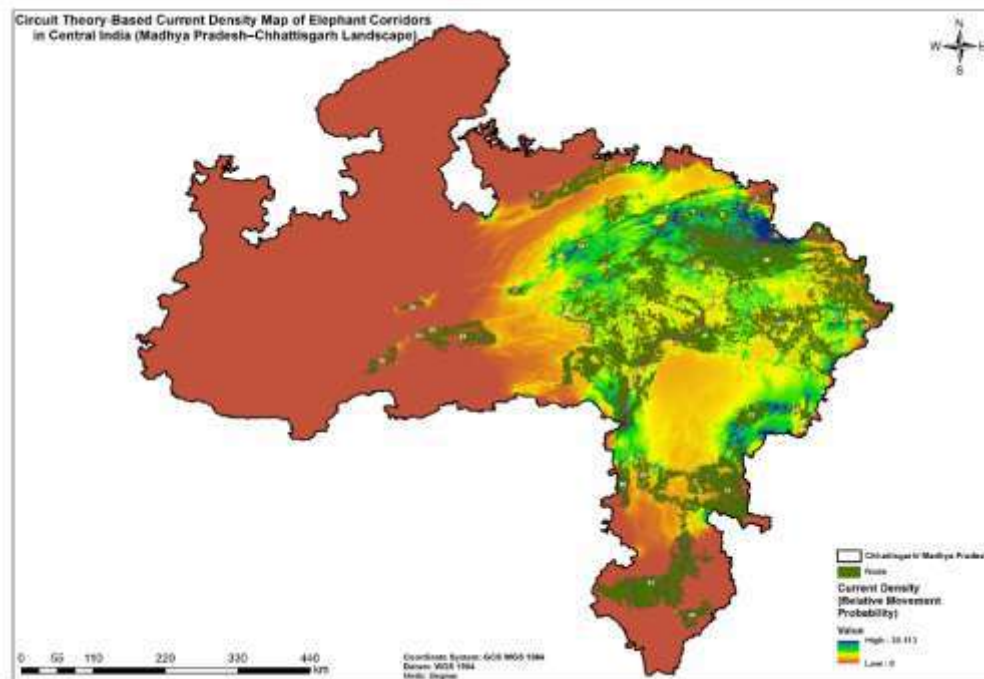


Figure 6: Map showing the Elephant conservation prioritization units with their Circuitscape theory-based connectivity



Boarwell Damaged by Wild Elephant group in BTR



Solar panel damaged by Elephant group in BTR



M.Sc. Interns of Sacred Heart College, Thevara, Kochi, Kerala state field work in Tala range, BTR.



Information sharing for HEC mitigation strategic plan preparation in Dindori Forest Division



Wild Elephant entry point from Chhattisgarh in Phen Sanctuary, KTR



Elephant presence sign foot print in petroling camp, Phen Sanctuary, KTR



Tuskers presence in Anuppur Division



Heard of elephant, Range- Pataur , BTR



Habitat Survey Range Churhat Sidhi



Habitat Survey Range Khannaudi, S. Shadol



Elephant footprint BTR



Elephant footprint BTR



Elephant Dung BTR



Uprooted tree by Elephant and their Foot print



Village Survey Gohparu S. Shahdol



Village Amamnar Range Jaisinghnagar Div. N. Shahdol



Fencing damaged by elephant in Phen Sanctuary adjoining CG border



Fencing damaged by elephant in Phen Sanctuary adjoining CG border



Village hut kitchen damaged by Elephant



Abundance Gurja (*Lansea Coromandelica*) is sign of Elephant suitable habitat of East Beohari Range, N. Shahdol

2. Title of the Project:- A Scientific Study of Ecological Impact and Sustainability of Aerial Firefighting in the Forests of South Panna Division

Why this Project:-

Forest fires are one of the major ecological disturbances affecting tropical dry deciduous forests, particularly in South Panna Division, Madhya Pradesh. These forests are highly vulnerable due to seasonal dryness, accumulation of combustible biomass, and anthropogenic activities such as intentional burning for the collection of non-timber forest products like mahua (*Madhuca longifolia*). Such practices often lead to uncontrolled forest fires, resulting in biodiversity loss, degradation of soil quality, and adverse impacts on flora and fauna.

Conventional firefighting methods are labor-intensive, time-consuming, and often ineffective in remote and inaccessible forest areas. Drone-based aerial firefighting has emerged as an innovative and rapid response mechanism for fire suppression. It allows targeted application of fire retardants, reduces human risk, improves operational efficiency, and enhances response time during fire incidents.

However, the ecological implications of aerial application of fire retardants such as Mono Ammonium Phosphate (MAP) on soil, vegetation, microorganisms, water quality, and wildlife are not well studied. Therefore, this project aims to scientifically evaluate the effectiveness, ecological impact, and sustainability of aerial firefighting interventions in forest ecosystems.

Research Methodology:-

The study follows a scientific and systematic approach combining field-based experimentation, environmental monitoring, and ecological assessment. Fire suppression treatments will be applied using drone-based aerial systems under different fire-retardant combinations:

- MAP (Mono Ammonium Phosphate) + Water
- MAP + Eco-hydrogel
- MAP + Eco-hydrogel + Kaolinite clay

The methodology will include:

- Site selection and mapping of high-risk fire zones using satellite imagery and field validation.
- Environmental Impact Assessment (EIA) following MoEF&CC guidelines.
- Vegetation assessment will be carried out using standard forest inventory methods with 0.1 ha plots and nested quadrats (5 m × 5 m, 3 m × 3 m and 1 m × 1 m) for trees, shrubs, and herbaceous vegetation as per the working plan code 2014.
- Faunal assessment will be conducted through line transects, camera traps, scat, pugmarks, and other indirect evidence.

Environmental parameters will include:

- **Soil:** pH, microbial diversity, soil nutrients (NPK).
- **Water:** pH, DO, BOD, nitrate, phosphate, turbidity, etc.
- **Vegetation:** flora species richness (baseline), regeneration rate etc.
- **Wildlife:** camera trap observations, fauna species (baseline) presence before and after retardant application.
- **Air and Noise:** air quality, sound intensity during drone operations.

Biomass and carbon stock estimation will also be carried out using field sampling methods.

Study Design:-

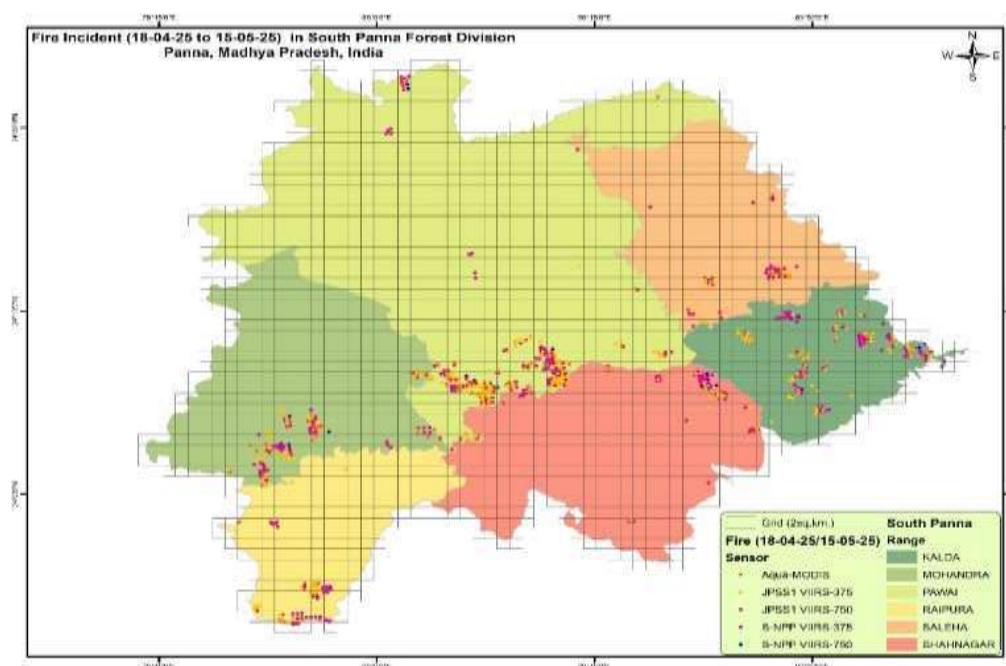
The study is based on a comparative experimental design involving treated and control plots.

- Treated plots: Fire-affected areas subjected to aerial firefighting treatments.
- Control plots: Adjacent unburnt areas representing baseline ecological conditions.

Three fire trial treatments will be applied:

- T1: MAP + Water
- T2: MAP + Eco-hydrogel
- T3: MAP + Eco-hydrogel + Kaolinite clay

Each treatment will be replicated during multiple fire events to ensure reliability. Observations will be recorded before and after fire events to assess ecological changes, recovery patterns, and operational effectiveness.



Map showing spatial distribution of fire incidents in South Panna Forest Division (April-May 2025)

Objectives of Research:-

The present study aims to evaluate forest fire dynamics and assess the effectiveness, feasibility, and environmental implications of aerial firefighting interventions in tropical dry deciduous forests, with special reference to the South Panna Forest Division.

The objectives of the study are as follows:

Primary Objectives

- To assess the environmental safety and operational feasibility of using MAP for forest fire suppression.
- To deploy drone technology to deliver MAP precisely to fire-prone zones or during active fire suppression.
- To analyse the cost-effectiveness of drone-based fire-retardant application compared to conventional methods.
- To contribute to a proactive wildfire mitigation plan in fire-prone forest areas.

Activities Undertaken:-

- Literature review on forest fire ecology and management practices.
- Study of fire incidence and vulnerability in South Panna Division.
- Review of drone-based aerial firefighting technologies and applications.
- Identification and selection of suitable fire retardants and their combinations.
- Determination of quantity and preparation methods for fire retardant formulations.
- Review of EIA standards for ecological parameter assessment.
- Development of methodology for soil, microbial diversity, water, air, and noise analysis.
- Preparation of field proforma for flora, fauna, aquatic ecology, and environmental monitoring.
- Design of experimental layout and fire trial protocols.
- Identification of laboratories and procedures for EIA-related sample analysis.
- Initiation of report writing and documentation of study framework.

Cost of the Project:- Rs. 4.99 lakh

Expected Outcome of Research:-

- Identification of the most effective fire-retardant formulation for fire suppression.
- Demonstration of the operational feasibility of drone-based firefighting using MAP.
- Scientific understanding of the ecological impacts of aerial firefighting.
- Assessment of vegetation recovery, soil health, biodiversity response, and microbial changes after fire.
- Evaluation of water quality changes and environmental risks associated with retardant application
- Development of a detailed EIA report aligned with forest management objectives.
- Development of sustainable and eco-friendly fire management strategies.
- Generation of baseline data for policy formulation and forest management planning.
- Creation of a framework for integrating drone technology into forest fire response systems

2.3 FACILITATION CELL

2.3.1 ENVIRONMENTAL IMPACT ASSESSMENT (EIA) CELL

Mandate

Environmental impact assessment and preparation of environmental management plans

2.3.2 CLIMATE CHANGE, CLIMATE JUSTICE, REDD+

Mandate :

- Estimation of carbon sequestration and carbon pool in different forest types and plantations.
- Coordinate with various research divisions of the institute conducting for research on various aspects of climate change.
- Estimation of carbon sequestration in different samples from working plan / other agency.

Achievements :

- Carbon pool was estimated for 20 plantations under FDA project.
- Leaf litter carbon of 46 samples was estimated of Obedullaganj Working Plan.
- Leaf litter carbon of 350 samples was estimated of Katni Working Plan.

2.3.3 MONITORING AND EVALUATION

Mandate

- Contacting with the SFD and other potential funding agencies for getting the assignment of monitoring & evaluation work of developmental schemes.
- Preparation of project proposals for monitoring & evaluation and submission to the funding agencies concerned.

List of project titles with names of funding agency

Completed Project : 01

- 1 ग्रीन इंडिया मिशन, म.प्र. द्वारा विभिन्न वन विकास अभिकरणों में वर्ष 2019, 2020, 2021, 2022 में कॉम्पोनेन्ट A के विभिन्न सब मिशन अंतर्गत वृक्षारोपण कार्य एवं कॉम्पोनेन्ट B सपोर्ट एक्टिविटी के कार्य का अनुश्रवण मूल्यांकन एवं प्रोजेक्ट इम्पैक्ट असेसमेंट (पी.आई.ए.) किये जाने के संबंध में।

Funding Agency - अपर प्रधान मुख्य वन संरक्षक (ग्रीन इंडिया मिशन/वन विकास अधिकरण)
म.प्र. भोपाल

Ongoing Projects : 01

- वन विभाग म.प्र. द्वारा विभिन्न योजनाओं के अंतर्गत वर्ष 2015–16 में किये गये वृक्षारोपणों का अनुश्रवण एवं मूल्यांकन।

Funding Agency : PCCF (Development) M.P.

Completed Project :

1. Title of the Project:- **खुबफसल के लिए जल संचयन और वृक्षारोपण के माध्यम से सूखे से निपटारा (2019-2020-2021-2022) के लिए एक योजना।** **दक्षिण मध्य प्रदेश के अंतर्गत वर्ष 2019 से 2021 तक ग्रीन इंडिया मिशन के तहत कुल 323 वृक्षारोपण स्थलों का चयन किया गया जिसमें से 105 वृक्षारोपण में कुल 6037.33 हेक्टेयर क्षेत्र को शामिल किया गया। जिसमें मध्य प्रदेश के 18 वनमण्डल का चयन किया, जो कुल क्षेत्रफल का लगभग 30% है। ग्रीन इंडिया मिशन के अंतर्गत 11 सबमिशन को शामिल किया गया है। जो निम्नानुसार है-**

Why this Project:-

- ग्रीन इंडिया मिशन के अंतर्गत कराये गये वृक्षारोपण जो लगभग 6 वर्ष के हो गये हैं उन वृक्षारोपणों का मूल्यांकन किया जाना अत्यन्त आवश्यक है क्योंकि मूल्यांकन के परिणामों के आधार पर भविष्य में किए जाने वाले वृक्षारोपण की रणनीति निर्धारण में सहायक होगा।
- वृक्षारोपण परियोजनाओं के सफल क्रियान्वयन के लिए एवं बैंच मार्किंग के लिए।

Research Methodology:-

PCCF GIM, मध्य प्रदेश, भोपाल के द्वारा दिए गए निर्देशानुसार मध्य प्रदेश के प्रत्येक संभाग के लिए वृक्षारोपण का चयन स्तरीकृत यादृच्छिक नमूनाकरण (Stratified random sampling) के आधार पर किया गया। इस परियोजना के अंतर्गत वर्ष 2019 से 2021 तक ग्रीन इंडिया मिशन के तहत कुल 323 वृक्षारोपण स्थलों का चयन किया गया जिसमें से 105 वृक्षारोपण में कुल 6037.33 हेक्टेयर क्षेत्र को शामिल किया गया। जिसमें मध्य प्रदेश के 18 वनमण्डल का चयन किया, जो कुल क्षेत्रफल का लगभग 30% है। ग्रीन इंडिया मिशन के अंतर्गत 11 सबमिशन को शामिल किया गया है। जो निम्नानुसार है-

Submission
Submission 1(a) Moderately dense forest cover , but showing degradation
Submission 1 (b) Type A Ecorestoration of degraded open forest with plenty of root stocks
Submission 1 (b) Type B Ecorestoration of degraded open forest with limited root stocks and blanks
Submission 1(b) Type C Ecorestoration of degraded open forest of largely open areas with sparse undergrowth
Submission 1 (c) Restoration of grasslands
Submission 2 (f) Restoration of abandoned mining areas
Submission 3 (a) Plantation in urban and peri urban areas
Submission 4 (a) Agroforestry and social forestry in farmers land including current fallows
Submission 4 (b) Agroforestry and social forestry in Shelterbelt plantation
Submission 4 (c) Agroforestry and social forestry in Highway/ Rural roads/ canals/ Tank Bunds
Submission 5 Restoration of wetlands

