BI-MONTHLY OUTREACH JOURNAL OF NATIONAL TIGER CONSERVATION AUTHORITY
GOVERNMENT OF INDIA

stripes

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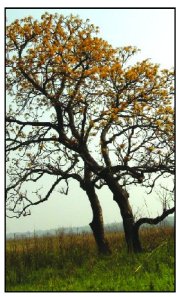
LANDMARKS



CHALLENGES

PERSPECTIVES

PRIME MINISTER'S MESSAGE ON THE OCCASION OF WILDLIFE WEEK 2012

India is home to a magnificent variety of ecosystems and species of flora and fauna. Our glorious natural heritage must be nurtured and passed on to the future generations.

Given the pressures of a growing population, it is not going to be easy to maintain the existing biological diversity in our country. However, we are firmly committed to conserving our unique wildlife, vast areas of forests of forests and other landscapes including the snow-clad mountains, alpine pastures, deserts and marine areas. If this commitment is to be fulfilled, each one of us would be required to actively pursue a conservationist lifestyle.

We would be required to actively pursue a conservationist lifestyle. We would also need to ensure that gradually the various facets of conservation get embedded in all developmental activities.

On the occasion of Wildlife Week 2012, which coincides with the birth anniversary of Mahatma Gandhi, I call upon my fellow citizens, especially the young, to join in this noble endeavor of conserving and protecting our wildlife and maintaining the ecological integrity of our great nation.

— Dr Manmohan Singh
Prime Minister

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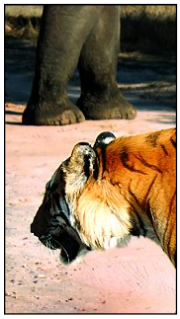

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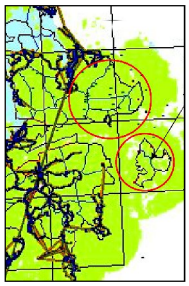

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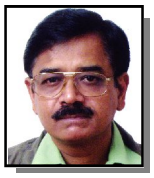
note from the editor



TIGER habitats, which are productive in terms of tiger prey, are characterized by a large number of tiger births and deaths. Most of the core areas of tiger reserves serve as good 'tiger source' areas from where tigers move out as part of their innate, social behaviour and territorial requirements. 'Co-occurrence' of tigers in human dominated landscapes with varied, ecologically unsustainable land uses, by and large, leads to tiger mortality. Based on information gathered from tiger States, 16 causative factors causing tiger deaths have been identified. Several advisories have been issued from Project Tiger, time and again, on the steps required to deal with a tiger death. Based on these and after consultation with States, the NTCA has brought out a SOP for dealing with tiger deaths to meet the present requirements. The officers and staff of tiger reserves and forest areas of tiger landscapes will find this useful.

Use of camera traps in a mark recapture framework has been mainstreamed by the NTCA in the refined country level tiger assessments for computing tiger densities. This has been extended to yearly monitoring at the reserve level also (Phase-IV). The NTCA and the Wildlife Institute of India have a database of tiger camera trap photos, which is being developed into an active national repository with unique ID system. Details of this interesting system are highlighted in this issue.

The 'M-STrIPES' is a state-of-the-art monitoring system for intensive protection of tigers. It has been launched in several tiger reserves where a customized software has been provided for uploading day to day patrolling data, to generate information on patrolling intensity as well as spatial use by tiger and other wild animals. An interesting update from Bhadra is included in this issue.

The second Asia Ministerial Conference on Tiger Conservation was held in Bhutan in November, 2012. The commitment from the tiger range countries to save the wild tiger is encouraging. The NTCA actively participated in this meeting while highlighting its initiatives.

Dr Rajesh Gopal
Member-Secretary, NTCA

SOP for dealing with tiger death

Advisories have been issued by the Project Tiger/National Tiger Conservation Authority, time and again, for dealing with cases of tiger mortality and seizure of tiger body parts. Based on inputs from field officers, experts vis-a-vis advisories, a standard operating procedure has been developed after finetuning to meet the present challenges.

Detailed instructions for the procedure to be followed in tiger death/seizure of body part/incident reported but no body part/carcass available but for corroborative field evidences, have been included in the SOP.

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At Scene of crime (SoC)/ incident:

- Reach the spot at the earliest, while informing the Field Director/Conservator/Chief Conservator of Forests having jurisdiction.
- Call for investigation team to the spot immediately. It should be mandatory for the investigation team to visit the SoC with Investigation Kit
- Cordon off the area with rope/tape so that evidences are not disturbed
- Take photos of undisturbed site/video record from different angles for comparison with camera trap recordings (if done in the area). Photographs and video should have both close-ups and from distance shots. Tapes may be placed to show distances of various physical objects found at SoC. Circumstantial observation at SoC should be minutely recorded.
- Do not manipulate evidences.
- Divide the whole area into grids/circles for investigation and collection of evidences.
- Note down all finer details, date, time, GPS location, weather etc. Each step and action in the investigation process should be properly documented. It is highly recommended that investigating officers (IOs) should adopt the practice of writing daily case diaries as prescribed under Section 172 CrPC and submit it to next supervisory officer on daily basis.
- Requisite seizure/arrest memo should be prepared on the spot.
- Wherever possible, two independent witnesses should be associated in search, seizures and arrests.
- Survey the entire area. In case of suspected infighting of animals, look for trails of other injured animals also.
- At least an area of about 500m encircling the SoC may be searched thoroughly for evi-

dence. In many cases it is seen that the animal moves some distance after it is hit by the bullet or it consumes poison. It is also common that the poachers remove the carcass to a nearby place for the sake of convenience in de-skinning the animal.

