

**Title of the Project: Monitoring and evaluation of Wildlife and their habitats for sustainable management and development in the protected areas/ Territorial divisions of Madhya Pradesh.**

**Why this Project:-**

To estimate the population of wild animal species of Madhya Pradesh, to find out the population density, the spatial occupancy of different species and to utilize the findings for its management purposes. Wildlife-population is not always static. Its number increases/decreases at different places and at different times, means the number of the same species varies from place to place and year to year. These data supports the park managers while taking any interventions for wildlife management.

**Research Methodology:-**

- Procurement of the primary data from all 83 units of Madhya Pradesh on Monitoring Tigers, Co-predators, prey and their habitats which is already being generated annually for PAs and at every 4 year interval in whole state by the staff of MP Forest Department at beat level on prescribed formats following the protocol developed by WII and NTCA in the form of Field guide: "Monitoring Tigers, Co-predators, prey and their habitats" which includes the following points:
  - Sampling for Tiger, Leopard and other carnivore sign encounter rate.
  - Sampling for ungulate encounter rates.
  - Sampling of vegetation, human disturbance and ungulate pellets.
  - Camera trapping for tiger identification
- Double sampling method is used for tiger population estimation. It is based on determining spatial occupancy of tigers throughout the potential tiger forests and sampling such forests using camera traps in a statistical framework (one pair in each 2 sq km grid).
- Hard and soft copy of data received and checked
- Rectified the data mainly for GPS location errors
- Analysis for population estimation of Tigers, other carnivore and herbivore species using various software (Arc GIS, Distance 6.2 software).
- Tiger identification was done with the help of capture histories (X matrix) and analyzed using the program Density 7.2.
- Preparation of various maps in ArcGIS software including habitat mask.
- Preparation of tiger data base with minimum movement area of individual for 2018, 2019-20 and 2020-21
- Data tabulation and report preparation

**Study Design:-**

- Followed the protocol developed by WII and NTCA in the form of Field guide: "Monitoring Tigers, Co-predators, prey and their habitats-2017"

**Objectives of Research :**

- To monitor the Tigers, co-predators, prey and their habitats in protected areas and territorial divisions of the state.
- To strengthen/improve the facilities and services for monitoring and data interpretation
- To create a database based on individual stripe pattern and movement area of tiger which will support monitoring the individual tiger and to deal with wildlife crime

**Activities Undertaken :-**

- Procurement of hard and soft copies of wildlife census data from all 83 units of Madhya Pradesh Forests Department.

- Data checking and Rectification of huge amount of data for -Wrong GPS entries, Double entry errors through cleaning tool and Manual corrections for wrong entry
- Segregation of Tiger and Leopard bearing beats and Map preparation in Arc GIS
- Analysis of encounter rate/km for carnivore species,
- Analysis of herbivore densities/sq km in Distance 6.2 software,
- Segregation of Tiger images
- Collate each and individual image with other images and with existing old database to find out individual tiger numbers
- Tiger Identification with their IDs
- Preparation of MMA of each individual tiger based on their capture location
- Preparation of camera matrix and trap matrix
- Preparation of MCP for each unit based on camera trap locations
- Preparation of habitat mask for each unit using Arc GIS
- Analysis of camera trap data with capture –recapture matrix for tiger density analysis and, Tiger density analyzed using Density 7.2 software.
- Create updated data base of individual tiger with left-right flanks and its minimum movement area.

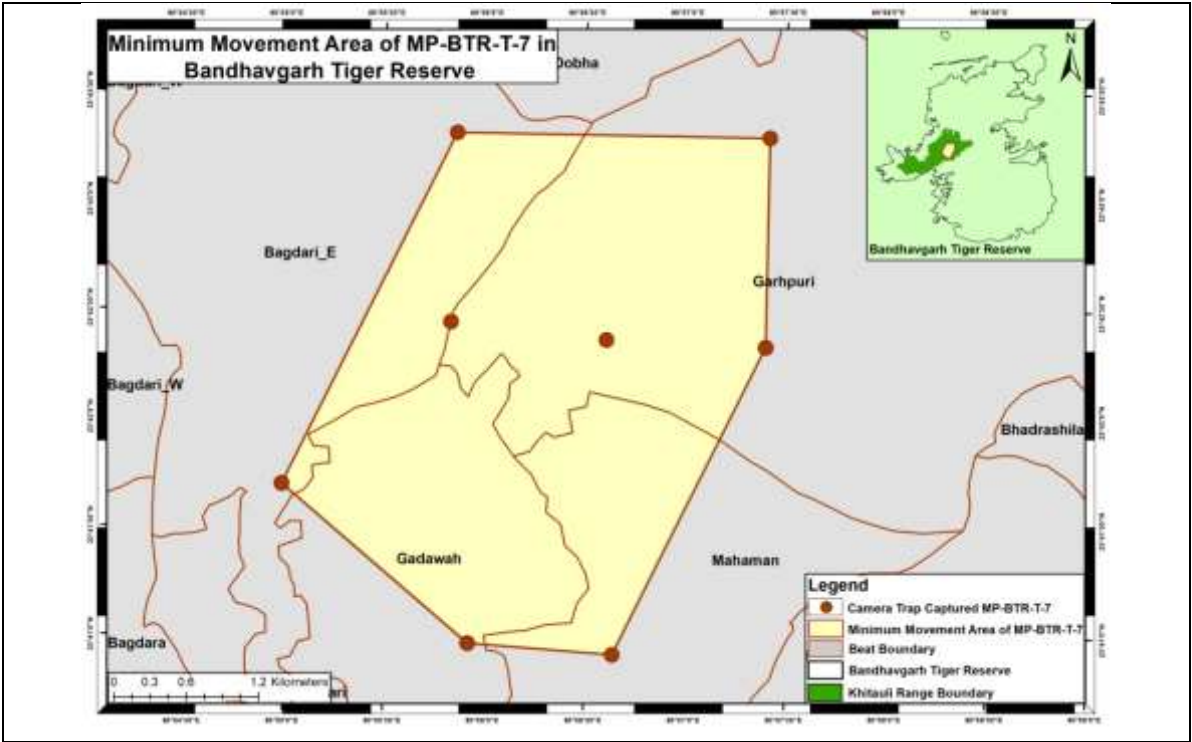
**Cost of the project- Rs. 154.28 Lakhs**

**Outcome of research:-**

Information on population of tiger, other carnivores and prey species for year 2018, 2019-20 and 2020-21 would be applicable for Park Managers while performing various kinds of interventions regarding wildlife management on spatial and temporal basis.

Created data base would be supportive for wildlife management and for investigating the wildlife crime.





Left-Right Flank and Minimum Movement Area of MP-BTR-T-7 of Bandhavgarh Tiger Reserve