संपूर्ण डिजाइन सांख्यिकीय रूप से सुदृढ़ है, ताकि कम से कम मानव-पक्षपात हो। सबमिशन के उद्देश्यों के अनुरूप मूल्यांकन कार्य किया गया। ग्रीन इंडिया मिशन वित्तपोषी संस्था के द्वारा दिये गये निर्धारित प्रपत्रानुसार वनमण्डल स्तर एवं परिक्षेत्र स्तर पर जानकारी एकत्र कर मूल्यांकन कार्य किया गया। इसमें प्रदेश के 18 वनमंडल लिये गये हैं। इनमें दक्षिण सिवनी, शिवपुरी, श्योपुर, धार, झाबुआ, बडवानी, सेंधवा, उत्तर बैतूल, दक्षिण पन्ना, उमरिया, औबेदुल्लागंज, रायसेन, दक्षिण सागर, नर्मदापुरम, सतना, दक्षिण बालाघाट, सीहोर, पश्चिम बैतूल शामिल हैं।

मूल्यांकन कार्य के अंतर्गत पौधों की वृद्धि एवं जीवितता प्रतिशत का अध्ययन किया गया और आसपास के परिवेश में बदलाव का भी अध्ययन शामिल किया गया। ग्रीन इंडिया मिशन का उद्देश्य केवल पर्यावरणीय उत्थान नहीं, बल्कि सामाजिक लाभ भी है। इस परियोजना के अंतर्गत वैज्ञानिक इस बात का भी मूल्यांकन कर रहे हैं कि मिशन के तहत पौधारोपण से ग्रामीणों की जीवन शैली में कितना सुधार हुआ और स्थानीय समुदायों के रोजगार और जीवन स्तर पर कितना प्रभाव डाला है।

Study Design:- ग्रीन इंडिया मिशन के अंतर्गत वर्ष 2019 से 2021 तक के कुल 323 वृक्षारोपण स्थल का चयन किया गया जिसमें से 105 वृक्षारोपण में कुल 6037.33 हेक्टेयर क्षेत्र को शामिल किया गया। जिसमें मध्यप्रदेश के 18 संभागों का चयन किया, जो कुल क्षेत्रफल का लगभग 30% है।

Objectives of project:-

- 5 मिलियन हेक्टेयर (MHA) की सीमा तक वन/वृक्ष आवरण में वृद्धि और अन्य 5 मिलियन हेक्टेयर वन/गैर-वन भूमि के वन/वृक्ष आवरण की गुणवत्ता में सुधार।
- कार्बन पृथक्करण और भंडारण (जंगलों और अन्य पारिस्थितिक तंत्रों में), जल विज्ञान सेवाएं और जैव विविधता जैसी बेहतर/संवर्धित पारिस्थितिकी तंत्र सेवाएं; ईंधन, चारा, और लकड़ी और गैर-लकड़ी वन उत्पाद (एनटीएफपी) जैसी प्रावधान सेवाओं के साथ।
- लगभग 30 लाख परिवारों की वन आधारित आजीविका आय में वृद्धि।
- आने वाले भविष्य में वार्षिक CO₂ पृथक्करण को 50 से 60 मिलियन टन तक बढ़ाया जाएगा।

Activities Undertaken:-

- क्षेत्र सर्वे के समय डाटा एकत्रित करने हेतु निर्देशिकायें तैयार करना।
- क्षेत्र सर्वे
- द्वितीयक आँकड़ों का एकत्रिकरण
- प्राथमरी आँकड़ों (जीवित प्रतिशत, वृद्धि, ग्राइंग स्टाक, बेसल एरिया, प्राकृतिक पुनरुत्पादन, बायोडायवर्सिटी इन्डेक्स, कार्बन स्टाक, ईको सिस्टम सर्विसेस, वाइल्ड लाइफ प्रजेन्स, कम्युनिटी पार्टिसिपेशन एवं प्रोजेक्ट इम्पेक्ट असिस्मेंट) का एकत्रिकरण।
- एक्सेल शीट में आंकड़ों को भरना एवं विश्लेषण कार्य।

Cost of the project : Rs. 81,40,500 / –

Expected Impact of the Project:- यह मूल्यांकन भविष्य में की जाने वाली परियोजनाओं की सफल क्रियान्वयन में सहायक सिद्ध होगा।

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries -

- परियोजना क्षेत्र के लोग विभिन्न वानिकी गतिविधियों के प्रति जागरूक हैं, जिनसे उन्हें प्रत्यक्ष एवं अप्रत्यक्ष लाभ प्राप्त होंगे।
- इन लाभों में वन उपज और वनों से मिलने वाली सेवाओं की उपलब्धता में वृद्धि तथा रोजगार के अवसरों में सुधार शामिल है।
- ग्रामीणों को जलवायु संतुलन में वनों की महत्वपूर्ण भूमिका का भी भली-भांति ज्ञान है। चूंकि अधिकांश आबादी अनुसूचित जाति एवं जनजाति (SC/ST) से संबंधित है, इसलिए अधिकांश लाभ इन्हीं तक पहुंचे हैं।
- इस योजना से महिलाओं को भी समान रूप से लाभ मिला है।
- अध्ययन उपरान्त प्राप्त परिणामों के आधार पर भविष्य की रणनीति बनाने हेतु सुझाव प्रेषित किये जायेंगे।

Ongoing Projects :

Why this Project :-

- ### Research Methodology:-

- ### Study Design:-

Objective of Research:-

- ### Activities Undertaken:-

- क्षेत्र सर्वे के समय डाटा एकत्रित करने हेतु निर्देशिकायें तैयार करना ।
- क्षेत्र सर्वे
- द्वितीयक आँकड़ों का एकत्रिकरण
- प्राथमरी आँकड़ों (जीवित प्रतिशत, वृद्धि, ग्रोइंग स्टाक, बेसल एरिया, प्राकृतिक पुनुरुत्पादन, बायोडायवर्सिटी इन्डेक्स, कार्बन स्टाक, ईको सिस्टम सर्विसेस, वाइल्ड लाइफ प्रजेन्स, कम्युनिटी पार्टिसिपेशन एवं प्रोजेक्ट इम्पेक्ट असिस्मेंट) का एकत्रिकरण ।
- एक्सेल शीट में आंकड़ों को भरना एवं विश्लेषण कार्य ।

मध्यप्रदेश के 63 वनमण्डलों में से प्रथम चरण में चयनित 360 वृक्षारोपणों का मूल्यांकन कार्य वर्ष 2022-23 एवं 2023-24 में पूर्ण कर प्रतिवेदन कार्यालय प्रधान मुख्य वन संरक्षक, वन बल प्रमुख म.प्र. भोपाल की ओर प्रेषित किये जा चुके हैं। वे वृक्षारोपण जिनके प्रतिवेदन पूर्ण किये गये हैं उनकी सूची निम्नानुसार है—

Sr. No.	Evaluation Team	Circles and total No of plantations	Division and No of plantations
1	1. Dr. Awadhesh Sharma, SRO 2. Sh. Rakesh Jain, SRO 3. Sh. Shobhakant Mishra, FG 4. Sh. Nitesh Soni, FG	20 Gwalior-09 Shivpuri-09 PTR-01 STR-01	1. Morena-02 2. Sheopur-07 3. Ashoknagar-02 4. Guna-03 5. Shivpuri-04 6. PTR-01 7. STR-01
2	1. Dr. Aniruddh Majumdar, Scientist B 2. Sh. KL Verma, SRO 3. Sh. Rajesh Dixit, FG 4. Sh. Basant Rajak, FG	20 Balaghat-03 Chhatarpur-10 Rewa-07	1. North Balaghat-01 2. South Balaghat-02 3. Chhatarpur-05 4. Tikamgarh-02 5. North Panna-02 6. South Panna-01 7. Rewa-07
3	1. Dr. Sachin Dixit, SRO, 2. Sh. Dharmendra Singh, Forester 3. Sh. Anand Agarwal, FA 4. Sh. Pravindra Gwalvansh, FG	20 Betul-05 Sagar-15	1. North Betul-01 2. South Betul-03 3. West Betul-01 4. Damoh-07 5. North Sagar-03 6. South Sagar-05
4	1. Sh. GS Mishra, SRO 2. Smt Richa Seth, SRO 3. Sh. Rakesh Uike, FG 4. Sh. Vijay Bahadur, TA	20 Rewa-16 Seoni-04	1. Sidhi-16 2. South Seoni-04
5	1. Dr. Pratiksha Chaturvedi, SRO 2. Sh. SS Raghuvanshi, SRO 3. Sh. Vijay Haldkar, Dy Ranger 4. Sh. Vinay Kori, FG	20 Bhopal-11 Ujjain-09	1. Bhopal-01 2. Raisen-02 3. Obedullaganj-01 4. Sehore-02 5. Rajgarh-03 6. Vidisha-02 7. Dewas-02 8. Neemuch-01 9. Ratlam-01 10. Shajapur-02 11. Ujjain-03
6	1. Dr. Anjana Rajput, SRO 2. Dr. Mayank Makrand Verma, SRA 3. Sh. C.P. Mishra, FG 4. Sh. Deendayal, FG	20 Rewa-20	1. Satna-10 2. Singrauli-10
7	1. Smt. Abhishweta Rawat, RRO 2. Smt. Madhuri Shrivastav, RA 3. Sh. Sajid Ali, Dy Ranger 4. Sh. Sant Lal Kudape, Forester	20 Indore-05 Khandwa-12 Hosangabad-03	1. Dhar-02 2. Indore-02 3. Jhabua-01 4. Barwah-01 5. Barwani-01 6. Burhanpur-04 7. Khandwa-02 8. Khargoun-02 9. Sedhwa-02 10. Harda-02 11. Hosangabad-01

8	1. Dr.Uday Homkar, SRO 2. Sh.Amit Pandey,SRO 3. Sh.Sunil Rajak,Dy Ranger 4. Sh.Sushil Thakur, FG	20 Chhindwara-11 Seoni-09	1.East Chhindwara-06 2.West Chhindwara-03 3.South Chhindwara-02 4.Narsinghpur-02 5.North Seoni-07
9	1. Dr.Jyoti Singh,SRO 2. Sh. Girish Shukla, RO 3. Sh.S.S. Mehta, Dy Ranger 4. Sh.Alok Raikwar,TA	20 Jabalpur-12 Shahdol-08	1.Dindori-03 2.East Mandla-03 3.Jabalpur-01 4.Katni-01 5.West Mandla-04 6.Anuppur-01 7.North Shahdol-03 8. South Shahdol-01 9.Umaria-03

तृतीय चरण के चयनित 180 वृक्षारोपणों का क्षेत्रीय मूल्यांकन कार्य प्रगति पर है एवं वृक्षारोपण स्थलों का डाटा फीडिंग, डाटा एनालिसिस, प्रतिवेदन तैयार करने आदि कार्य प्रगति पर है।

Cost of the Project :- Rs. 2.51 Crore

Expected Outcome of Research : -

- यह मूल्यांकन भविष्य में की जाने वाली परियोजनाओं की सफल क्रियान्वयन में सहायक सिद्ध होगा।

Deliverable technologies developed in each project for stakeholders, forest professionals, field foresters and other beneficiaries - वन विभाग के क्षेत्रीय अमले के लिए।



Plantation Evaluation Workplace Seoni Division



Plantation Evaluation Workplace South Sagar Division



Plantation Evaluation Workplace Harda Division

2.3.4 GIS and Remote Sensing

This cell is handled all the activities concerned with geographical information and remote sensing. The cell is entrusted with the following responsibilities:

- Procurement of necessary computer hardware, GIS software, satellite imageries, aerial photographs and equipments and tools required for the interpretation of the remote sensing data.
- Providing the required geographical data, satellite maps, etc. to the research divisions and other cells of the institute.
- Interpretation of satellite imageries.
- Preparation of GIS thematic maps.

Other activities:-

- Carried out works in execution of GIS thematic mapping and analysis of geo-spatial data in research projects.
- Performed various activities as a Co-PI in the research project "Developing a new danger rating system (study site – Jabalpur)".
- Provided technical assistance as a Team Member, project "Evaluation and monitoring of 20 plantations of Sidhi, W.Chhindwara & S.Chhindwara Forest Divisions.
- Carried out field works of 8 plantations of North & South Sagar Forest Divisions. Prepare and analyse data of 10 plantations of North Sagar, South Sagar and Dhar Forest Divisions.
- Provided technical support in data analysis and report writing of 11 plantations under Green India Mission of Sheopur Forest Division.
- Provided technical assistance in preparation of Annual Research Report 2024-25.
- Completed Online courses from iGOT Karmayogi and received the following Certificates -
 - a. Geospatial Technology in Forestry and Wildlife Resource Management on dated 27 Dec. 2025
 - b. AI for Digital Transformation : Computer Vision on dated 17 Feb. 2026
 - c. Securing your Computer System : Essential PC Hardening Techniques on dated 17 March 2026

2.3.5 EXTENSION, TRAINING AND CONSULTANCY

Mandate

1. Identification and prioritization of the training needs of the state forest department and other stakeholder organizations and preparation of appropriate training modules.
2. Submit appropriate project proposals for training, prepared by various research divisions of the institute to the respective funding organizations.
3. Facilitating the research divisions concerned in organizing the training programmes.
4. Organizing visits of the trainees of various forestry training organizations to the institute.
5. Compilation and publication of the Annual Action Plan and Annual Research Report of the institute.
6. Registration and allotment of IDs to all the research projects and ongoing activities of various divisions.
7. Upkeep of the records of periodical monitoring of the progress and evaluation of the research projects/ongoing activities of various divisions by the Director/Addl. Director (Research Coordinator).
8. Facilitation in the organization/participation in seminars/workshops/ symposia/fairs/exhibitions/ other events.
9. Dissemination of forestry research technologies evolved by the institute.
10. To act as a nodal agency for co-ordination of research extension activities.

Activities

- Publication of Annual Research Report, Annual Action Plan of the institute and training modules.

- Organization of trainings, workshops, meetings, seminars and conferences and preparation of proceedings and action taken report.
- Participation in 'Kissan Mela', 'Herbal Fairs' and public awareness events.
- Providing logistic support of xeroxing audio visual equipments, public address system, binding of research documents.
- Co-ordination with different research divisions and facilitation cells of the institute.
- Providing desired information about research services to the stakeholders.
- Preparation of information related to Madhya Pradesh Vananchal Sandesh, Annual Administrative Report, Annual Statistical Report and informations pertaining to extension of activities of the institute for the M.P. Forest Department.
- Providing I.D. nos. to all research projects, compilation of information of research projects of the institute

Dissemination of information

a. Annual Research Report

The Annual Research Report for 2024-25 was prepared, published and hosted on website of the institute.

b. Training on concept of Soil Moisture Conservation and its Importance in forestry

Three days training programme has been organized from 16/12/2025 to 18/12/2025, by the Forest Management Division of State Forest Research Institute, Jabalpur. In which a total of 25 trainees from Sheopur, Alirajpur, Rewa, North Betul, and Harda Forest Divisions participated in the trainings.