- Rivers, lakes or other water bodies near by the SoC may also be inspected for collection of evidence as the poachers wash their body or the tools/weapons used in de-skinning the animal in the nearby rivers or water bodies. In some cases it is also noticed that the poachers enter the tiger reserve walking along the river banks.
- Record footprints of animals/human/tyre marks of vehicles if any by using plaster of Paris.
- Search & collect all possible evidences carefully in original conditions, while preserving (if needed)
- Search for evidences at ground level, eye level and above eye level (eg hideout/machan/bullet marks on trees/freshly cut branches/traces of kindled fire on the floor/burnt matchsticks etc). Samples to be collected from the spot may include: blood, body-fluids, tissues,hair/fur/teeth/ bone pieces etc, gun powder, cloth fibre, paint chips, soil, cartridge case, bullets, footprints, tyre marks, gutka wrapper, matchsticks, food items, water sample from waterhole etc.
- Tools recovered from the spot should be appropriately secured for finger prints, stains etc.
- At times clothes worn by the accused are to be seized for analysis of blood stains, fluids etc.
- Nail cuttings may be taken if skinning is suspected.
- Use transparent polythene bags for collecting these samples. The different articles should not be put in one bag. Each article needs to be put in one bag, separately.
- Specimen seal to be sent to the expert, court and the third copy to be put in official file for records.
- Properly label and seal the samples collected. Assign each sample with exhibit number and brief description. Search the leads/trails/routes of escape/exit. Use sniffer dogs for leads (if available).
- Record external evidence from carcass: wounds, bullet injury/marks, symptoms of poisoning etc apart from body measurement (if possible). Injuries on the carcass should be properly measured and described / explained.
- Go for post mortem (PM) if team available. Otherwise keep the carcass in deep freeze. The PM has to be conducted in daylight.
- While doing post mortem, collect sample of visceral content and tissue. Send visceral sample for forensic analysis to a reputed laboratory; send the tissue sample to the Wildlife Institute of India (WII) or a recognized institute within the country having domain expertise for DNA profiling and histo-pathological tests.
- Finalize the PM report, and send the same to the Chief Wildlife Warden (CWLW) under intimation to the National Tiger Conservation Authority (NTCA). In case the PM report is under process, send a preliminary report to the Authority indicated immediately
- Dispose of the body as per rules in the presence of the competent authority In case of seizures of body parts, the same may be required as evidence for prosecution in the courts of law and hence in such situations do not dispose the same till the orders of the concerned court for disposal of the same are received.
- Issue a departmental preliminary offence report (POR)/FIR etc.
- Prepare a seizure memo and arrest memo with signature of accused (if present), witnesses etc. alongwith a site map, and a species identification certificate issued by a forest officer, not below the rank of an Assistant Conservator of Forests who would certify that he has identified the species on the basis of his training and experience in identifying the species in the field

> Based on detailed interrogations and leads, thoroughly investigate the matter, establish backward and forward links, arrest other links involved based on statement given by the accused and information given by accused

If suspect(s) is arrested:

- Collect name, address, biometric details, photographs, height, weight etc. of suspect(s).
- During the search/ arrest/ interrogation, special care should be taken to seize/ get details of telephone nos. especially mobile phones, diaries including numbers scribbled on a piece of paper etc. These are crucial in tracing linkages. Persons arrested must be informed of the full particulars of the offence committed and the grounds for arrest. (Sec.50 Cr. P.C. & Art 22 (1) -Constitution of India)
- Prepare an arrest memo with ground/basis for arrest, citing reasons/basis for arrest
- Record statements of suspects(s) and/or witness(s) alongwith signatures under Section 50(8) of WPA. Ideally the statement should be recorded by ACF and above authorized by the

State Govt. in this behalf (which is the requirement of WPA)

- The nominated person by the accused needs to be informed about the arrest and place where the accused has been lodged as per Section 50A of CrPC and Supreme Court's order in Joginder Singh's case
- Get medical examination of arrested suspect(s) conducted and produce before the magistrate having jurisdiction within 24 hrs or where forward and backward linkages are to be discovered move an application for remand. Always contact your public prosecutor in the local court beforehand in case you are trying to move such application so that the staff succeeds in getting the remand.
- In case of a female offender, medical examination has to be conducted only by a female registered medical practitioner.
- Take proper care of health and safety of accused during the period in which he is in your remand. If the accused falls ill in dept's custody, he must be given medical aid or treatment admitted in hospital.
- Based on interrogations and leads, thoroughly investigate the matter, establish backward and forward links, arrest other links involved based on statement given by the accused and information given by accused.
- The arrested person has a right to consult and be defended by a legal practitioner of his choice (Article 22 (1) of the Constitution of India).
- If the arrested person is poor, he can get free Legal Assistance from the Legal Services Authority (Art 39 A Constitution of India).
- Arrest should not be made on mere suspicion (145 CrPC).
- The arrested person is entitled for compensation for groundless arrest / illegal detention.
- Though the statement given by the accused under psychoanalysis test has little evidentiary value but in case of hardened criminals who don't cooperate in investigation, such tests may be recommended.
- Prepare a final report, complaint as per Section 55 of WPA and file in the court of law.
- Submit a final report with conclusion regarding cause of death to the Chief Wildlife Warden under intimation to the National Tiger Conservation Authority through the Field Director/ Wildlife Warden/Conservator/ Chief Conservator of Forests having jurisdiction

Adhish Krishn

Actions required at the Office of Field Director/Wildlife Warden/Conservator/Chief Conservator of Forests having jurisdiction/Control Room

- Send a preliminary intimation to NTCA, Chief Wildlife Warden and Regional Deputy Director (RDD) of WCCB about the incident (SMS/e-mail/telephonic call/fax etc) immediately
- Constitute a post mortem team as per NTCA protocol
- Send an investigation team/issue office order appointing the Investigating Officer (IO)
- Analyse the past and present intelligence reports for possible leads, cellphone records of history sheeters/suspects, check with neighbouring districts/divisions/states
- Deploy vehicular checking on barriers, inform local police and issue red alert for checking vehicles at all exit points
- Check the photographs of carcass and compare with the National Repository of Camera Trap Photographs of Tigers (NRCTPT) in NTCA or the Phase-IV camera trap monitoring database or other research database to establish the identity/source area
- Issue an official version of the incident through the Chief Wildlife Warden
- Send biometric details of suspect(s) to NTCA for alerting other Field Directors/ States/Wildlife Crime Control Bureau, and for establishing possible linkage with other crimes elsewhere.
- Closely monitor/supervise the investigation, liaise with police department, Tiger Cell of the State (if available), Wildlife Crime Control Bureau and other investigation agencies.
- Prepare a 'Final Report' and submit to the Chief Wildlife Warden under intimation to the NTCA. Since all tiger deaths are treated as 'Poaching Cases' by the NTCA unless proven otherwise, justification for categorizing a tiger death as 'natural' should be provided alongwith evidences
- All cases of poaching/seizure should be dealt in the courts of law having jurisdiction.
- Monitor the case ongoing in the court of law till its final disposal
- After the court's order, analyse the case for corrective actions (if needed) for further appeal.
- If the decision of the court is satisfactory, close the case and report to the Chief Wildlife Warden under intimation to the NTCA.

Protocol for camera trap photo database

Protocols for the establishmentof a national repository of camera trap photographs of tigers (NRCTPT) have been finalized by the NTCA, which would help in collection, classification, storage, analysis and retrieval of camera trap photographs of tigers at the national level.

Udaishringi

Part I: Work to be done at reserve and state-level before images are sent to the National Tiger Conservation Authority (NTCA)

Introduction

Photographic images of tigers are accumulating rapidly across India as a result of camera trap surveys, general photography, forensic work and other activities by multiple agencies. If these images are systematically collected and compiled in a retrievable and useful manner, they can be of immense assistance to the protection, management and rigorous monitoring of wild tiger populations in India. The purpose of this note is to outline the establishment of such a NATIONAL REPOSITORY OF CAMERA TRAP PHOTOGRPHS OF TIGERS (NRCTPT) under the direct control of National Tiger Conservation Authority (NTCA) with facilitation for instant sharing of information with States and other participants.

Intensive camera trapping has been now mandated as the main methodology for annual monitoring of tiger populations in key source populations and tiger reserves (projecttiger.nic.in/whtsnew/Protocol_Phase_IV_Monitoring_r.pdf). Additional tiger photographs may be made available by individual reserve or through any other ad hoc camera trapping efforts as well as from photographs of dead tigers, skin seizures and photographs of wild tigers obtained by tourists, forest officials and other individuals. All statistical information about tiger populations in the country will be derived from these individual identifications based on rigorous analysis conducted by NTCA / outside experts at NRCTPT.

The first January of 2006 will be treated as the starting date for accumulating these tiger identifications in a rigorous, secure national database. Given the maximum life span of about 15 years for wild tigers, the database will have to be continually accrued over the years. An initial capacity for 99,999 individual tiger ID records is suggested.

Although the tiger photo-ID database can be a powerful tool, the possibility of problems arising from accidents, errors, and deliberate manipulation is substantial. Therefore, a carefully designed protocol to regulate and validate the inflow of photographs right at the establishment stage of NRCTPT is crucial.

Furthermore, to use the software program 'ExtractCompare' (Hiby et al. 2010) with its associated standard MS Access data-base, it is imperative to establish strict quality control regimes right at the inception to maintain high levels of data integrity. This document contains details on how such a reliable National Repository of Camera Trap Photographs of tigers (NRCTPT) can be established and maintained.

RESPONSIBILITIES OF CENTRAL DATABASE MANAGEMENT FACILITY AT THE NTCA,

NEW DELHI, AFTER THE DATABASE IS ESTABLISHED

- Receiving tiger photographs and ancillary information in a properly labeled, formatted and authenticated manner on hard copy forms and digital form together with authentication documents duly signed by authorized personnel certifying them.
- Scrutinizing, selecting photos and entering camera-trap photo-capture data and their associated photo-images into the database together with all the meta-data (including location, date, time, personnel involved, and other meta-data from storage media, camera traps, film rolls etc)
- Using software program ExtractCompare to perform batch level automated matching followed by visual examination to identify unique individuals and assign the unique ID numbers.
- Documenting and archiving all received images (including those not entered into the database) for future reference, vouching, resolving disputes etc.
- Generating statistical analyses and interpretation of results.
- Sharing these results with the respective states, parliament, participating scientific institutions/partners, etc.

The regional offices of the NTCA will facilitate the process by interacting with the states.

PROTOCOLS TO BE FOLLOWED AT STATE AND TIGER RESERVE LEVEL BEFORE COMMENCING FIELD DATA COLLECTION

Each state with help from technically qualified persons/institutions will develop a SURVEY DESIGN for each Tiger Reserve or source site, keeping in view requirements specified under Phase IV of National Tiger Estimation and the ladder process of moving from Section 2 to Section 3 provisions therein.

Once the Survey Design is approved by the Chief Wildlife Warden (CWLW) of the State and necessary logistical needs, personnel and other resource needs are identified, the steps listed below will be required to implement field surveys for reliable data collection.

- Each Tiger Reserve or Source Site will identify a "supervisor" to oversee the entire field survey operations. The supervisor can be either a forest department officer at the rank of range forest officer or above, or a qualified scientist authorized by the state Chief Wildlife Warden to implement Phase IV protocols.
- The supervisor at the Tiger Reserve or Source Site level will assign a unique LOCATION LABEL to each TRAP LOCATION where camera traps will be deployed in the field FOLLOWING THE SURVEY DESIGN APPROVED BY NTCA.
- The supervisor will record and list all such TRAP LOCATIONS with their GPS coordinates as well as a GEOREFERENCED DESCRIPTIVE NAME associated

with a map at 1:50,000 scale.
- Each camera trap unit and film roll or electronic disk used for gathering camera trap data will get a unique, non-repeated identification number which should be inscribed on it.
- The supervisor will prepare a deployment plan and schedule covering all trap locations identified in the approved survey design.

PROTOCOLS TO BE FOLLOWED BY FIELD SURVEY TEAMS

The field protocols outlined below will be strictly followed and adequate checking / validation and supervision will be in place to ensure data integrity:

- Each "double sided camera trap" (hereinafter called camera trap) consists of two cameras and tripping systems, each one with its own unique ID numbers.
- While setting up camera traps 'Date' and 'time' settings of both the cameras at a trap location will be synchronized.
- Only image storage device (eg memory card or film roll) which have unique ID inscribed on them, will be loaded into the cameras.
- While out in the field, camera traps will be set up initially, checked routinely and removed systematically according to the deployment plan prescribed in Data Forms A and B. The set up and checking activities for camera traps will be carried out with all relevant ancillary data being recorded exactly as shown in Data Form C.