Classroom session and field demonstration programme

c. Organization of training programme for Developing Micro-Management Plans

The Micro-Management Plan is a 'Five/Ten-Year Development Plan' that incorporates the aspirations of the majority of people - particularly forest-dependent communities - as well as various other sections of society. This plan comprises a prioritized list of activities, based on available natural and human resources, aimed at the holistic and sustainable development of the village; through this framework, the development of both the forest area and the village is undertaken jointly. It serves as the

blueprint for forest and development initiatives at the village level. It is a needs-based, location-specific plan that utilizes available resources to fulfill rural requirements.

Three training programs were organized on 16/09/2025 to 18/09/2025, 12/11/2025 to 14/11/2025, and 09/12/2025 to 11/12/2025. 106 trainees from South Sagar, North Sagar, Damoh, South Seoni, North Seoni, Narsinghpur, Khandwa, Khargone, Gwalior, Jabalpur, East Chhindwara, West Betul, Dhar, Jhabua, South Balaghat, North Balaghat, North Betul, Chhatarpur, Shivpuri and North Shahdol forest divisions attended the training.



Classroom session and field demonstration programme

d. Dissemination of research technologies and strengthening of extension linkages

- **Conducting educational tour and exposure visit of the trainee forest rangers, trainee forest guards and students regarding the research activities of the institute**

Probationary IFS officers, Trainee Forest Range Officers posted in various forest divisions of M.P., trainee Forest Range Officers and trainee Forest Guards from Van Vidhyalya, Amarkantak, Jaiv Vividhata Prashikshan Kendra, Tala, Umaria, Rajiv Gandhi Sahbhagi Vaniki Training Institute, Lakhnadaun, Van Vidhyalya, Shivpuri, Van Vidhyalya, Betul. Van Vidhyalya, Jhabua, Ranger College, Balaghat, Telangana Forest Academy, Dulapilly, Hyderabad, Chandrapur Forest Academy, Chandrapur, Indira Gandhi Forest Training School, Pachmari, Forest Training School, Govindgarh, IGNFA, Dehradun, Forester-cum-Forest Guard Training School, Hazaribagh, Jharkhand, Principal Chief Conservator of Forests, Human Resource Development, Bhopal and students from M.M. College of

Physiotherapy & Paramedical Science, Jabalpur, Vijayashree Ayurvedic Medical College & Hospital, Jabalpur, JNKVV, Jabalpur, Mar Thoma Gram Jyoti English Medium School, Khitola, Jabalpur, Dr. PDKV Akola, Maharashtra, Vijayashree Educational Institute, Jabalpur, College of Forestry Odisha University Agriculture and Technology, Narayana E-Techno School Jabalpur, Choudhary Ranbir Singh University Jind, Haryana, Office of the Deputy Director of Agriculture, Dhamtari, Chhattisgarh, PM-Shri Senior Secondary School, Sakra, Patan, Jabalpur, visited the institute during the year as a part of their course curriculum. They were acquainted with the research activities of the institute by class room lectures and visited to various laboratories, wildlife department, mist chambers, shade net houses, Lac gene bank, botanical garden, nurseries, museum and herbarium, located in the SFRI campus.



Exposure visit of trainee forest rangers, forest guards and students

e. Training on Forest Genetics, Biotechnology and Plant Tissue Culture

The Biotechnology Division of the Institute provided 7 days, 01 month, 03 months training students of Govt. M.H. Home Science & Sci. for Woman College, Jabalpur, Hitkarni H.S. School Garha, Jabalpur, PMCoE Govt. Tilak PG College, Katni, M.P., Guru Teg Bahadur Khalsa college, St. Aloysious College, Jabalpur, AKS University Satna, Govt. Model Science College, Jabalpur, Gyan Ganga Science & Technology Jabalpur, Institute of Agriculture RDVV, Jabalpur, Mangalayatan University, Jabalpur,

Mahakoushal University, Jabalpur and Shri Ram College of Commerce Jabalpur, participated in training programmes.



f. MoU between State Forest Research Institute, Jabalpur and other Institute.

A Memorandum of Understanding (MoU) has been signed between State Forest Research Institute, Jabalpur and Sri Guru Tegh Bahadur Khalsa College, Jabalpur, Shri Ram College of Commerce and Shri Group of Institutions, Jabalpur, Malwanchal University, Indore, Awadesh Pratap Singh University, Rewa, , IIT Indore and Mata Gujri Mahila Mahavidhyalay, Jabalpur with the aim of promoting research work on forestry, wildlife and environment. After the signing of the MoU, MPSFRI and concerned institute will be jointly organizing seminars, webinars, training and workshops and in the future scientists, research officers and professors of both the institutes will be benefitted through the sharing of knowledge and expertise. SFRI also has been signed MoU with Bank of Maharashtra, Jabalpur.





g. Participation of the Institute in International Van Mela, Bhopal

State Forest Research Institute, Jabalpur participated in the International Van Mela, from 17/12/2025 to 23/12/2025. The visitors coming to the stall were provided with information related to the research activities of the institute and the information sought by them and publicity was done by providing brochures and magazines related to the research activities of the institute among the visitors.

In the Van Mela, the Institute was awarded for its outstanding work and demonstrations in lac processing, alongside its research activities.



Participation of the Institute in International Van Mela, Bhopal

h. Participation of the Institute in Mahakal Van Mela, Ujjain

The Mahakal Van Mela was organized in Ujjain from February 11 to 16, 2026. The Institute aimed at promoting scientific methods of lac cultivation and providing practical demonstrations from visitors attending the fair. Through this stall, visitors were provided with information regarding lac production, processing, and various associated products, as well as details concerning the Institute's research and extension activities. In the Mahakal Van Mela 2026, the State Forest Research Institute, Jabalpur, third position at the state level for its outstanding presentation of lac processing and research activities.



MoU with Institutes:

S. N.	Name of Institutes
1.	Indian Institute of Technology (IIT), Indore
2.	Guru Teg Bahadur Khalsa College, Jabalpur
3.	Shri Ram College, Jabalpur
4.	Malavanchal University, Indore
5.	Avdhesh Pratap Singh University, Rewa
6.	Mata Gujri Mahila Mahavidhyalay, Jabalpur
7.	Bank of Maharashtra, Jabalpur

Participation in Fairs :

S.No.	Event	Date	Place
1.	National Buyer-Seller meets, RCFC-CR JNKVV Jabalpur	18-19 March 2026	JNKVV Jabalpur
2.	Participated in 11th International Herbal Fair 2025 jointly organized by Madhya Pradesh Laghu Vanopaj Sangh and Forest Department.	17th to 23th December 2025	Lal Pared Ground Bhopal
3.	Participated in Mahakal Van Mela 2026 jointly organized by Madhya Pradesh Laghu Vanopaj Sangh and Forest Department.	11th to 16 th January 2026	Sethi Maidan, Ujjain

Organization of trainings

S. N.	Topic	Organized by	Venue	Date	Target Group	No. of participants
1.	Gyan Ganga Science & Technology Jabalpur	Biotechnology Division	SFRI	07/07/2025 to 14/07/2025 (7 Days)	B. Pharmacy	08
2.	Guru TegBahadurKhalsa college	Biotechnology Division	SFRI	22/07/2025 to 29/07/2025 (7 Days)	B.Sc. Biotech	24
3.	Institute of Agriculture RDVV, Jabalpur	Biotechnology Division	SFRI	19/08/2025 to 28/08/2025 (7 Days)	B.Sc. Agri.	26
4.	Mangalayatan University, Jabalpur	Biotechnology Division	SFRI	28/08/2025 to 03/09/2025 (7 Days)	B.Sc. Agri.	25
5.	Mahakoushal University, Jabalpur	Biotechnology Division	SFRI	08/09/2025 to 16/09/2025 (7 Days)	B.Sc. (Agri, Forensic, Micro, Biotech)	29
6.	Mahakoushal University, Jabalpur	Biotechnology Division	SFRI	17/09/2025 to 25/09/2025 (7 Days)	B.Sc. (Agri, Forensic, Micro, iotech)	29
7.	St. Aloysious College, Jabalpur	Biotechnology Division	SFRI	19/09/2025 to 26/09/2025 (7 Days)	B.Sc. Biotech	05
8.	St. Aloysious College, Jabalpur	Biotechnology Division	SFRI	08/10/2025 to 15/09/2025 (7 Days)	B.Sc. Biotech	01
9.	Rani Lakhmi Bai Central Agriculture University, Jhansi, Uttar Pradesh	Biotechnology Division	SFRI	06/10/2025 to 15/09/2025 (10 Days)	B.Sc. Forestry	31
10.	Govt. M.H. Home Science & Sci. for Woman College, Jabalpur	Biotechnology Division	SFRI	03/11/2025 to 08/11/2025 (5 Days)	B.Sc. Biotech	29
11.	Govt. M.H. Home Science & Sci. for Woman College	Biotechnology Division	SFRI	10/11/2025 to 15/11/2025 (5 Days)	B.Sc. Biotech	30
12.	Govt. M.H. Home Science & Sci. for Woman College	Biotechnology Division	SFRI	14/11/2025 (One day)	M.Sc. Zoology	35
13.	Govt. M.H. Home Science & Sci. for Woman College	Biotechnology Division	SFRI	17/11/2025 to 21/11/2025 (5 Days)	B.Sc. Biotech	29
14.	Govt. M.H. Home Science & Sci. for Woman College	Biotechnology Division	SFRI	24/11/2025 to 03/12/2025 (10 Days)	B.Sc. Botany IVth year	31
15.	Govt. M.H. Home Science & Sci. for Woman College	Biotechnology Division	SFRI	24/11/2025 to 28/11/2025(5 Days)	B.Sc. Biotech IIIrd Year	11
16.	Govt. M.H. Home Science & Sci. for Woman College	Biotechnology Division	SFRI	24/11/2025 to 03/12/2025 (10 Days)	B.Sc. Biotech IVth year	12
17.	Hitkarni H.S. School Garha, Jabalpur	Biotechnology Division	SFRI	05/12/2025 (One day)	Higher Secondary	33
18.	PMCoE Govt. Tilak PG College, Katni, M.P.	Biotechnology Division	SFRI	29.12.2025 One Day	M.Sc. Botany	30
19.	Govt. M.H. Home Science & Sci. for Woman College, Jabalpur	Biotechnology Division	SFRI	05/01/2026 to 03/05/2026 Four Months	M.Sc. Biotech	17
20.	Guru Teg Bahadur Khalsa college	Biotechnology Division	SFRI	27/01/2026 to 26/07/2026 Six Months	M.Sc. Biotech	02
21.	St. Aloysious College, Jabalpur	Biotechnology Division	SFRI	19/01/2026 to 18/07/2026 Six Months	M.Sc. Biotech	02
22.	AKS University Satna	Biotechnology Division	SFRI	02/02/2026 to 31/07/2026 Six Months	M.Sc. Biotech	03

S. N.	Topic	Organized by	Venue	Date	Target Group	No. of participants
23.	Govt. Model Science College, Jabalpur	Biotechnology Division	SFRI	16/01/2026 to 23/01/2026 (5 Days)	B.Sc. (Botany) III	30
24.	Govt. Model Science College, Jabalpur	Biotechnology Division	SFRI	27/01/2026 to 03/02/2026 (5 days)	B.Sc. (Botany) III	06
25.	Shri Ram College of Commerce Jabalpur	Biotechnology Division	SFRI	29/01/2026 to 19/02/2026 (15 Days)	B.Sc. Biotech III & II year	18
26.	Govt. Model Science College, Jabalpur	Biotechnology Division	SFRI	04/02/2026 to 13/02/2026 (5 Days)	B.Sc. (Botany) IV year	09
27.	Biological Science Rani Durgavati University	Biotechnology Division	SFRI	13/03/2026 to 31/03/2026 (10 days)	B.Sc. Biotech Ist year	09
28.	Govt. Model Science College, Jabalpur	Biotechnology Division	SFRI	1/04/2026 to 8/04/2026 (5 days)	M.Sc. Enviro IV Sem	19
29.	Sri Sai Baba Aadarsh Mahavidyalaya Ambikapur Chhattisgarh	Biotechnology Division	SFRI	13/04/2026 to 17/04/2026 (5 days)	M.Sc. II Sem (Biotech, Botany & Zoology)	72
30.	धार जिले में क्षेत्रीय आजीविका का साधन अफ्रीकी बाओबाब (एडेनसोनिया डिजिटटा) का संरक्षण	SFRI	धार वन मण्डल, धार	26/11/2025	Forest field staff of Dhar	120
31.	धार जिले में क्षेत्रीय आजीविका का साधन अफ्रीकी बाओबाब (एडेनसोनिया डिजिटटा) का संरक्षण	SFRI	धार वन मण्डल, माण्डू	27.11.25	Forest staff and committee members	100
32.	Maintenance of mist chamber poly house, green net house	Social forestry Jabalpur	Central Nursery Pariyat	21.11.25	Forest staff of Social forestry	50
33.	Plant preparation in root trainers and soil nutrient management	Social forestry Jabalpur	Central Nursery Jabalpur	11.3.25	Forest staff of Social forestry	40
34.	सूक्ष्म प्रबंध योजना निर्माण हेतु प्रशिक्षण कार्यक्रम	SFRI	SFRI	16/09/2025 to 18/09/2025 12/11/2025 to 14/11/2025 09/12/2025 to 11/12/2025	Field Staff	103
35.	Training on concept of Soil Moisture Conservation and its Importance in forestry	SFRI	SFRI	16/12/2025 to 18/12/2025	Field Staff	25
36.	Celebration of the 4th National Lac Insect Day and organise Lac Cultivation Training Workshop	SFRI, Jabalpur	Sihora village of Jabalpur Forest Division :	16/05/2025	Farmers & Van samiti member	25
37.	Lecture delivered to trainee Trainees forest guard of Forestry training school Amarkantak on research activities, quality seed collection, certification & testing and nursery management.	SFRI, Jabalpur	SFRI, Jabalpur	14/05/2025	Trainees forest guard	44
38.	Lecture delivered to Trainees forest guard of Forestry training school & Biodiversity center Tala on research activities, quality seed collection, certification & testing and nursery management.	SFRI, Jabalpur	SFRI, Jabalpur	22/05/2025	Trainees forest guard	37

S. N.	Topic	Organized by	Venue	Date	Target Group	No. of participants
39.	Orientation training on Wildlife monitoring and Lac cultivation	SFRI, Jabalpur	SFRI, Jabalpur	26/05/2025	Om Prakash Sharma, & other group members, Krishna Nagar, Jhabua (Shiksha Sanskrati Utthan Nyas)	3
40.	Lecture delivered to Trainees forest guard of Forestry training school Amarkantak (Circle-Bhopal, Jabalpur and Shahdol on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	26/05/2025	Trainees forest guard	42
41.	Lecture delivered to Trainees forest guard of Forestry training school Govindgargh (Circle Rewa and Chhatarpur on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	02/06/2025	Trainees forest guard	48
42.	Lecture delivered to Trainees forest guard of Forestry training school Betu on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	10/06/2025	Trainees forest guard	49
43.	Lecture delivered to Trainees forest guard of Forestry training school Jhabua on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	11/06/2025	Trainees forest guard	53
44.	Lecture delivered to Trainees forest guard of Forestry training school Betul on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	16/06/2025	Trainees forest guard	48
45.	Lecture delivered to Trainees forest guard of Ranger college, Balaghat on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	21/06/2025	Trainees forest guard	50
46.	Wildlife assessment and camera trap installation.	SFRI &STR	Bhimkund training center Satpura Tiger Reserve	27/06/2025	Rangers and Field Staff	120
47.	Wildlife assessment and camera trap installation.	SFRI &STR	Matkuli training center STR	28/06/2025	Rangers and Field Staff	150