It is important that all field survey personnel, supervisory personnel and others write their names legibly, sign and date the filled forms. This will form the basis of authenticity of the entire exercise and will be diligently done. The supervisor will ensure authentication of the data forms and associated data from the field and ensure its safe keeping.

PROTOCOLS TO BE FOLLOWED AT THE TIGER RESERVE LEVEL

The carefully stored data and storage media (films, disks) will be handled by the Tiger Reserve or source site level supervisor authorized by the Field Director or the qualified researcher appointed by the Chief Wildlife Warden. He/she will ensure that the following steps are implemented:

- The data to be integrated at reserve level will include: The raw camera trap data (on memory cards from digital cameras or film rolls from film cameras) each with its own Individual ID, imprinted meta-data and associated data forms.
- Downloading and storing images as 'field copy' at Tiger Reserve or Source Site level: Create a new folder on the computer hard disc, and name it by joining the 'name of the field technician' from whom the images were received, and the 'date of receiving data'. For example, images received from Santosh Naik on 8th October 2012 (this will be on Data Form C) is copied into a computer drive with a specific folder name that identifies it as below:
Example folder name: SantoshNaik-8-10-2012

Each data form received from Santosh Naik on 8th October 2012 should also be tagged/filed under the same name (Example: SantoshNaik-8-10-2012).

- Create sub-folders within this folder that is named by pairing the 'camera ID' and 'memory card ID' (or Film roll ID).
Example sub-folder name: KA-CAM192-MC003

Download images from the memory cards into these respective folders. Do not rename them, so they retain their original names as generated in the camera.

- Images stored as above are considered as 'field copy' of images received from field survey personnel. Store all images like this and not just tiger images.
- Now, leaving this 'field copy' of images as it is on the hard disk, create a second 'backup copy' of these images in a separate folder.
- After downloading images from the memory card as two copies, format the memory cards. Always make sure the memory cards are formatted before giving the camera units back to the field survey personnel.
- Documenting tiger capture details in Data Form D: At the Tiger Reserve or source site level, examine all images carefully and enter details related to each tiger photo-capture in a fourth data-form.
- The two images from two cameras of a trap location are linked as 'complementary images' of each other.

a) When establishing the link between two images as the 'right flank' and 'left flank' of same individual through the same photo-capture event, take extreme care in using the date-time information from the meta-data of the image or time-stamp on the images.
b) Counter-check this 'linking' of images with information recorded in Data Form C, and by looking at other images captured immediately before and after these tiger images.
c) The supervisor will also look at the 'set-up time' and the next 'check time' at a location to ascertain if a tiger capture in the image was from the same location using Data Form C.

PROTOCOLS TO BE FOLLOWED AT THE STATE LEVEL

The task of recording, compilation, authentication before submission of data to the NTCA will

be performed at Chief Wildlife Warden's office or at headquarters of the scientific institution conducting the survey.

- After camera trapping is completed for the season or for a pre-defined period, four data-forms — A, B C and D — all authenticated by and countersigned by the reserve director/head of research institution will be sent to the Chief Wildlife Warden as well as to NTCA (two identical copies) for further authentication.
- Field Director will also send images collected at Tiger Reserve or source site level (the 'field copy' of images) on CDs/DVDs to the Chief Wildlife Warden for further authentication.
- If any individual tiger can be identified based on preliminary visual comparisons, at Tiger Reserve or Source Site, 'Annual Temporary Tiger ID number' will be assigned by the Chief Wildlife Warden, using Data Form E.
- Till this point, all data will be in the form of paper field data-sheets and films or digital images on CDs/DVDs. Entries in an MS Excel spreadsheet will be recorded at state level and sent to the NTCA.
- At state level, the data received from all Tiger Reserves or source sites will be thoroughly validated and authenticated.
- Apart from Data Form E, and an authenticated version of data, no other new document is created at State level. Also, DO NOT rename or reorganize images in any way. This data sent to the NTCA will be deemed authentic and final.

PROTOCOLS FOR THE ESTABLISHMENT OF THE NATIONAL REPOSITORY OF CAMERA TRAP PHOTOGRAPHS OF TIGERS (NRCTPT)

PART-II: COVERING WORK TO BE CARRIED OUT AFTER IMAGES ARE RECEICED BY THE NTCA

RESPONSIBILITIES OF THE CENTRAL DATABASE MANAGEMENT FACILITY AT THE NTCA, NEW DELHI, AFTER THE DATABASE IS ESTABLISHED AND IMAGES ARE RECEIVED

- Receiving tiger photographs and ancillary information in a properly labeled, formatted and authenticated manner on hard copy forms and digital form together with authentication documents duly signed by authorized personnel certifying them.

- Scrutinizing, selecting photos and entering the camera-trap photo-capture data and their associated photo-images into the database together with the meta-data (including location, date, time, personnel involved and other meta-data from storage media, camera traps, film rolls etc).

- Using software program ExtractCompare to perform batch level automated matching followed by visual examination to identify unique individuals and assign the unique ID numbers.

- Documenting and archiving all received images (including those not entered into the database) for future reference, vouching, resolving disputes etc.

- Generating all statistical analyses and interpretation of results.

- Sharing the results in the form of unique Tiger IDs with the respective states, parliament, participating scientific institutions/partners and the public. The Regional Offices of the NTCA can facilitate the process by interacting with the States involved.

However, all the procedures below are implemented by technically fully qualified personnel.

PROTOCOLS FOR THE PROCESSING OF IMAGES, ARCHIVING AND ANALYSIS AT THE NTCA, NEW DELHI

All images (including tigers), electronic meta data and ancillary data in hard copy forms, duly authenticated at Reserve and State level and countersigned by officials as mentioned on the forms will finally arrive at the NTCA from the office of the Chief Wildlife Wardens for further processing and assignment of National Unique Tiger IDs (UTID). The exact format in which these data are received will be as below:

- Images will be received on CDs or DVDs, or negative film rolls. These disks and rolls will contain images termed as original 'STATE COPIES'.
- These disks MUST HAVE linked authenticated Data Forms A, B, C, D and E.

These camera trap images will be processed for individual identification of tigers by fully following the protocols/steps as described below:

- **RE-ORGANIZING AND RE-NAMING ALL CAMERA TRAP IMAGES IN WINDOWS EXPLORER**

Authenticated 'STATE COPIES' of images are stored in folder structures already described in document 1. These images are required to be re-named / re-labeled in a standardized manner for the whole country before they can be entered into the National Tiger Photo Database. To maintain data integrity, and also to facilitate easy storing of data in the database, these images received as STATE COPIES must be re-organized as per steps below.

STEP 1: Retaining the same folder structure, make A FRESH DUPLICATE COPY of all the images and meta-data on the hard disk of a separate computer with

adequate storage space. On the copy, the images get a new name (or label) by fixing a 'date-time stamp' to the image number. This date-time information will be derived from EXIF metadata (Exchangeable Image File Format) embedded in images by the digital cameras. There are standard software tools for renaming images by stringing EXIF meta-information of images with their original image numbers.
Example: Label of image received: IMG0001.jpg
New name after re-labeling: 2012-10-02_20-13-37_IMG0001.jpg

STEP 2: CREATE A NEW FOLDER STRUCTURE. For each TIGER RESERVE OR SOURCE SITE create as many NEW folders as there are unique camera trap locations. EACH NEW FOLDER MUST have a label using the Camera Trap Location ID contained in Data Form A described in document 1.
Example: for location 'Mannina Katte Road 2.4' create a folder by its Camera Trap Location ID NH24

- Refer to Data Form C and D to identify TIGER images as captured at specific camera trap location, and then copy these images into appropriate Camera Trap Location folder.
Example: copy images from SantoshNaik-8-10-2012 > KA-Cam192-MC003 into folder NH24 > {images captured at MNKR 2.4}, and images from SantoshNaik-8-10-2012 > KA-Cam213-MC006 into folder NH24 > {images captured at MNKR 2.4}.

- PLEASE NOTE THAT MOST CAMERA TRAP UNITS WOULD HAVE BEEN MOVED AROUND, SO PLEASE DO THE FOLLOWNG TO TAKE CARE OF THIS ISSUE: If, a camera trap unit was deployed in more than one location before downloading images at tiger reserve office, one should be very careful in ascertaining the location for images because they will be downloaded into a single folder in the field copy of images. For example, if the camera unit 'KA-Cam192' was deployed in two locations, the folder SantoshNaik-8-10-2012 > KA-Cam192-MC003 will have images taken from these two locations. It is very important to refer to 'Data Form - C' (and cross-validate with 'Data Form - B') to ascertain the dates when the unit was shifted to a new location, and accordingly copy the images into two different folders.
Example: copy images captured in location NH24 from SantoshNaik-8-10-2012 > KA-Cam192-MC003 into folder NH24 > {images captured at Camera Trap Location ID NH24}, and images captured in location NH25 from SantoshNaik-8-10-2012 > KA-Cam192-MC003 into folder NH25 > {images captured at Camera Trap Location ID NH25}.

- By stringing together the 'Camera Trap Location ID', 'date-time of capture' with the 'original

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image number', a unique reference image file name is created for all images received at NTCA.
Example: NH25_2012-10-02_20-13-37_IMG0002.jpg
Where, source site code
location ID Date/time stamp of image Image number
NH (Nagarahole) 25
2012-10-02_20:13:37 IMG0002

Note: Each image gets linked to a Tiger Reserve (of possible and nearest source site) in India. We have used the list of Tiger Reserves (current and potential source sites identified by NTCA) to generate codes for each of the Tiger Reserves (see Appendix 1).

Referring to Data Forms C, D and E, select all tiger images and copy them into a new folder. Lable this new folder by site and year of trapping.

Example: Bandipur 2012

Establish and validate opposite flanks for each photo-capture by looking into Data Forms C, and D.

THOROUGHLY CROSS CHECK TEMPOARY IDs assigned to individual tigers BY STATE CWWS in Data Form E, by VISUALLY COMPARING all tiger images received.

INSERTING THE CAMERA TRAP DATA TO NATIONAL TIGER PHOTO DATABASE USING MS ACCESS FORM

Finally ALL images of camera trapped tigers from all source sites/tiger reserves, and their capture details are consolidated into NTPD. This is done in two stages.

- First, the camera trap data from a single TIGER RESERVE OR SOURCE SITE is appended to a carrier database 'tiger_append'. A final validation of the data can be performed at this stage, and if there are any irregularities they are resolved. PLEASE NOTE THAT ALL TIGER IMAGES RECEIVED FROM FIELD GET INCLUDED IN THE DATABASE.

- In the second stage, data from 'tiger_append' database are imported into the central database. A subset of these tiger images is tagged for extracting patterns in ExtractCompare software. These patterns are then compared with all other images using the ExtractCompare software and the tigers that do not find a match with any tiger in the database get a new ID. The scheme of naming the tigers is defined in the next part of this document.

- This comprehensive database from all tiger reserves/source sites and from all previous years also records National Unique Tiger ID.

- ASSIGNMENT OF UNIQUE NATIONAL TIGER IDs (UTIDs) USING ExtractCompare SOFTWARE

Establishing the identity of each the tiger, and then to have unambiguous NATATIONAL identifications to all photographed tigers is central to maintaining a reliable national database from camera trap data.

The general naming scheme outlined below reflects two important aspects about the individual tiger identity: first the landscape from where the individual was captured, and second the 'strength' of the identity of the individual tiger based on its photos (so as to be able to separate out ambiguous identities from unambiguous identities).

- To avoid multiple counting and controversies it is essential for each tiger to have one PERMANENT national ID (UTID). It is logical and ecologically meaningful to have these IDs linked spatially to one of the five disjunct tiger landscapes as well as to the year of First capture. These IDs SHOULD NOT BE ASSIGEND TO STATES OR TIGER RESERVES because tigers often move across these boundaries either permanently or temporarily. We propose the following general scheme for UTID:
Example: WG- stands for Western Ghats, followed by a unique running serial number that is nationally assigned and continued over the years.
WG-12387, CI-19680, NE-3427 etc

Each individual tiger is spatially coded to the landscape from where it was first captured. We have used the list of landscapes identified by NTCA to generate the codes for each landscape (see Appendix 2)

- Based on the quality of photos and the number of photos in each capture there can be four types of names or "IDs" for each tiger: (a) IDs for unusable images, (b) IDs for 'unidentifiable' individuals, (c) Partial IDs, and (d) Permanent IDs.