S. N.	Topic	Organized by	Venue	Date	Target Group	No. of participants
48.	Lecture delivered to 11 th batch FRO trainees from Telangana State Forest Academy, Hyderabad on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	15/07/2025	Trainee FROs	39
49.	Lecture delivered to on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	13/08/2025	Farmers of Mandla district Mr. Rajeev Chavla & Roshan Singh	2
50.	Advanced monitoring skills and M-STriPES training.	SFRI & Forestry training Amarkantak School Amarkantak	Forestry training Amarkantak School Amarkantak	22-23/08/2025	Trainee forest Guards	100
51.	Organized lac cultivation training workshop	SFRI, Jabalpur	Sakra village of Anuppur division:	23/08/2025	Farmers and van samiti members	65
52.	Lecture delivered to Trainee FROs from Chandrapur Forest Academy on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	24/09/2025	Trainee FROs	40
53.	Organized Lac Cultivation Training Workshop	SFRI, Jabalpur	SFRI, Jabalpur	12/10/2025	Farmers of Dhamtari District, Chhattisgarh	25
54.	Orientation training on Wildlife monitoring and Lac cultivation	SFRI, Jabalpur	SFRI, Jabalpur	18/10/2025	Mr Nandekeshwar AIGM, NTCA RO Nagpur	1
55.	AITE DFO Level Training programme	Panna Tiger Reserve	Hinauta Training Center	23/10/2025	All DFOs	23
56.	AITE Training of master trainer in Gandhi Sagar	Gandhi Sagar WLS, Mandsaur	Gandhi Sagar	27/10/25 to 30/10/25	Master trainer	60
57.	AITE Training of master trainer in Gandhi Sagar	Ratapani Tiger Reserve,	Dehlawari Training Center	5/11/2025 to 7/11/2025	Frontline Forest Staff	50
58.	Lecture delivered to Trainees Range officer of Hazaribag Forestry Training school, Jharkhand on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	05/11/2025	Trainees Range officer	40

S. N.	Topic	Organized by	Venue	Date	Target Group	No. of participants
59.	Lecture delivered to BAMS students of Vijay shree Medical college of Jabalpur on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	16/11/2025	BAMS students of Vijay shree Medical college of Jabalpur	40
60.	Lecture delivered to B.Sc forestry students of JNKVV, Jabalpur under training of nursery management on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	24/11/2025	B.Sc forestry students of JNKVV, Jabalpur	32
61.	Digital data entry for All India Tiger Estimation.	SFRI	E-DAKSH, Jabalpur (AITE)	25/11/25 to 26/11/2025	Computer Operators	169
62.	Lecture delivered to Students of Hitkarini Dental School, Devtal Jablpur on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	30/11/2025	Students of Hitkarini Dental School, Devtal Jablpur	36
63.	Lecture delivered to on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	10/12/2025	Farmers of Dhamtari Chhattisgarh (Krishi Vistar Adhikari)	12
64.	Lecture delivered to B.Sc. forestry students of JNKVV, Jabalpur under training of nursery management on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	14/12/2025	B.Sc. forestry students of JNKVV, Jabalpur	60
65.	Lecture delivered to BAMS Students of Vijay Shree medical college Jabalpur on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	20/12/2025	BAMS Students of Vijay Shree medical college Jabalpur	35
66.	Lecture delivered to M.Sc. students of Govt Tilak P.G. college Katni on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	28/12/2025	M.Sc. students of Govt Tilak P.G. college Katni	42
67.	Lecture delivered to B.Sc. Honours (forestry) students of College of Forestry, OUAT, Bhubaneswar, Odisha on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	06/01/2026	B.Sc Honours (forestry) students of College of Forestry, OUAT, Bhubaneswar Odisha	46

S. N.	Topic	Organized by	Venue	Date	Target Group	No. of participants
68.	Orientation training on Wildlife monitoring and Lac cultivation	SFRI, Jabalpur	SFRI, Jabalpur	22/01/2026	B.Sc forestry students of JNKVV Jabalpur	17
69.	One day workshop on Radio-Telemetry and tracking of wildlife	Veerangana Durgwati Tiger Reserve	Moholi Training Center	23/2/2026	Frontline Forest Staff of Veerangana Durgwati Tiger Reserve	55
70.	Lecture delivered to Trainees forest guard of forestry training school, on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	01/03/2026	Panchmari	48
71.	Orientation training on Wildlife monitoring and Lac cultivation	SFRI, Jabalpur	SFRI, Jabalpur	02/03/2026	Ankit Kumar Jain, ACF Jabalpur	1
72.	Organized lac cultivation training workshop	SFRI Jabalpur & Mandsaur Division	Naveli village of Mandsaur division	07/03/2026	Farmers & samiti members	45
73.	Orientation training on Wildlife monitoring and Lac cultivation	SFRI, Jabalpur	SFRI, Jabalpur	10/03/26	Amar Singh Bhadoriya, RFO Jabalpur	1
74.	Orientation training on Wildlife monitoring	SFRI, Jabalpur	SFRI, Jabalpur	11/03/26	B.R. Pandey, SDO Baihar	1
75.	Lecture delivered to Trainees forest guard of Ranger Training College, Balaghat on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	14/03/2026	Trainees forest guard	49
76.	Orientation training on Wildlife monitoring and Lac cultivation	SFRI, Jabalpur	SFRI, Jabalpur	15/03/2026	Trainees forest guard	55
77.	Lecture delivered to Trainees forest guard of Forestry training school Betul on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	18/03/2026	Trainees forest guard	58
78.	Lecture delivered to Trainees forest guard of Forestry training school Lakhnadon on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	18/03/2026	Trainees forest guard	81
79.	Lecture delivered to Trainees forest guard of Forestry training school Amarkantak on research activities, quality seed collection, certification &	SFRI, Jabalpur	SFRI, Jabalpur	20/03/2026	Trainees forest guard	67

S. N.	Topic	Organized by	Venue	Date	Target Group	No. of participants
	testing and nursery management					
80.	Lecture delivered to Trainees forest guard of Forestry training school Govindgarh on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	26/03/2026	Trainees forest guard	55
81.	Lecture delivered to Trainees forest guard of Forestry training school Tala on research activities, quality seed collection, certification & testing and nursery management	SFRI, Jabalpur	SFRI, Jabalpur	30/03/2026	Trainees forest guard	35

Trainings/Workshops/Meetings attended by officers/scientists and Research Staff of the Institute.

S.N.	Name of the programme	Organized by	Venue	Date	Participants
1.	Attended Online meeting with DSIR for discussion on Ongoing Projects, Completed Projects and Preparing Future Research Strategy	SFRI, Jabalpur	SFRI, Jabalpur	09/04/2025	Scientific Staff, SFRI
2.	Pench Tiger Reserve camera trap procurement meeting	Pench Tiger Reserve	Pench Tiger Reserve, M.P.	17/04/2025	Dr. Aniruddha Majumdar
3.	Meeting with C-DAC for lac proposal	C-DAC & SFRI	C-DAC Kolkata	21/04/2025	Dr. Aniruddha Majumdar
4.	Meeting on Habitat Improvement and Wildlife Conservation in Mathawad Forest Range Alirajpur, Madhya Pradesh	Chief Wildlife Warden and Principal Chief Conservator of Forests (Wildlife), Bhopal, MP	Van Bhawan, Bhopal.	13/05/2025	Dr. Anjana Rajput & Ms. Shalini Jaiswal
5.	Pench Tiger Reserve camera trap procurement meeting	Pench Tiger Reserve	Pench Tiger Reserve	14/05/2025	Dr. Aniruddha Majumdar
6.	ICCON 2025 (Indian Conservation Conference 2025) <i>Tracing the giant's path: Climate Anthropogenic drivers of Elephas maximus range expansion and conflict in central India. India's Flagship Fauna: Ranging Through Resistance and Resilience</i>	Wildlife Institute of India, Dehradun	WII Auditorium Dehradun	25/05/2025 to 27/05/2025	Dr. Mayank Makrand Verma
7.	Attend 2 nd Rajbhasha Vaigyanik Karyashala	Central Zone Regional Centre (CZRC) of the Zoological Survey of India	Jabalpur	31/05/2025 to 01/06/2025	Dr. Aniruddha Majumdar

S.N.	Name of the programme	Organized by	Venue	Date	Participants
8.	Meeting with School of Wildlife Forensic and health	Wildlife Forensic and Health, Nanaji Deshmukh University	Jabalpur	04/06/2025	Dr. Aniruddha Majumdar
9.	Attended in camera trap meeting at Pench Tiger Reserve	Pench Tiger Reserve	Pench Tiger Reserve	03/07/2025	Dr. Aniruddha Majumdar
10.	Attended Elephant Corridor meeting at Bandhavgarh Tiger Reserve	PCCF (Wildlife) & Bandhavgarh Tiger Reserve,	Tala, Bandhavgarh Tiger Reserve	17/07/2025 to 19/07/2025	Dr. Aniruddha Majumdar
11.	Meeting with STF Indore team	SFRI	SFRI	22/07/2025	Dr. Aniruddha Majumdar
12.	Interview in Satpuda & meeting with CCF STR	Satpuda Tiger Reserve	Satpuda Tiger Reserve	23/07/2025	Dr. Aniruddha Majumdar
13.	Attended Workshop at TFRI Jabalpur	TFRI-Jabalpur	TFRI Jabalpur	31/07/2025 & 01/08/25	Mr Pradeep Vasudeva, Dr Archana Sharma Dr Aniruddha Majumdar Dr Uday Homkar
14.	Talk on Wildlife monitoring in IIT Indore	IIT Indore	IIT Indore	11/0820/2025	Mr Pradeep Vasudeva Dr Aniruddha Majumdar
15.	Attended "World Elephant Day Celebration" Programme	SFRI, Jabalpur	SFRI, Jabalpur	12/08/2025	Scientific staff, SFRI
16.	Attended webinar on GIS day	WII Dehradun	Online	12/08/2025	Dr Aniruddha Majumdar
17.	Attended mid-term review meeting of lac project NPCLIGR	ICAR-NISA	Online	11/09/2025	Dr Aniruddha Majumdar
18.	Attend AITE 2026 Regional (Central) workshop meeting at Pench Tiger Reserve, M.P.	Pench Tiger Reserve	Pench Tiger Reserve	15/09/2025 to 17/09/2025	Dr Aniruddha Majumdar
19.	Attended Meeting on plantation evaluation	SFRI Jabalpur	SFRI Jabalpur	23/09/2025	Dr Aniruddha Majumdar
20.	Meeting with CAS FOS Chandrapur	SFRI Jabalpur	SFRI Jabalpur	24/09/2025	Dr. Aniruddha Majumdar
21.	Attended AITE 2026 meeting at Bhopal		Bhopal	25/09/2025 to 26/09/2025	Dr. Aniruddha Majumdar
22.	Meeting on AITE-2026 for CCF level conference at Satpuda	M.P. Forest Department	Satpuda Tiger Reserve, M.P.	13/10/2025 to 16/10/2025	Dr. Aniruddha Majumdar
23.	Attended presentation and certificate distribution event of B.Sc. (Hons.) Agriculture students from Central University Jhansi (MP)	SFRI, Jabalpur	SFRI, Jabalpur	14/10/2025	Scientific staff, SFRI
24.	Attended workshop in Panna Tiger reserve	DFO Panna	Panna Tiger Reserve	23/10/25 to 24/10/25	Dr. Aniruddha Majumdar
25.	Attended RAC meeting of PCCF R&E Bhopal	PCCF (R&E) Bhopal	Bhopal	24/10/2025	Scientific Staff, SFRI
26.	Attend meeting at Field Director Satpuda Tiger Reserve	Satpuda Tiger Reserve	Satpuda Tiger Reserve	08/11/25	Dr. Aniruddha Majumdar

S.N.	Name of the programme	Organized by	Venue	Date	Participants
27.	Attended meeting on preparation of Review meeting of SFRI at Bhopal by PCCF & HoFF	SFRI, Jabalpur	SFRI, Jabalpur	14/11/2025	Scientific Staff SFRI
28.	Attended review meeting conducted by PCCF & HoFF	PCCF (R&E) Bhopal	Bhopal	18/11/2025	Scientific Staff SFRI
29.	Attended one day workshop on nursery management and techniques	Social Forestry Jabalpur	Social Forestry Jabalpur	21/11/2025	Forest staff of various nurseries
30.	Attended Satpuda Melghat 3rd railway line meeting	SFRI	Itarsi	9/12/25 to 10/12/25	Dr. Aniruddha Majumdar
31.	Invited speaker for wildlife monitoring in National workshop organize by Govt. Science college Jabalpur	Govt. Science college Jabalpur	Govt. Science college Jabalpur	15/12/25	Dr. Aniruddha Majumdar
32.	Attend meeting with PCCF Wildlife	PCCF Wildlife	Bhopal	16/12/25	Dr. Aniruddha Majumdar
33.	Attended meeting for discussion on Internal Projects funded by SFRI	SFRI, Jabalpur	SFRI, Jabalpur	14/01/2026	Scientific Staff, SFRI
34.	Participated in Webinar organised by FRI	Forest Research Institute, Dehradun	Online	16 /01/2026	Dr. Aniruddha Majumdar
35.	Validation workshop Investing in Climate Resilient Agriculture in Madhya Pradesh.	Food and Agriculture Organization of the United Nation, New Delhi	Bhopal	02/02/2026	Panel Discussion on the Climate-Resilient Agriculture Investment Options and Project Idea Note
36.	Attended SIT meeting at Bandhavgarh Tiger Reserve	Bandhavgarh Tiger Reserve	Bandhavgarh Tiger Reserve	26-27/02/2026	Dr. Aniruddha Majumdar
37.	Invited speaker on two days National Workshop & delivered lecture Importance of Wildlife Management in the Environment	Mata Gujri college Jabalpur	Mata Gujri college Jabalpur	09/03/2026	Mr Pradeep Vasudeva Dr. Aniruddha Majumdar
38.	Attended meeting on preparation of Review meeting of Forest Management Division at Bhopal by Chief Secretary (Forest) Bhopal	SFRI, Jabalpur	SFRI, Jabalpur	10/03/2026	Dr.Pratiksha Chaturvedi,SRO)
39.	Attended executive council meeting of the Society of Tropical Forestry.	Director SFRI, Jabalpur	SFRI Jabalpur	17/03/2026	Scientific Staff and JTF Editorial Staff
40.	Participated in Rashtriya Hindi Vigyan Sammelan	Viyan Bharti and Bundelkhand University, Jhansi	Bundelkhand University, Jhansi (U.P.)	20/03/26 to 22/03/26	Mr Balram Lodhi

2.3.6 DOCUMENTATION CENTRE

Mandate

1. Documentation of research information/results.
2. Documentation of technical literature on forestry research activities of the Institute.
3. Maintenance of ledger files.
4. Providing research information to the users.
5. Sale of SFRI Publication
6. Maintenance of Forest archive

Activities

1. Maintenance of general and specific ledger files. At present, 250 general and 173 specific ledger files are being maintained. The research findings published in various journals/bulletins and reports, etc. were photocopied and added regularly in the respective ledger files.
2. Documentation of technical literature on forestry research.
3. Documentation of research articles published in different Journals, Magazines, Newsletters, Bulletins, Annual Research Report and Extension series.
4. Documentation of final reports of the projects financed by external agencies.
5. Publication of technical bulletins and extension series.
6. Sale of SFRI publications.

Journal Section

The branch is well furnished with a reading room. During the year 16 journals were received.

Archive

The Institute is in possession of some very old records of the state forest department. The old records which were earlier in a very fragile state were repaired and preserved as per techniques made available from National Archives of India,

These records (maps) dates back from the year 1856 when the Imperial Forest Department was established in Central provinces and Berar.