A) NOT-USABLE IMAGE (NUI)

Photos that are merely recognizable as that of a tiger but without any necessary and sufficient stripe patterns available for individual identification should be described as 'unusable' images. Following ID format will be used for such images.
Example: WG-12-NUI0001, Where 'WG' indicates the landscape and '12' indicates the year of capture

B) UNASSIGNED IMAGE (UAI)

There will be cases of camera trap images of a single flank that cannot be compared with all the same flank images in the dataset, even when stripe patterns are visible in the image. For example, a left hind leg image cannot be compared with an image that has only left front leg visible in it.

Such images are temporarily labeled as 'unidentified', and can potentially match images in the ensuing season. An unidentified individual during the camera trap survey in year 2012 can be named as follows.
Example: WG-12-UAI0001

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C) PARTIAL ID

When only a single broad side profile image of either the right or the left flank of the tiger exists for a new individual tiger, its identity will be ambiguous because a left-flank-only image and a right-flank-only image may logically belong to either the same individual or two different individuals.

In such cases it is best to reflect the ambiguous identity of the individual in its ID, and such IDs will be considered as Partial IDs. If in the ensuing camera trapping season, these images with 'ambiguous identity' match images of a capture with both the flanks then the individual tiger will be assigned a Permanent ID. **Examples of Partial ID: WG-L00335, and/or WG-R00333** Where, ID series with 'L' refers to individuals with only usable left-flank photos, and 'R' series to individuals with only usable right-flank photos.

D) PERMANENT ID

The identity of a tiger is unambiguous only when there is at least one capture with clear broad side profiles of both flanks in the data set. Only for tigers with both flank images, a permanent ID is assigned. The permanent ID has a spatial component (a code for the landscape) and a serial number which is national.**Example of a permanent ID: WG-2875**

Once these National Unique Tiger IDs are assigned at the NTCA, they SHOULD BE COMMUNICATED TO THE to each STATE (Chief Wildlife Warden) to replace temporary IDs assigned by them earlier in the process.

- Additional information in the database. This database can be used to record sightings from naturalists who have taken clear photos amenable for individual identification, as well as to record tiger mortalities with images of either their carcasses or pelts seized, to establish / ascertain reliable identity of the individual tiger. In all such cases, pattern matching software ExtractCompare can be effectively used to match these images with camera trapped individuals in the database that will greatly enhance tiger conservation.

But such images from other sources should be included in the database ONLY when reliable information on the location and date of photograph taken is available.

2nd Asia ministerial conference on tiger conservation: Bhutan

The leaders of the governments of the 13 Tiger Range Countries1 (TRCs) met in November, 2010, at the International Tiger Forum in St. Petersburg, Russia, and declared their collective political will to take all action necessary to prevent the extinction of wild tigers. They set the goal of doubling the numbers of wild tigers globally by 2022 in the St. Petersburg Declaration on Tiger Conservation, and endorsed the Global Tiger Recovery Program GTRP) as a road map to reach that goal, supported by international partners to mobilize needed external resources.

The TRC Ministers or their representatives who are charged with implementing the GTRP and its constituent National Tiger Recovery Priorities, met on October 22-23, 2012, at the Second Asian Ministerial Conference on Tiger Conservation in Thimphu, Bhutan, to reflect on advances thus far, enhance the action agenda through 2014 and re-emphasize their political will for tiger conservation demonstrated at the International Tiger Forum.

Progress in reversing the wild tigers' decline towards extinction has been significant, based on actions undertaken by TRCs. Nonetheless, the threats to wild tigers and their natural habitats are seen to be increasing. Tiger landscapes are economically and politically undervalued and their importance to human well-being poorly recognized. Building on the pledges of the St. Petersburg Declaration, the ministers or the heads of delegations of the TRCs have identified an affirmative nine-point action agenda up to 2014 and ask partners to intensify their support to:

■ Actively strengthen front lines: Urgently enhance rewards, recognition, and resources for front-line staff (in the form of numbers, institutional capacity, skills, tools, technology, infrastructure, operating costs, and insurance against loss of life and injury) in all TRCs over the next three years.

■ Diligently conserve tiger habitat, inside and outside protected areas, against current and future threats: Strengthen and continue programs to extend protected areas, remove current encroachments in core breeding areas and ensure full public disclosure through land-use plans, mapping current and future threats, application of the principles of Smart Green Infrastructure, better science to maintain quality habitats, smart patrolling to increase management effectiveness, and improved monitoring, with necessary programs and disclosure completed over the next two years.

■ Significantly enhance engaging and sharing the benefits of conservation with communities, making them partners in tiger and habitat conservation and expanding sharing of benefits from conservation, expanding alternative livelihood programs, and promptly and adequately compensating villagers for losses due to/caused by tigers in all TRCs in two years. The TRCs are the People's Republic of Bangladesh, the Kingdom of Bhutan, the Kingdom of Cambodia, the People's Republic of China, the Republic of India, the Republic of Indonesia, the Lao People's Democratic Republic, Malaysia, the Republic of the Union of Myanmar, Nepal, the Russian Federation, the Royal Thai Government, and the Socialist Republic of Vietnam.

■ Enhance and mainstream collaboration among TRCs in management of transboundary landscapes and corridors, combatting illegal trade, and eliminating illicit demand through bilateral/multilateral mechanisms and with the support of organizations such as ASEAN-WEN, SA WEN, INTERPOL, and others.

■ Support TRCs with low tiger densities to launch tiger restoration programs: Build on lessons of success, create the conditions essential for successful restoration, and find suitable sources of tigers in at least two different national programs over three years.

■ Significantly accelerate the flow of national and external funds to support actions on the ground: Focus new support on gaps and accelerate projects to implement National Tiger Recovery Priorities (NTRPs) and fully fund the Global Tiger Recovery Program by 2014.

■ Develop a new partnership with business and industry: Engage business and industry in habitat conservation, valuation of ecosystems, sustainable finance, and outreach to consumers and other stakeholders, with five pilots that minimize and compensate for impacts to be launched across the TRCs in the next two years.

■ Develop and implement comprehensive national awareness strategies and initiatives to instill pride and bring people closer to nature to counteract the negative impacts on tigers from urbanization, disengagement of youth, development, and loss of cultural heritage, and to widely disseminate the value of tiger conservation landscapes.

■ Develop national action plans for a period of two years for each TRC with criteria and indicators to monitor NTRP/GTRP implementation. By issuance of the Thimphu Affirmative Nine-Point Action Agenda on Tiger Conservation, the TRC Ministers or the Heads of Delegations re-confirm their commitment to collective action and political leadership, together with the continued support of international partners to reach the goal of doubling the number of wild tigers globally by 2022.

Wildlife trafficking: East Asia Summit

The following are the comments of the National Tiger Conservation Authority on wildlife trafficking that the US proposed to bring as an agenda item at the East Asia Summit on November 20, 2012.

India has the maximum number of tigers along with its source areas amongst the 13 tiger range countries in the world. The findings of the recent all India tiger estimation indicate a countrywide 20% increase in the number of tigers in the year 2010 with an estimated number of 1706 (1520-1909). In the year 2006 estimated number of tigers was 1411 (1165-1657).

Tiger poaching and trafficking of its body parts due to outside market driven demand is one of the major threats to the tiger conservation in India. Under the ongoing Centrally Sponsored Scheme of Project Tiger, the Government of India provides funding support to States, inter alia, including protection, antipoaching operations and intelligence networking; strengthening of infrastructure within tiger reserves; creation of inviolate space through relocation; capacity building of frontline staff, local people and officers and strengthening of training centres and training in related fields, including enforcement, intelligence networking, etc.

(2) Several milestone initiatives have been taken in the last few years to control poaching and trafficking of body parts of tigers and other wild animals to strengthen tiger conservation in the country.

These initiatives, inter alia, include the following, namely:--

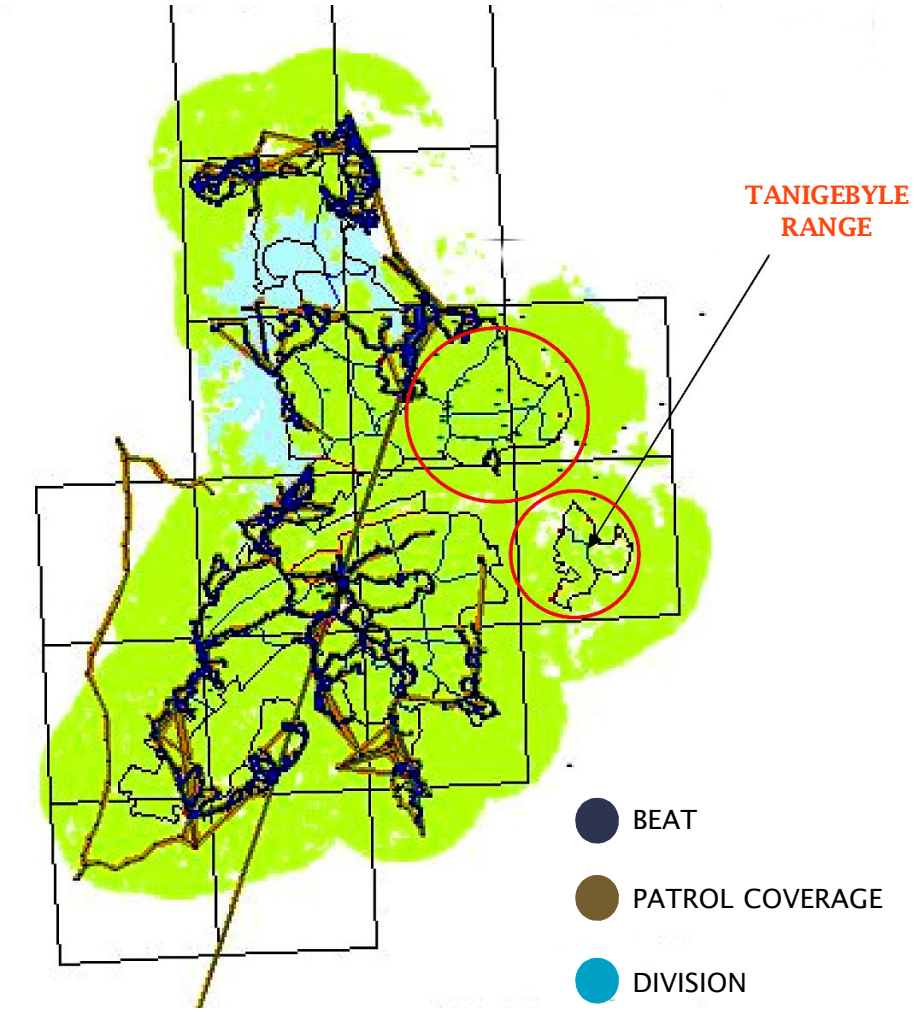
- Amendment of the Wild Life (Protection) Act, 1972 making enabling provisions for constituting the National Tiger Conservation Authority and the Tiger and Other Endangered Species Crime Control Bureau.
- Enhancement of punishment for offence in relation to the core area of a tiger reserve or where the offence relate to hunting in the tiger reserves or altering the boundaries of tiger reserves, etc.
- Strengthening of antipoaching activities, including special strategy for monsoon patrolling, by providing funding support to tiger reserve States, for deployment of antipoaching squads involving ex-army personnel or home guards, apart from workforce comprising of local people, in addition to strengthening of communication and wireless facilities.
- India has a bilateral understanding with Nepal on controlling trans-boundary illegal trade in wildlife and conservation, apart from a protocol on tiger conservation with China.
- A protocol has been signed in September, 2011 with Bangladesh for conservation of the Royal Bengal Tiger of the Sunderban.
- A sub-group on tiger and leopard conservation has been constituted for cooperation with the Russian Federation.
- A Global Tiger Forum of Tiger Range Countries has been created for addressing international issues related to tiger conservation.
- India is signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) wherein several resolutions have been adopted for controlling illegal trafficking of tiger, rhino and other wild animal body parts.
- Special Tiger Protection Force (STPF) has been approved for 13 sensitive tiger reserves. The States of Karnataka and Maharashtra have already deployed the same.
- In collaboration with TRAFFIC-India, an online tiger crime data base has been launched, and Generic Guidelines for preparation of reserve specific Security Plan has been evolved.
- Steps have been taken for modernizing the infrastructure and field protection, besides launching 'Monitoring system for Tigers – Intensive Protection and Ecological Status (M-STrIPES)' for effective field patrolling and monitoring.
- Initiatives taken for improving the field delivery through capacity building of field officials, apart from providing incentives.
- Action initiated for using Information Technology to strengthen surveillance in tiger reserves.
- India is actively participating in the South Asia Enforcement Network.
- Under the ongoing Centrally Sponsored Scheme funding assistance is being provided to States for raising awareness on wildlife conservation.