These historical documents reflect the rich heritage of forests, their management systems and the forest dwellers.

A very large collection of maps (202) more than a century old is also available in the Institute

The maps preserved in archives are in tattered condition which may worsen further in future. Therefore digitization of these maps using advanced technology is essential for their long term preservation and making them available for reference in future research activities.

Achievements during the year

1. 08 projects reports were documented.
2. A sum of Rs. 740/- was received from the sale of bulletins, extension series, and other publications
3. 16 periodicals were received and displayed.
4. 63 articles were selected, photocopied, classified and filed into ledger files.
5. 158 damaged pages of ledger files were replaced by xerox copies.
6. Prepare, Listing, clean & repairs of old maps ledger files and rearranged

SFRI PUBLICATIONS

Technical Bulletins

S N.	Bulletin No.	Title	Year	Price (INR)
1	2	Volume Table of Terminalia tomentosa for M.P.	1963	70.00
2	4	Yield Table of Sal for M.P.	1966	70.00
3	5	Seed Directory vol. I	1967	30.00
4	9	Standard Volume Table of Teak for S.Chhindwara in M.P.	1971	70.00

S N.	Bulletin No.	Title	Year	Price (INR)
5	10	Family Ranunculaceae to Polygonaceae in M.P. (Monograph of 13 family)	1971	25.00
6	11	Teak growth tables of different ecological forest types in M.P.	1971	70.00
7	12	Standard volume tables of <i>Boswellia serrata</i> for Nimar tract in M.P.	1971	70.00
8	15	Bark Table for <i>Boswellia serrata</i>	1971	25.00
9	16	Family Linaceae to Berseraceae	1974	25.00
10	18	Species for plantation in M.P. (Reprint 1996)	1977	100.00
11		मध्यप्रदेश में वृक्षारोपण के लिये उपयुक्त प्रजातियाँ	1977	100.00
12	22	Bamboo Plantation	1986	50.00
13	23	Fuel wood removal by headloads-A case study of Jabalpur	1987	20.00
14	24	Eucalyptus cultivation in M.P. – JTF	1987	25.00
15	26	Socio-economic Potential of Minor Forest Produce in M.P.	1991	75.00
16	28	Material for forest flora of Madhya Pradesh	1996	150.00
17	29	Tissue culture protocols for Teak, Neem & Khamer	1997	150.00
18	30	Growth statistics of forest plantations	1997	75.00
19	31	Medicinal plant of M.P. distribution, cultivation & trade	1998	200.00
20	32	Local Volume Table for Teak, Sal and other species	1997	60.00
21	33	Price Trends of some medicinal plants	1998	80.00
22	34	Biological Diversity of SFRI premises	1998	50.00
23	35	Seed production in Teak Seed Orchards in M.P.	1998	100.00
24	36	Seed certification protocol of forest tree species	1998	75.00
25	37	Tissue culture protocols for important medicinal plants of M.P.	1998	30.00
26	38	Macro-propagation protocol of some tree and medicinal plants species.	1998	40.00
27	39	Yield and stand tables of teak in Madhya Pradesh	1998	200.00
28	40	An Annotated Bibliography of Bamboo	1999	50.00
29	41	Status survey of Non Timber Forest Produce in primary Tribal Markets: A case study in Amarkantak Plateau.	1999	100.00
30	42	Application of laboratory seed testing results in nursery practices.	2000	50.00
31	43	म0प्र0 में भिलवा का सामाजिक आर्थिक विश्लेषणात्मक अध्ययन।	2000	100.00
32	44	Silviculture research in M.P.	2000	150.00
33	45	Handbook of Bamboos with particular reference to M.P.	2002	80.00
34	46	औषधीय पौधों की खेती की प्रचार प्रसार पत्रिका।	2003	150.00
35	47	Medicinal herbs in trade: a study of safed musli (<i>chlorophytum</i> species) in Madhya Pradesh	2003	20.00
36	48	Collection, processing and marketing of <i>Buchanania lanzan</i> in Madhya Pradesh	2005	20.00
37	49	मध्यप्रदेश के महत्वपूर्ण आयुर्वेदिक पादप	2005	70.00
38	50	आंवला वृक्षारोपण एवं आर्थिक महत्व	2008	50.00
39	51	उच्च गुणवत्ता के बीज एकत्रीकरण, भण्डारण, उपचारण, प्रमाणीकरण तथा बीजोत्पादन क्षेत्रों के चयन एवं प्रबंधन पर दिग्दर्शिका।	2008	50.00
40	52	Floral Diversity of Kanha Tiger Reserve	2009	900.00
41	53	Nursery and Planting technique of Tree Species	2010	100.00
42	54	Forest Glossary for All (English – Hindi)	2010	50.00

S N.	Bulletin No.	Title	Year	Price (INR)
43	55	वृक्षारोपण मार्गदर्शिका	2011	150.00
44	56	संग्रहित लाख में समय के साथ वनोपजों में होने वाली कमी का अध्ययन।	2014	TM
45	57	Status of natural gum and gum oleo-resin of M.P.	2014	TM
46	58	बीज प्रक्षेत्र का चयन, बीज उत्पादन क्षेत्र की स्थापना, प्रबंधन, बीज संग्रहण, भण्डारण, उपचारण, परीक्षण एवं रोपणी प्रबंधन	2014	TM
47	59	वानिकी में मेक्रोक्लोनल प्रोपेगेशन तकनीक द्वारा वृक्ष एवं औषधीय प्रजातियों के क्लोनल पौधे तैयार करने की विधियाँ।	2014	TM
48	60	सामुदायिक भागीदारी द्वारा अकाष्टीय वनोपजों के मानचित्रण एवं आंकलन विधि मार्गदर्शिका।	2015	55.00
49	61	अकाष्टीय वनोपज सतत् विदोहन एवं प्रबंधन नियमावली।	2015	190.00
50	62	कैमरा ट्रैप मार्गदर्शिका	2016	TM
51	63	अकाष्टीय वनोपज प्रजातियों का अंतःस्थलीय, बाह्य स्थलीय संरक्षण, नवप्रवर्तन – वनवर्धन एवं विकास।	2016	1120.00
52	64	अकाष्टीय वनोपज सतत् विदोहन एवं प्रबंधन नियमावली।	2016	800.00
53	65	Volume table of Teak for various divisions of Madhya Pradesh	2016	TM
54	66	Volume table of <i>Shorea robusta</i> (Sal) for various forest divisions of Madhya Pradesh	2016	TM
55	67	रोपणी मार्गदर्शिका	2016	100.00
56	68	Growth table of important coppices origin species for Madhya Pradesh	2016	-
57	69	वन एवं औषधीय प्रजातियों की रोपणी एवं रोपण तकनीक मार्गदर्शिका	2016	370
58	70	कट रूट स्टोक विधि : लेन्टाना उन्मूलन की नई तकनीक	2017	TM
59	71	बाघ, सह-परभक्षी, चौपायों एवं उनके वासस्थल का अनुश्रवण हेतु मार्गदर्शिका	2017	TM
60	72	प्रशिक्षण मार्गदर्शिका – आधुनिक जीपीएस, रेंज फाईंडर एवं कम्पास हेतु	2017	TM
61	73	Primary Processing and Drying Techniques of NTFPs	2017	-
62	74	Directory of Medicinal Plants Traders and ISM Industries in Madhya Pradesh	2017	-
63	75	Selection of superior races of Khmer (<i>Gmelina arborea</i>) through clonal propagation	2017	-
64		क्लोनल प्रोपेगेशन द्वारा खमेर (<i>मेलाईना आरबोरिया</i>) की श्रेष्ठ नस्लो (रेसेस) का चयन	2017	-
65	76	Quantitative estimation of bioactive compounds through Chemo-fingerprinting (HPLC) for the identification of quality germplasm - <i>Andrographis paniculata</i> , <i>Bacopa monnieri</i> and <i>Swertia angustifolia</i>	2017	-
66	77	औषधीय पौध प्रजातियों की जबलपुर वन वृत्त के वनक्षेत्रों में वर्तमान स्थिति, संख्यात्मक घनत्व एवं उपलब्ध मात्रा का आंकलन "सर्वेक्षण एवं आंकलन मार्गदर्शिका"	2017	TM
67	78	बाघ, सह-परभक्षी, चौपायों एवं उनके वासस्थल का अनुश्रवण- 2018 हेतु मार्गदर्शिका	2018	TM
68	79	Volume table of miscellaneous species for various divisions of Madhya Pradesh.	2018	TM
69	80	हमारी कंद संपदा: मध्यप्रदेश में पायी जाने वाली कंद प्रजातियों की पहचान एवं विवरण	2018	TM
70	81	Propagation techniques of economically important endangered and rare species (salai, shisham, achar, maida lakdi and bija) of Madhya Pradesh	2018	--
71	82	पलाश के वृक्षों में लाख की कृषि प्रक्रिया	2018	TM

S N.	Bulletin No.	Title	Year	Price (INR)
72	83	बांधवगढ़ टाईगर रिजर्व के घास मैदानों का पारिस्थितिकीय अध्ययन : वन्य प्राणी प्रबंधन के संदर्भ में	2018	TM
73	84	कुसुम के वृक्षों में लाख की कृषि प्रक्रिया	2019	TM
74	85	Climate Change and Role of Communities in Adaptation and Mitigation	2019	
75	86	मध्यप्रदेश की प्रमुख गोंदों के उत्पादन एवं संग्रहण क्षेत्र	2019	TM
76	87	कार्बन का महत्व, पर्यावरणीय घटनाओं से इसका संबंध एवं वनों में कार्बन संचयन का आंकलन ।	2019	TM
77	88	Quantitative estimation of bioactive compounds of 5 commercially important medicinal plants through chemo-fingerprinting (HPLC) for the identification of quality planting material.	2019	TM
78	89	दुर्लभ एवं संकटग्रस्त प्रजातियों की रोपणी तकनीक का प्रचार प्रसार	2019	TM
79	90	वनों एवं वन रोपणियों में लगने वाली कीट व्याधियों एवं उनके निदान पर किये गये कार्यों का सरल भाषा में संकलन : मध्यप्रदेश के संदर्भ में	2019	TM
80	91	Species specific cage designs to rescue & transport the wildlife & nest boxes for birds. (<i>only soft copy</i>)	2020	TM
81	92	Quantitative determination of bio-active compounds of critically endangered and rare medicinal plants <i>Alectra chitrakutensis</i> and <i>Butea superba</i> through chemoprofiling	2021	--
82	93	Clonal propagation studies of <i>Alectra chitrakutensis</i> and <i>Butea superba</i> critically endangered and rare medicinal plants	2021	--

(TM : Training Material)

Extension Series

Ext. Series	Title	Year	Price (INR)
1.	Teak Seed collection and uses	1981	10.00
2.	वृक्षारोपण में बीजों का महत्व	1981	15.00
3.	म.प्र. में साल रोपण की तकनीक	1991	15.00
4.	पड़त भूमि विकास हेतु उपयुक्त प्रजाति लेडिंग	1991	10.00
5.	ईसबगोल	1994	5.00
6.	सर्पगन्धा	1994	5.00
7.	रोसा घास	1995	5.00
8.	A mechanical device for pre sowing treatment of teak seeds	1995	5.00
9.	वृक्षारोपण कैसे करें	1996	25.00
10.	S.F.R.I Publications	1999	40.00
11.	माइकोराइजा (वैम)	1999	TM
12.	राइजोबियम	1999	TM
13.	एजेटोबेक्टर	2000	TM
14.	पी.एस.बी. (फास्फोरस विलायक)	2000	TM
15.	आँवला : वनों से किसानों तक	2000	40.00
16.	बाँस : वनों से किसानों तक	2000	40.00
17.	सागौन : वनों से किसानों तक	2000	60.00
18.	खमेर : वनों से किसानों तक	2000	60.00
19.	यूकेलिप्टस : वनों से किसानों तक	2000	50.00
20.	बच (एकोरस केलेमस)	2001	5.00
21.	सतावर (एस्पेरेगस रेसीमोसस)	2001	5.00
22.	सफेद मूसली (क्लोरोफाइटम बोरिविलियानम)	2001	5.00

Ext. Series	Title	Year	Price (INR)
23.	कलिहारी (ग्लोरिओसा सुपरबा)	2001	5.00
24.	सनाय (केसिया आगस्टफोलिया)	2001	5.00
25.	सर्पगंधा (रावोल्फिया सर्पेन्टिना)	2001	5.00
26.	अश्वगंधा (विथानिया सोमनीफेरा)	2001	5.00
27.	मुश्कदाना (एबलेमासकस मास्केटस)	2001	5.00
28.	लेमनग्रास (सिंबोपोगन फ्लेक्सिपोसस)	2001	5.00
29.	मेन्था या पोदीना (मेन्था आर्वेसिस)	2001	5.00
30.	लघुवनोपजों का प्राथमिक प्रसंस्करण (भाग 1)	2003	20.00
31.	लघुवनोपजों का प्राथमिक प्रसंस्करण (भाग 2)	2007	20.00
32.	Directory of Medicinal Plants Trades and ISM Industries of Central India	2009	100.00
33.	Monograph on <i>Alectra chitrakutensis</i>	2011	60.00
34.	Monograph on <i>Ceropegia bulbosa</i> and <i>Ceropegia macrantha</i>	2011	60.00
35.	Monograph on <i>Crateva magna</i> and <i>ficus cupulata</i>	2011	60.00
36.	Monograph on <i>Dioscorea tomentosa</i> , <i>D. wallichia</i> and <i>d. alata</i>	2011	60.00
37.	Monograph on <i>Flemingia stricta</i> and <i>F. paniculata</i>	2011	60.00
38.	Monograph on <i>Guggal (Commiphora wightii)</i>	2011	60.00
39.	Monograph on Maida tree (<i>Litsea glutinosa</i>)	2011	60.00
40.	Monograph on Padri tree (<i>Radermachera xylocarpa</i>)	2011	60.00
41.	Monograph on Shyonaka (<i>Oroxylum indicum</i>)	2011	60.00
42.	Some ethnic plants in cure of various human diseases	2011	250.00
43.	कमरकस (पलाश) गोंद का सतत् विदोहन, प्राथमिक प्रसंस्करण, श्रेणीकरण एवं भण्डारण तकनीकों का प्रदर्शन	2012	TM
44.	साल बोरर से साल वनों की सुरक्षा	2014	TM
45.	Education material on Conservation , multiplication and utilization of rare, endemic Angiosperms and Pteridophytes in Forest Botanic Garden of State Forest Research Institute, Jabalpur (M.P.)	2014	TM
46.	Education material on Herbarium preparation and its management	2015	TM
47.	मध्यप्रदेश के वनों में पायी जाने वाली महत्वपूर्ण दुर्लभ प्रजातियों की उपयुक्त रोपणी तकनीकी का विकास।	2015	TM
48.	खमेर शीर्ष सूखन रोग एवं प्रबंधन तकनीकी मार्गदर्शिका	2015	TM
49.	खनन क्षेत्रों में वनीकरण एवं पारिस्थितिकीय पुर्नस्थापना हेतु तकनीकी मार्गदर्शिका	2015	TM
50.	नर्मदा तट पर वृक्षारोपण हेतु उपयुक्त प्रजातियाँ एवं रोपण विधियाँ	2017	---
51.	मार्गदर्शिका-साल वृक्षों की मृत्युदर को प्रभावित करने वाले कारकों का अध्ययन एवं उनके रोकथाम के उपाय	2017	TM
52.	मार्गदर्शिका-आर्थिक महत्व की प्रजातियों बीजा, धावड़ा एवं अचार मे होने वाले रोगों का समेकित प्रबंधन एवं तकनीक	2017	TM
53.	महुआ प्रशिक्षण एवं प्रदर्शन मार्गदर्शिका	2018	TM
54.	सलई वृक्ष में वैज्ञानिक विधि से टैपिंग तकनीक, सतत् विनाश विहीन विदोहन, प्राथमिक प्रसंस्करण एवं भंडारण विधि – मार्गदर्शिका	2018	TM
55.	पौधों की विक्रय दरें ।	2018	--
56.	मध्यप्रदेश में पाई जाने वाली प्रमुख गोंदों की विदोहन एवं विदोहनोत्तर तकनीक	2018	--

Brouchers

S.N.	Title	Year
1	अचार (बुकनेनिया लेन्जन)	2007
2	महुआ (मधुका लेटीफोलिया)	2007
3	बहेड़ा (टरमिनेलिया बेलेरिका)	2007
4	बांस (डेन्ड्रोकेलेमस स्ट्रिक्टस)	2007
5	बीजा (टेरोकार्पस मारसूपियम)	2007
6	सागौन (टेक्टोना ग्रेंडिस)	2007
7	बबूल (अकेशिया निलोटिका)	2007
8	खैर (अकेशिया कटेचू)	2007
9	खमैर (मेलाइना आरबोरिया)	2007
10	ऑवला पौधों का विनाश विहीन विदोहन एवं संरक्षण मार्गदर्शिका	2007
11	महुआ रासायनिक उर्वरकों के प्रयोग से महुआ फूल एवं फल की उत्पादकता में वृद्धि	2011
12	जन भागीदारी द्वारा अकाष्टीय वनोपजों का प्राकृतिक वन क्षेत्रों में सतत विदोहन एवं प्रबन्धन तकनीकी का विकास	2012
13	कुल्लू गोंद का सतत विदोहन, प्राथमिक प्रसंस्करण, श्रेणीकरण एवं विपणन	2013
14	धावड़ा गोंद का सतत विदोहन, प्राथमिक प्रसंस्करण, श्रेणीकरण एवं विपणन	2013
15	सलई गोंद का सतत विदोहन, प्राथमिक प्रसंस्करण, श्रेणीकरण एवं विपणन	2013
16	पलाश गोंद का सतत विदोहन, प्राथमिक प्रसंस्करण, श्रेणीकरण एवं विपणन	2013
17	वनौषधि विपणन सूचना विश्लेषण केन्द्र	2014
18	बॉस-बीज संग्रहण, भण्डारण, उपचारण एवं नर्सरी प्रबन्धन	2015
19	खमैर – बीज संग्रहण, भण्डारण, उपचारण एवं नर्सरी प्रबन्धन	2015
20	कुल्लू-बीज संग्रहण, भण्डारण, उपचारण एवं नर्सरी प्रबन्धन	2015
21	भिलवा – बीज एवं रोपणी तकनीक	2017
22	माहुल – बीज एवं रोपणी तकनीक	2017
23	मुण्डी – बीज एवं रोपणी तकनीक	2017
24	कुम्भी – बीज एवं रोपणी तकनीक	2017
25	मृदा नमूना एकत्रीकरण विधि	2017
26	अश्वगंधा – बीज एवं रोपणी तकनीक	2017
27	कालमेघ – बीज एवं रोपणी तकनीक	2017
28	सर्पगंधा – बीज एवं रोपणी तकनीक	2017
29	जैविक खाद एवं नीम खली वानिकी प्रजातियों के पौधों की वृद्धि में लाभदायक	2017

S.N.	Title	Year
30	कृषि वानिकी पद्धति के अंतर्गत गेहूँ के साथ क्लोनल यूकेलिप्टस रोपण : लागत एवं आय	2017
31	SFRI ENGLISH BROCHURE (About Institute)	2017
32	SFRI HINDI BROCHURE (About Institute)	2017
33	REGIONAL-CUM-FACILITATION CENTRE, CENTRAL REGION, JABALPUR (RCFC)	2017
34	क्षेत्रीय-सह-सुविधा केन्द्र मध्य क्षेत्र, जबलपुर (आर.सी.एफ.सी.)	2018
35	वृहत् स्तर पर पौधा रोपण कैसे करें	2018
36	कलिहारी (<i>Gloriosa superba</i>)	2019
37	गुग्गल (<i>Commiphora wightii</i>)	2019
38	अश्वगंधा (<i>Withania somnifera</i>)	2019
39	भिलवा (<i>Semecarpus anacardium</i>)	2019
40	चिरायता (<i>Swertia chirata</i>)	2019
41	सलई (<i>Boswellia serrata</i>)	2019
42	चित्रक (<i>Plumbago zeylanica</i>)	2019
43	चनाहुर (<i>Marsdenia tenacissima</i>)	2019
44	सफेद मुसली (<i>Chlorophytum borivilianum</i>)	2019
45	कुचला (<i>Strychnos nux-vomica</i>)	2019
46	बायविडंग (<i>Embelia ribes</i>)	2019
47	गिलोय % <i>Tinospora cordifolia</i>)	2019
48	हरा – बीज एवं रोपणी तकनीक	2020
49	बहेड़ा – बीज एवं रोपणी तकनीक	2020
50	रीठा – बीज एवं रोपणी तकनीक	2020
51	हल्दू – बीज एवं रोपणी तकनीक	2020
52	खुरासानी इमली – बीज एवं रोपणी तकनीक	2020
53	सतावर (<i>Asparagus racemosus</i>)	2020
54	निशोथ % <i>Operculina turpethum</i>)	2020
55	शंखपुष्पी % <i>Evolvulus alsinoides</i>)	2020
56	तुलसी % <i>Ocimum sanctum</i>)	2020
57	स्टीविया % <i>Stevia rebaudiana</i>)	2020
58	कालमेघ (<i>Andrographis paniculata</i>)	2020
59	अग्निमंथ (<i>Premna Integrifolia</i>)	2020
60	सहजन (<i>Moringa oleifera</i>)	2020
61	रक्त चंदन (<i>Pterocarpus santalinus</i>)	2020
62	मलकांगनी (<i>Celastrus paniculatus</i>)	2020
63	केवाच (<i>Mucuna pruriens</i>)	2020

S.N.	Title	Year
64	मण्डूकपर्णी (<i>Centella asiatica</i>)	2020
65	गोखरू (<i>Tribulus terrestris</i>)	2020
66	बावची (<i>Psoralea corylifolia</i>)	2020
67	सदाबहार (<i>Catharanthus roseus</i>)	2020
68	चंद्रसूर (<i>Lepidium Sativum</i>)	2020
69	अनंतमूल (<i>Hemidesmus indicus</i>)	2020
70	बेल (<i>Aegle marmelos</i>)	2021
71	खस (<i>Vetiveria zizanioides</i>)	2021
72	गुड़मार (<i>Gymnema sylvestre</i>)	2021
73	अशोक (<i>Saraca asoca</i>)	2021
74	ब्राह्मी (<i>Bacopa monnieri</i>)	2021
75	ईसबगोल (<i>Plantago ovata</i>)	2021
76	सर्पगंधा (<i>Rauvolfia serpentina</i>)	2021
77	बच (<i>Acorus calamus</i>)	2021
78	उच्च गुणवत्ता के अचार फलों के संग्रहण हेतु अवधि निर्धारण एवं विनाश विहीन विदोहन	2021
79	श्योनाक (<i>Oroxylum indicum</i>)	2021
80	सिस्सू, रूट ट्रेनर में उच्च गुणवत्ता के पौध तैयारी (डलवर्जिया सिरसू)	2024
81	बहेड़ा, रूट ट्रेनर में उच्च गुणवत्ता के पौध तैयारी (टरमेनेलिया बेलेरिका)	2024
82	सफेद सिरस, रूट ट्रेनर में उच्च गुणवत्ता के पौध तैयारी (अल्बीजिया प्रोसेरा)	2024
83	सगौन, रूट ट्रेनर में उच्च गुणवत्ता के पौध तैयारी (टेक्टोना ग्रैन्डिस)	2024
84	हरा, रूट ट्रेनर में उच्च गुणवत्ता के पौध तैयारी (टरमेनेलिया चिबुला)	2024
86	आँवला, रूट ट्रेनर में उच्च गुणवत्ता के पौध तैयारी (एम्बिलिका ऑफीसिनेलिस)	2024
87	शीशम, रूट ट्रेनर में उच्च गुणवत्ता के पौध तैयारी (डलवर्जिया लेटीफोलिया)	2024
88	काला सिरस, रूट ट्रेनर में उच्च गुणवत्ता के पौध तैयारी (अल्बीजिया लेबेक)	2024
89	करंज, रूट ट्रेनर में उच्च गुणवत्ता के पौध तैयारी (पोंगेमिया पिन्नेटा)	2024
90	चिरोल, रूट ट्रेनर में उच्च गुणवत्ता के पौध तैयारी	2024

2.3.7 LIBRARY AND INFORMATION CENTRE

Mandate

SFRI library and information center is a prominent library of the state of Madhya Pradesh in the field of forestry. It houses books, reports, Indian Forest Records, Working Plans, Working Schemes, Forest resource surveys and Sanctuary Plans. Apart from the research staff of the Institute, forest officers, scientists and technical staff make use of the library facilities. Students, research scholars from various institutes and universities also visit the library regularly.

The library and information centre maintains literature on forestry and allied subjects. It has books on environment, silviculture, forest protection, mensuration, management, marketing, utilization, social forestry, biodiversity, ecology, botany, tissue culture, tree improvement, law, medicinal plants, wildlife, seed science and computer science, etc.

Following activities were undertaken during the year -

S. No.	Works
1.	Circulation of books, working plans, reports and other reading materials
2.	Correspondence with users for return of books
3.	Provide CAS to users
4.	Classification of books and arrangement of classified books
5.	Preparation of book card slips and pasting of book pockets on books

2.3.8 COMPUTER AND INFORMATION TECHNOLOGY

Mandate

1. Application of computers in forestry.
2. Design, development and implementation of computer based information system.

Objectives

1. To design and develop the website of the institute.
2. To provide logistics and maintenance of all the computer peripherals of the institute.
3. To provide Internet Facilities in the Institute without interruption at 50 Mbps high speed.
4. To maintain CCTV Cameras in the Institute and Main Gate for security purpose.
5. Maintenance of EPABX facilities (Intercom) in the Institute.
6. Maintenance of Biometrics for attendance of all employees of the Institute.
7. To maintenance video conferences.

Information Technology Centre

Information Technology centre has a number of computer systems connected to each other via Local Area Network (LAN) and with Domain server. The computer systems are shared by a router to access World Wide Web information and Wi-Fi, which is also connected by local area network (LAN).

Activities carried out during the year

1. Presentations of powerpoint for Workshops, Meetings, Seminars and Trainings, etc. has been done successfully through out the year.
2. Maintained online meetings & conferences through video system.
3. Website of the institute has been upgraded time to time.
4. Provided internet surfing and e-mail facilities to users through LAN and Internet.
5. Maintained all computer peripherals viz., computer systems, printers, scanners, LAN, UPS etc.

3. PUBLICATIONS AND PRESENTATION OF RESEARCH PAPERS/ ARTICLES BY SCIENTISTS / RESEARCH PERSONNEL'S OF THE INSTITUTE

(April 2025 to March 2026)

Papers published in Journals (National and International)

S.N.	Name of Journal	Title of paper	Author(s)	Vol. No.
1.	International Journal of Biomedical Research Science (IJBSRS)	<i>In vitro</i> Clonal Propagation of Medicinally Valuable sp. <i>Centella asiatica</i> (L.) for Conservation and Sustainable Utilization	Shailendra Singh Yadav, Kavita Verma, Shivani Dubey, Anuradha Dave & Pradeep Vasudeva	ISSN: 3107-8745 Vol 02 No (1) Jan-Feb-Mar-Apr 2026
2.	International Journal of Innovative Research and Technology	Optimizing in vitro propagation of schizostachyum dulloo (gamble) r.b. majumdar using plant growth regulators and sterilization protocols	Shailendra Singh Yadav, Anya Shrivastava, Manisha Rathi, Sandeep Fellows & Pradeep Vasudeva	Accepted 2026
3.	Journal of Wildlife Science	Mortality investigations in wild Asiatic elephants (<i>Elephas maximus</i>) due to infected Kodo millet consumption in Bandhavgarh Tiger Reserve, Madhya Pradesh- A case study.	Ambade, V. K. N., Sen, S., Krishnamoorthy, L., Pandey, R. K., Dubey, A. K., Sahay, A., Varma, P. K., Sarothiya, R., Jawre, S., Rajput, N., Majumdar, A., Karmarkar, T., Sudini, H., Mathesh, K., Shrivastav, S., Gupta, N. & Nigam, P.	2025: Online Early Publication, 01-08. https://doi.org/10.63033/JWLS.CRPW6521
4.	Indonesian Journal of Applied Environmental Studies	Living with Leopard-Utopia or reality! Study on perception of local people towards coexistence with Leopard (<i>Panthera pardus fusca</i>) in and around the vicinity of the urban areas of Central India.	Majumdar, A., Suryan, T., Lodhi, B., Tirkey, A. S., Patil, A. K., Tripathi, R. M., Shukla, S., Thakur, J. S., Jaiswal, A. K., & Krishna, J. S.	2025: 6(1), 7–19.
5.	Raksha Technical Review	Advanced electronics and integrated communication engineering application for effective wildlife conservation in Central India.	Roy, S., Shrivastava, A. B., Jawre, S., Majumdar, A., Vasudeva, P., & Rakshit, S. (2025).	2025: 14(2), 57–63.
6.	Asian Journal of Extension Education	Growth performance of commercially viable major bamboo species in Central India.	Majumdar, A., Lodhi, B., Sen, I., & Agnihotri, A.	2024: 42, 12–22.
7.	Journal of Non-Timber Forest Products,	Entomofaunal diversity associated with the lac insect <i>Kerria lacca</i> (Kerr) in Maharashtra, India.	Lodhi, B., Majumdar, A. and Mohanasundaram, A.	2025: 32(1), pp.32-37.
8.	Agriculture Research Journal	Productivity based performance and life cycle of lac insect samples of Maharashtra.	Lodhi B, Majumder A, Thakur R, Jain N and Aarmo BS	2025: 62 (4) pp 469-476.
9.	Journal of Tropical Forestry	Encrustation Thickness of Lac Insect in Some Lac Growing Districts of Maharashtra,	Lodhi B., Majumdar A., Aarmo B.S. and Vasudeva P. (In press). Accepted	2026
10.	11 th International Herbal Fair, Bhopal; Smarika	मध्य प्रदेश के प्रमुख लाख उत्पादक जिलों में स्थानीय समुदायों की लाख उत्पादन पर निर्भरता का आकलन	Majumder A., Lodhi B., Aarmo BS and Vasudeva P.	2025: 110-115.
11.	Journal of Tropical Forestry	Assessment of Floral Diversity in Bagdara Wildlife Sanctuary, Madhya Pradesh, India	Anjana Rajput, Shalini Jaiswal and Ruchira Dakhore	July-Dec., 2024, Vol. 40 (3&4) Page 134-151

S.N.	Name of Journal	Title of paper	Author(s)	Vol. No.
12.	Journal of Tropical Forestry	Diversity of Birds of Bagdara Wildlife Sanctuary, Singrauli, Madhya Pradesh	Anjana Rajput, Ruchira Dakhore and Shalini Jaiswal	Jan.-June, 2025, Vol. 41 (1&2) Page 38-49
13.	E-publication	Crop raiding by wild animals and their compensation by Government	Anjana Rajput	ETV bharat.com 20.09.2025
14.	Journal of Tropical Forestry	Landscape-Scale Tiger Occupancy in Madhya Pradesh: Patterns, Drivers and Conservation Implications from AITE-2022	Dr. Mayank Makrand Verma, Satyadeep Nag, Sandeep Fellows, Pradeep Vasudeva, Amitabh Agnihotri	Vol-41, July-Dec., 2026/ No. 3 & 4

Paper published/presented in seminars/ symposiums/ workshops/webinar

S. N.	Name of seminars/ symposiums/ workshops/webinar	Title of the paper	Author(s)	Vol. No./ Pg. No.
1.	The 6th Central Indian Landscape Symposium CILS 6	Key Drivers of Elephant Presence in Sanjay Dubri Tiger Reserve, Madhya Pradesh	Dr. Mayank Makrand Verma, Varun R, Satyadeep Nag	Sixth Central Indian Landscape Symposium (CILS6) Olive Resorts, Sillari Pench, Maharashtra 7-10 Jan., 2025
2.	"Smarika" International Herbal Fare, Bhopal. Dec.2025	धार जिले में क्षेत्रीय आजीविका का साधन अफ्रीकी बाओबाब खुरासानी इमली (एडेनसोनिया डिजिटटा) का संरक्षण	डा. उदय होमकर एवं शुभी सोनी	49-51
3.	Souvenir, National Buyer-Seller Meets. RCFC-CR, JNKVV Jabalpur	दुर्लभ औषधीय संपदा: श्योनाक (<i>Oroxylum indicum</i>): प्रसंस्करण एवं मूल्य संवर्धन	डा. उदय होमकर	58-59
4.	Abstract Book: International Seminar on New Horizons In Plant Sciences "NHPS-2026" Department of Botany University of Kerala, Kariavattom Kerala	Nursery technique of some RET species with special reference to Madhya Pradesh.	Uday Homkar & Pradeep Vasudeva	14
5.	राजभाषा वैज्ञानिक कार्यशाला, प्रोसीडिंग ऑफ जूलॉजिकल सर्वे ऑफ इंडिया, जबलपुर	मध्य प्रदेश के जबलपुर और इंदौर के शहरी क्षेत्रों में तेंदुए की उपस्थिति, संघर्ष क्षेत्रों की पहचान और मानव तेंदुए के सहस्तित्व पर उपयुक्त उपायों के ऊपर सुझाव	Majumder A.	2025
6.	द्वितीय राजभाषा वैज्ञानिक कार्यशाला, प्रोसीडिंग ऑफ जूलॉजिकल सर्वे ऑफ इंडिया	लाख कीट पारिस्थितिकी तंत्र में विभिन्न कीट प्रजातियों का अध्ययन	Majumder A., Lodhi B., Aarmo BS and Vasudeva P.	2025
7.	राष्ट्रीय हिंदी विज्ञान सम्मलेन प्रोसीडिंग ऑफ बुंदेलखंड यूनिवर्सिटी, झाँसी (विज्ञान भारती)	मध्य प्रदेश एवं महाराष्ट्र के लाख उत्पादक जिलों में लाख कीट पारिस्थितिकी तंत्र में विभिन्न कीट प्रजातियों का अध्ययन	Lodhi B., Majumder A., Aarmo BS and Vasudeva P.	2026

Paper published in books/souvenirs

S. No.	Name of the edited books/ souvenirs	Title of the paper	Author(s)	Vol. No. / Pg. No.
1.	Journal of Tropical Forestry	Impact of Forest fires on soil properties : A review	Dr. Pratiksha Chaturvedi, Satyendra Thakur, Dinesh Kumar Kuldeep and Ajay Lavishkar	Vol. 41 No.1 & 2
2.	Journal of Tropical Forestry	Preventing the flames : A review of forest fire mitigation techniques	Dr. Pratiksha Chaturvedi, Satyendra Thakur, Dinesh Kumar Kuldeep and Ajay Lavishkar	Vol. 41 No.1 & 2
3.	वन-धन व्यापार	गोरखमुंडी (<i>Sphaeranthus indicus</i>)	डॉ. जी. एस. मिश्रा, राजेश बर्मन एवं आलोक रैकवार	Year 2025/Vol. 25, Issue (2&3) pp: 3-6
4.	वन-धन व्यापार	चयनित महत्वपूर्ण औषधीय पौधों का पारंपरिक उपयोग: परिचय, उपयोगी भाग एवं औषधीय महत्व	डॉ. जी. एस. मिश्रा, राजेश बर्मन एवं आलोक रैकवार	Year 2025/Vol. 25, Issue (4) pp: 3-6
5.	स्मारिका 11वें अंतर्राष्ट्रीय वन मेला, 2025	Impact of NTFPs on Rural Livelihoods : A case study of Balaghat District	Dr. G.S. Mishra, Rajesh Barman, Alok Raikwar, Dr. Pratibha Bhatnagar, Vijay Bahadur Singh	Year 2025
6.	शोध सारांश द्वितीय राजभाषा वैज्ञानिक कार्यशाला, प्रोसीडिंग ऑफ जूलॉजिकल सर्वे ऑफ इंडिया	लाख कीट पारिस्थितिकी तंत्र में विभिन्न कीट प्रजातियों का अध्ययन,	Majumder A., Lodhi B., Aarmo BS and Vasudeva P.	2025
7.	शोध सारांश राष्ट्रीय हिंदी विज्ञान सम्मलेन प्रोसीडिंग ऑफ बुंदेलखंड यूनिवर्सिटी, झाँसी (विज्ञान भारती)	मध्य प्रदेश एवं महाराष्ट्र के लाख उत्पादक जिलों में लाख कीट पारिस्थितिकी तंत्र में विभिन्न कीट प्रजातियों का अध्ययन	Lodhi B., Majumder A., Aarmo BS and Vasudeva P.	2026

Publication of technical bulletins / brochures

S. No.	Name of technical bulletins/ brochures	Authors	Bulletin/ Brochure No.	No. of pages
1.	उन्नत तकनीक से सेमियालाता के पौधे पर कुसमी लाख उत्पादन की प्रक्रिया: in Hindi	Dr. Aniruddha Majumdar		4
2.	सेमिअलता वर कुसमी लाख उत्पदनाची प्रक्रिया: in Marathi	Dr. Aniruddha Majumdar		4

4. BUDGET / FINANCE

Funding Sources

- 1 Grant-in-aid under non-plan budget of the Govt. of Madhya Pradesh, Forest Department
- 2 Project based external funding from Govt./Semi Govt./Non-govt. Organizations and Private Donors.
- 3 Special assistance received from miscellaneous funding agencies.
- 4 Revenue from various sources of the institute.

Financial support and expenditure 2025-26

Budget head	Opening balance (Rs.in lakhs)	Budget received during the year (Rs. in lakhs)	Total Amount (Rs. In lakhs)	Expenditure (Rs. in lakhs)	Remark
10-2406 Non-Plan (Grant-in-aid)	50,26,000	12,00,00,000	12,50,26,000	9,00,64,743	Budget Amt. 2,58,00,000/- Surrendered to MP. Govt. by Challan
Deposit Works (Sponsored projects)	4,61,10,478	2,40,77,489	7,01,87,967	2,69,70,323	
Total Rs.	5,11,36,478	14,40,77,489	19,52,13,967	11,70,35,066	

Details of sponsored projects

Various projects have been funded by Govt./Semi. Govt./Non. and Private Agencies from time to time. Such on-going and completed projects during the year 2025-26 are given below:

S. No.	Project Name & I.D.No.	Sponsoring agency	Balance available in the beginning of the year	Amount received in the year	Total Amount	Total Expenditure (1.4.25 to 31.3.26) in Rs.
On-going Projects						
1	मध्यप्रदेश के विभिन्न कृषि-जलवायु क्षेत्रों में कृषि-वानिकी मॉडल की सफलता एवं असफलता के कारकों की पहचान। FD/SE/P/E/23-24/09	APCCF R&E Lokvaniki M.P Bhopal	31,17,522	-	31,17,522	5,88,880
2	Multilocal cum provenance trials of important forestry and bamboo species in different forest divisions of Madhya Pradesh. FD/BT/P/E/22-23/07	APCCF R&E Lokvaniki M.P Bhopal	27,35,291	-	27,35,291	4,15,926
3	Standardization of propagation technology production of quality seedling of <i>Boswellia serrata</i> , <i>Buchanania lanzan</i> and <i>Shorea robusta</i> . FD/FP/P/E/24-25/06	APCCF R&E Lokvaniki M.P Bhopal	15,61,485	11,04,000	26,65,485	16,37,684
4	Identification of seed stands for establishment of Seed Production Area of Anjan, Aonla, Bija, Haldu and Khamer. FD/FP/P/E/25-26/12	APCCF R&E Lokvaniki M.P Bhopal	-	6,50,000	6,50,000	98,023
5	Identification of seed stands for establishment of Seed Production Area of Teak. FD/FP/P/E/25-26/13	APCCF R&E Lokvaniki M.P Bhopal	-	5,00,000	5,00,000	4,233

S. No.	Project Name & I.D.No.	Sponsoring agency	Balance available in the beginning of the year	Amount received in the year	Total Amount	Total Expenditure (1.4.25 to 31.3.26) in Rs.
5	विभिन्न परियोजनाओं अंतर्गत किये गये वृक्षारोपण का अनुश्रवण एवं मूल्यांकन। M&E/PIE/22-23/01	PCCF, (Development) M.P. Bhopal	31,56,337	-	31,56,337	45,74,651
6	Comparative Study of MP Teak Timber and Imported Teak Timber. FD/FP/PIE/24-25/07	PCCF, (Development) M.P. Bhopal	2,68,479	4,17,000	6,85,479	3,88,551
7	Study project on wild elephant habitat use and mitigation measures to minimize man-elephant conflict: With special reference to Sanjay-Bandhavgarh habitat linkage of central highlands Landscape. WL/WM/PIE/22-23/06	PCCF (CAMPA) Bhopal	18,61,535	-	18,61,535	10,46,745
8	Training on concept of soil moisture conservation and its Importance in Forestry पर तीन दिवसीय प्रशिक्षण कार्यक्रम के आयोजन बावत्। FD/FM/PIE/24-25/01	PCCF (CAMPA) Bhopal	21,23,271	10,00,000	31,23,271	4,91,164
9	Estimation of Prey Population, abundance and dynamics in M.P. WD/AED/PIE/24-25/08	PCCF (CAMPA) Bhopal	18,55,224	19,43,960	37,99,184	19,20,772
	Equipment purchasing Work DD/PIE/25-26/15	PCCF (CAMPA) Bhopal	-	22,60,000	22,60,000	10,09,421
10	Strengthening of Market Analysis centers for technical support in Marketing of Minor Forest Produce in Madhya Pradesh. FD/FU/PIE/23-24/06	म.प्र. लघु वनोपज (व्यापार एवं विकास) सहकारी संघ मर्यादित भोपाल	(12,475)	5,00,000	4,87,525	3,14,709
11	Collection and Ex-situ conservation of medicinal and aromatic plants in Gene-bank of SFRI, Jabalpur and their management. FD/CON/PIE/23-24/08	Madhya Pradesh State Biodiversity Board	3,70,590	8,00,000	11,70,590	3,92,591
12	Conservation of Boabab Tree (<i>Adenonia digitata</i>) through development and extension of its nursery, plantation and conservation techniques in Dhar district of Madhya Pradesh. FD/CON/PIE/23-24/12	Madhya Pradesh State Biodiversity Board	2,64,744	8,00,000	10,64,744	6,31,889
13	Ecology of Indian Wolf (<i>Canis lupus pallipes</i>) and its conservation implication in Nauradehi Wildlife Division Madhya Pradesh. WD/AED/PIE/23-24/01	PCCF, Wildlife, M.P, Bhopal	12,01,376	13,75,500	25,76,876	13,17,945
14	Network project on conservation of Lac insect genetic resources. SEM/PIE/14-15-05	IINRG Ranchi (ICAR)	9,031	9,23,000	9,32,031	9,32,031

S. No.	Project Name & I.D.No.	Sponsoring agency	Balance available in the beginning of the year	Amount received in the year	Total Amount	Total Expenditure (1.4.25 to 31.3.26) in Rs.
15	Hands on Exercise on lac cultivation in Bichhiya village of Umaria Forest Division of M.P. WD/AED/P/E/23-24/07	संचालक, जिला लघुवनोपज सहकारी यूनियन मर्यादित उमरिया म.प्र.	88,282	-	88,282	71,151
16	फॉरेस्ट फायर प्रिवेंशन एण्ड मैनेजमेंट स्कीम (2nd Phase) Allot F.Y. 2025-26	PCCF, Green India Mission, Bhopal	30,00,000	-	30,00,000	-
17	Model Ravine Reclamation Plan Through Plantation in Ravin lands of Morena Dist. FD/BI/P/E/25-26/05	PCCF, Green India Mission, Bhopal	9,85,000	-	9,85,000	1,77,050
18	Standardization of species root trainer sizes and potting mixes of five important wild medicinal tree species. FD/FP/P/E/25-26/06	PCCF, Green India Mission, Bhopal	20,94,000	-	20,94,000	7,77,666
19	Periodic Observation in Preservation Plots Established in different Forest Type of Madhya Pradesh. FD/CON/P/E/25-26/14	PCCF, Green India Mission, Bhopal	-	27,50,000	27,50,000	-
20	अनुसंधान एवं विस्तार रोपणियों का श्रेणीकरण, मूल्यांकन एवं मान्यता का आंकलन FD/CON/P/E/25-26/17	PCCF, Green India Mission, Bhopal	-	9,36,000	9,36,000	-
21	Molecular characterization, Biochemical profiling and in-vitro multiplication of elite genotypes of Boswellia serrata (Traina & Planch) - with special reference to Madhya Pradesh FD/CON/P/E/24-25/09	DBT, Delhi	-	4,25,560	4,25,560	3,08,966
22	सूक्ष्म प्रबंध योजना निर्माण हेतु वन कर्मचारियों एवं समिति सदस्यों के प्रशिक्षण हेतु FD/FM/P/E/25-26/01	APCCF (JFM) Bhopal M.P.	51,75,000	-	51,75,000	17,90,882
23	A Scientific Study on Ecological Impacts and Sustainability of Aerial Firefighting in Forests of South Panna Division. WD/WM/P/E/2025-26/08	वन विकास अभिकरण, दक्षिण वन मण्डल, पन्ना म.प्र.	-	3,97,000	3,97,000	84,708
24	Assessment of floral and faunal diversity and preparation of wildlife passage plan on the proposed construction of 3rd railway line for the section of Itarsi - Nagpur under Narmadapuram and Betul Districts. WD/AED/P/E/25-26/10	Deputy Chief engineer (Const.) Betul, Nagpur Central Railway and Nagpur	-	27,69,000	27,69,000	19,00,816
25	Criteria for Laying Fire Lines and Their Effective Width. FD/BI/P/E/25-26/07	APCCF, Conservation, Bhopal	2,22,000	97,000	3,19,000	2,23,015
26	Developin A New Danger Rating System. FD/FU/P/E/25-26/04	APCCF, Conservation, Bhopal	1,65,000	72,000	2,37,000	2,44,849

S. No.	Project Name & I.D.No.	Sponsoring agency	Balance available in the beginning of the year	Amount received in the year	Total Amount	Total Expenditure (1.4.25 to 31.3.26) in Rs.
27	Assessment of Impact of Fire on Vegetation, Invasive Plants and Forest Fauna of M.P. WD/HED/P/E/25-26/02	APCCF, Conservation, Bhopal	4,26,000	1,88,000	6,14,000	7,80,134
28	जंगल की आग का मृदा संरचना एवं मृदा नमी पर प्रभाव FD/FM/P/E/25-26/03	APCCF, Conservation, Bhopal	1,83,000	80,000	2,63,000	1,85,373
29	वन गतिविधियों के मूल्यांकन में संयुक्त वन प्रबंधन समितियों की भूमिका का विप्लेक्षण विषेय रूप से वन अग्नि प्रबंधन पर ध्यान केंद्रित करते हुए FD/SE/P/E/25-26/09	APCCF, Conservation, Bhopal	1,44,000	63,000	2,07,000	2,86,211
30	Assessment of floral and faunal bio-diversities and preparation of suitable wildlife Conservation Plan in respect to construction of Sitapur - Hanumana Micro Irrigation Project WD/AED/P/E/2025-26/11	Vensor, Construc tion Company Limited Bhopal	-	25,06,320	25,06,320	19,51,785
31	AITE : अखिल भारतीय बाघ आंकलन वर्ष 2026 के अंतर्गत कम्प्यूटर आपरेटरों की ट्रेनिंग आयोजित करने हेतु WD/AED/P/E/2025-26/18	Director, Panna Tiger Reserve M.P.	-	8,50,000	8,50,000	77,704
Total Rs.		3,09,94,692	2,34,07,340	5,44,02,032	2,46,25,525	3,09,94,692
1	Maintenance of monitoring and evaluation facilities and data base of predators prey in Madhya Pradesh WL/RA/32	State Forest Research Institute Jabalpur	67,64,602	-	67,64,602	3,03,280
2	Preparation of quality planting material of RET and other important species. BD/P/II/21-22/07		5,28,420	-	5,28,420	1,49,291
3	Maintenance and enrichment of SFRI Bamboosetum FC/P/II/23-24/03		6,90,737	-	6,90,737	1,22,088
4	Periodic observations in preservation plots established in different forest types of Madhya Pradesh FC/P/II/23-24/04		3,70,000	-	3,70,000	24,240
5	Maintenance of Forest Herbarium, SFRI Jabalpur Pr. I.D. RA/II/P/06		(9,250)	-	(9,250)	-
6	Provenance trial of Litsea glutinosa. TI/RA/II/30		-	-	-	-
7	Maintenance of clonal germplasm of Mahua (Madhuca latifolia) TI/RA/II/28		-	-	-	-
8	Periodic measurement of sample plots laid out in different forest areas of Madhya Pradesh. MEN/RA/01/08		(9,000)	-	(9,000)	9,010

S. No.	Project Name & I.D.No.	Sponsoring agency	Balance available in the beginning of the year	Amount received in the year	Total Amount	Total Expenditure (1.4.25 to 31.3.26) in Rs.
9	मृदा नमूनों का परीक्षण करना SIL/RA/II/23		4,40,430	-	4,40,430	-
10	Organization of Hand on training Programme and Internship Biotechnology for University and College Students under Education Policy FD/BI/PIE/25-26/16		-	6,70,149	6,70,149	3,78,816
	Total Rs.		87,75,939	6,70,149	94,46,088	9,86,725
Completed Projects (2025-26)						
1	Genetic diversity assessment using molecular markers for elite identification of existing candidate plus trees of Teak (Tectona grandis) Madhya pradesh. GEN/PIE/21-22/11	APCCF R&E Lokvaniki M.P. Bhopal	4,83,242	-	4,83,242	1,38,151
2	ग्रीन इंडिया मिशन द्वारा विभिन्न वन विकास अभिकरणों में वर्ष 2019, 2020, 2021, 2022 एवं 2023 में कॉपोनेन्ट A के विभिन्न सब मिशन अंतर्गत वृक्षारोपण कार्य एवं कॉपोनेन्ट B सपोर्ट एक्टिविटी के कार्य का अनुश्रवण मूल्यांकन एवं प्रोजेक्ट इम्पेक्ट असेसमेंट (पी.आई.ए.) किये जाने के संबंध में। FD/M&E/PIE/24-25/10	PCCF, Green India Mission, Bhopal	58,56,605	-	58,56,605	12,19,922
	Total Rs.		63,39,847	-	63,39,847	13,58,073
	Gross Total Rs.		4,61,10,478	2,40,77,489	7,01,87,967	2,69,70,323

INCOME (Revolving Funds for the year 2025-2026)		
S.No.	HEAD	Income (In lakhs)
1	Gate Entry Fee	11,80,152
2	Guest House Charges	10,45,550
3	House Rent & Water Charges	12,67,423
4	Misc. Receipts	92,019
5	Plant Supply	1,56,820
6	Sale of Tender Form	14,000
7	Training Fee	5,58,025
8	Institutional Charge	21,68,408
9	Book Sale	740
10	POL Charges Recovery from employees	11,750
11	Recovery from Fellowship to Scholar's	20,158
12	RTI Receipt	252
13	Completed Project Balance Received	1,10,48,814
	Interest Received :-	
14	Interest on FDR	-
15	Saving Interest	11,89,782
	Grand Total	1,87,53,893

EXPENDITURE (Revolving Funds) for the year 2025-2026		
S.No.	HEAD	Expenditure (In Rs.)
1	Daily Wages	12,60,262
2	Repair & Maintenance	31,59,870
3	Travelling Expenditure	14,209
4	Electricity	1,95,252
5	Office Expenses	87,250
6	POL Expenses	3,500
7	Stationary Expenses	28,969
8	Printing Expenses	6,964
9	Misc. Expenses	6
	Gross Total	47,56,282

Income (Reserve Funds) for the year 2025-26		
	Details	Income (In Rs.)
1	RTI Receipt	1,256
2	Institutional Charges	21,43,408
3	Saving Interest	1,00,662
4	Misc. Receipt	8,002
	Total Rs.	22,53,328

Expenditure (Reserve Fund) for the year 2025-26		
1	Misc. Expenditure	0.00
2	Bank Charge	0.00
	Total Rs.	0.00

Details of Accounts Financial Status as on 31st March, 2026				
S.No.	Details	Cash in Bank	F.D.R.	Total (In Rs.)
1	Revolving Fund (Indian Bank)	3,00,52,068	3,00,00,000	6,00,52,068
2	Grant-In-aid	91,61,257	-	91,61,257
3	Deposit Work (Project Funds)	1,37,37,923	3,08,00,000	4,45,37,923
4	Sanchit Nidhi	58,49,162	5,50,00,000	6,08,49,162
	Total Rs.	5,88,00,410	11,58,00,000	17,46,00,410

5. ESTABLISHMENT

Postings, Transfers and Retirement (2025-2026)

Postings :

S.No.	Name	Designation	Date of Joining
1	Shri Ravi Kumar Kushwaha	Forest Ranger	29.07.2025
2	Ku. Dilshad Masih	Tech. Asstt.	11.03.2025

Retirement :

S.No.	Name	Designation	Date of Retirement
1	Shri Rajendra Prasad Kahar	Driver	30.04.2025
2	Dr. Shailendra Kumar Tiwari	Scientist-E	31.05.2025
3	Dr. Archana Sharma	Scientist-E	31.01.2026

Temporary project staff engaged during the year (April 2025 to March 2026)

S. No.	Name	Designation	Project under which appointed	Period	
				From	To
1.	Balram Lodhi	SRF	Network Project on conservation of Lac insect genetic resources.	Apr. 2025	Mar. 2026
2.	Bharat Singh Armo	Field Asstt.		Apr. 2025	Mar. 2026
3.	Pratap Rao Vagh	Project Asstt.	Maintenance of Monitoring and Evaluation Facilities and Data Base of Predators Prey in M.P.	Apr. 2025	Mar. 2026
4.	Shalini Jaiswal	JRF	Assessment of Impact of Fire on Vegetation, Invasive Plants and Forest Fauna of M.P.	May 2025	Feb. 2026
5.	Syed Tanveer Abbas Rizvi	JRF		May 2025	Feb. 2026
6.	Ashad Hussain	Project Asstt.	Estimate of Prey Population, abundance and dynamics in M.P.	Apr. 2025	Dec. 2026
7.	Abhilasha Barman	Comp. Opt.		Apr. 2025	Dec. 2026
8.	Maulik Pandey	JRF		Apr. 2025	Dec. 2026
9.	Shreya Bose	JRF		Apr. 2025	Dec. 2025
10.	Sant Kumar	Project Asstt.		Apr. 2025	Dec. 2026
11.	Jashandeep Singh	Field Asstt.	Ecology of Indian Wolf (<i>Canis lupus pallipes</i>) and its conservation implication in Nauradehi Wildlife Division, Madhya Pradesh	Apr. 2025	Jul. 2026
12.	Deepti Sonawane	JRF		Apr. 2025	Jul. 2026
13.	Arghya Kusum Das	JRF		Jun. 2025	Jul. 2026
14.	Shubhendra Mishra	JRF		Apr. 2025	Jun. 2025
15.	Ayushi Patel	JRF	Assessment of floral and faunal bio-diversities and preparation of suitable Wildlife Conservation Plan in respect to construction of Sitapur-Hanumana Micro Irrigation Project.	Jul. 2025	Mar.2026
16.	Piyusha Vishwas	JRF		Jul. 2025	Mar.2026
17.	Suryansh Dwivedi	Project Asstt.		Jul. 2025	Dec. 2025
18.	Pooja Yuvnati	JRF		Jul. 2025	Dec. 2025
19.	Dr. Anil Ku. Kori	JRF		Jul. 2025	Dec. 2025
20.	Kosturi Sen	Project Asstt.	Assessment of floral and faunal diversity and preparation of wildlife passage plan on the proposed construction of 3rd railway line for the section of Itarsi-Nagpur under Narmadapuram & Betul Districts.	Jul. 2025	Dec. 2025
21.	Ayushman Singh Rajput	JRF		Jul. 2025	Feb. 2026

S. No.	Name	Designation	Project under which appointed	Period	
				From	To
22.	Shubham Jain	Project Asstt.	Identification of seed stands for Seed Production Area of Teak.	Dec. 2025	Nov. 2026
23.		Comp. Asstt.	Standardization of propoagation technology for production of quality seedling of <i>Boswellia sarata</i> , <i>Buchania lanzan</i> & <i>Shorea robusta</i> .	Oct. 2024	Nov. 2025
24.	Akash Shukla	JRF		Feb. 2025	Jan. 2026
25.	Shailendra Nema	JRF		Standardization of species specific root trainer sizes and potting mixes of five important wild medicinal tree species.	Jul. 2025
26.	Manish Kumar Warkade	JRF	Nov. 2025		Oct. 2026
27.	Bhoopendra Agrawal	JRF	Identification of seed stands for establishment of Seed Production Area of Anjan, Aonla, Bija, Haldu and Khamer	Dec. 2025	Nov. 2026
28.	Santosh Kumar Bhadoriya	JRF	अनुसंधान एवं विस्तार रोपणियों का श्रेणीकरण, मूल्यांकन एवं मान्यता का आँकलन।	Mar. 2026	Dec. 2026
29.	Suryakant Choubey	FA	Study project on wild elephant habitat use and mitigation measures to minimise man-elephant conflict: With special reference to Sanjay-Bandhavgarh habitat linkage of the central highlands landscape.	Apr. 2025	Dec. 2026
30.	Satyadeep Nag	SRF		Apr. 2025	Dec. 2026
31.	Harshita Prajapati	JRF		Apr. 2025	Sep. 2025
32.	Anuradha Haldkar	JRF	A Scientific Study on Ecological Impacts and Sustainability of Aerial Firefighting in Forests of South Panna Division.	Feb. 2026	Jun. 2026
33.	Priya Chouksey	FA		Feb. 2026	Jun. 2026
34.	Shailendra Yadav	RA-III	Organization of hands on training Education Policy.	Jun. 2025	Jun. 2026
35.	Sonal Chaturvedi	JRF	वन विभाग द्वारा विभिन्न योजनाओं के अंतर्गत किये गये वृक्षारोपण का अनुश्रवण एवं मूल्यांकन।	Apr. 2025	Nov. 2026
36.	Priyanka Verma	JRF		Apr. 2025	Nov. 2026
37.	Ajay Lavishkar	JRF		Apr. 2025	Nov. 2026
38.	Deepa Pradhan	JRF		Apr. 2025	Nov. 2026
39.	Himanshu Kushwaha	JRF		Jan. 2026	Nov. 2026
40.	Vineet Kumar Mehra	JRF		Apr. 2025	Nov. 2026
41.	Anmol Lucky Ekka	JRF		May 2025	Nov. 2026
42.	Abhishek Soni	JRF		May 2025	Nov. 2026
43.	Siddharth Pagare	JRF		Jan. 2026	Nov. 2026
44.	Ramdeen Bhalavi	JRF		Apr. 2025	Dec. 2025
45.	Satyam Saxena	Comp. Opt.		Apr. 2025	Jun. 2025
46.				Jul. 2025	Jun. 2026
47.	Dinesh Kumar Kuldeep	JRF	सूक्ष्म प्रबंध योजना निर्माण हेतु प्रशिक्षण कार्यक्रम।	Jul. 2025	Jun. 2026
48.	Suneel Ku. Payasi	JRF	मध्यप्रदेश के विभिन्न कृषि-जलवायु क्षेत्रों में कृषि-वानिकी मॉडल्स की सफलता एवं असफलता के कारकों का विश्लेषण	Apr. 2025	Mar. 2026
49.	Shubham Tiwari	Project Asstt.		Apr. 2025	Nov. 2025

S. No.	Name	Designation	Project under which appointed	Period	
				From	To
50.	Vineet Kumar Pathak	Project Asstt.	Developing a Danger Rating System.	May 2025	Jan. 2026
51.		JRF	Periodic observation in different forest types of M.P.	Feb. 2026	Feb. 2027
52.	Durgesh Raj Vishwakarma	Comp. Asstt.	Comparative study of MP Teak Timber and Imported Teak Timber.	Apr. 2025	Dec. 2025
53.	Farhat Jahan	JRF	Standardization of propoagation technology for production of quality seedling of <i>Boswellia sarata</i> , <i>Buchania lanzan</i> & <i>Shorea robusta</i>	Mar. 2026	Feb. 2027
54.	Bhupendra Patel	Project Asstt.	Assessment of floral and faunal diversity and preparation of wildlife passage plan on the proposed construction of 3rd railway line for the section of Itarsi-Nagpur under Narmadapuram and Betul Districts	Jul. 2025	Feb. 2026
55.	Nikita Jain	Project Asstt.	“वन गतिविधियों के मूल्यांकन में संयुक्त वन प्रबंधन समितियों (JFMCs) की भूमिका का विश्लेषण”, विशेष रूप से वन अग्नि प्रबंधन पर ध्यान केंद्रित करते हुए।	Jun. 2025	Dec. 2025
56.	Rajesh Barman	FA	Strengthening of Market Information System (MIS) for Dissemination of Market Analysis of Minor Forest Produce in different Agro-Climatic Zones of Madhya Pradesh.	Aug. 2025	Apr. 2026
57.	Loukesh Kumar Ahirwar	JRF	Criteria of laying fire lines and their effective width.	Nov. 2025	Mar. 2026
58.	Shubhi Soni	FA	Conservation of Boabab Tree (<i>Adenonia digitata</i>) through development and extension of it's nursery, plantation and conservation techniques in Dhar District of Madhya Pradesh.	Dec. 2025	Dec. 2026
59.	Satyendra Thakur	JRF	जंगल की आग का मृदा नमी पर प्रभाव।	Jul. 2025	Oct. 2025





Participation of the Institute in Mahakal Van Mela, Ujjain



Training on concept of Soil Moisture Conservation and its Importance in forestry



Participated in the the Institute in Van Mela, Bhopal



FDA field work



Educational tour & exposure visit of the trainee forest officers



MoU between SFRI and Malwanchal University, Indore

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