Implementation of MSTrIPES in Bhadra

The monitoring system for tigers' intensive protection and ecological status (M-STrIPES) has been launched in seven tiger reserves of hte country on pilot basis whwere monthly reports are generatedto help managers to take informed decisions for protection and management.

Data for patrolling for the month of September 2012 was collected and entered in software. Analysis of data was done and maps and reports were generated. Data for Tanigebyle range was lost in a hard disk crash. We were unable to recover this data hence data for only three ranges has been treated.

PATROL MOVEMENT & COVERAGE



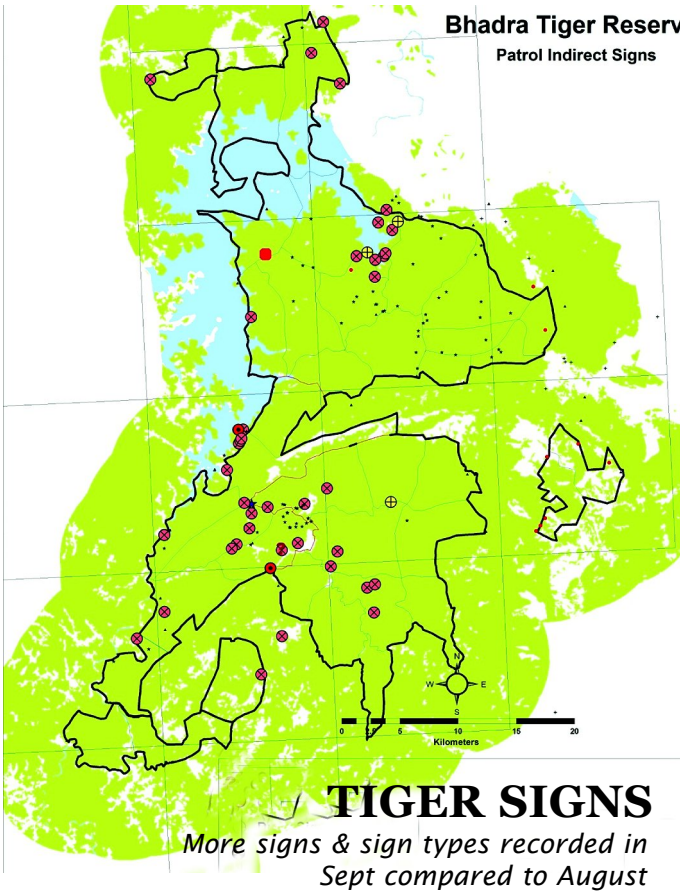
Patrolling data collection has improved in September 2012 (week 13-13-17) as compared that of August 2012 (Week 9-12). Week 13 has less data, may be because GPS units were collected for downloading track logs saved in August.

We can see there are some problems in recording track logs for some forest staff and they need to be trained in track log saving again.

Red circles indicate Tanigebyle range, data for which was lost and hence could not be entered.

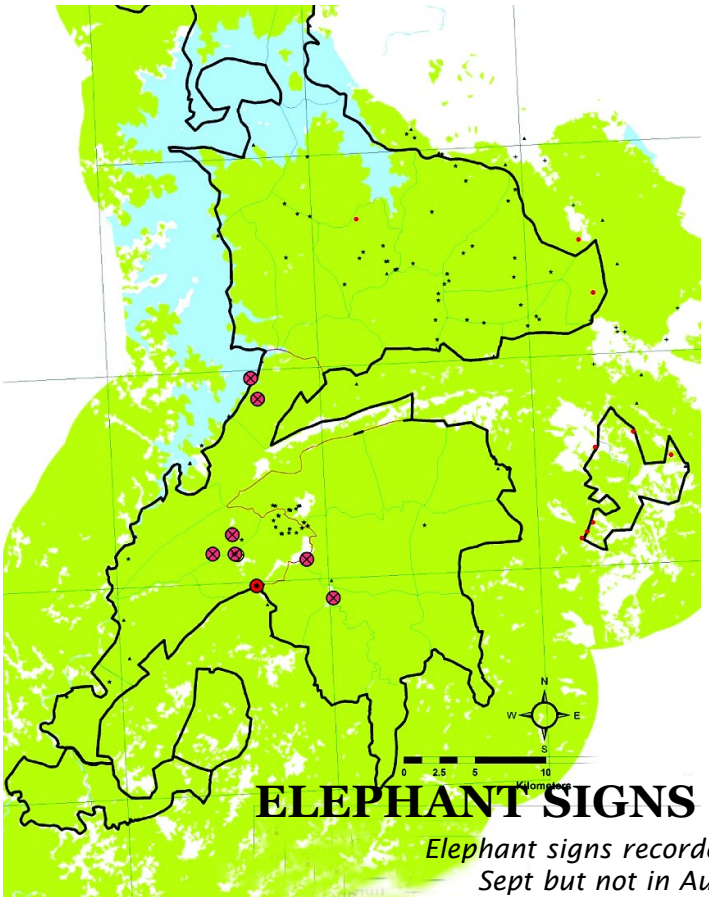
Patrolling intensity over all the park has increased (except Tanigebyle range).

Human impacts are reported in boundary of Hebbe range. Livestock grazing seems to be major impacting activity.



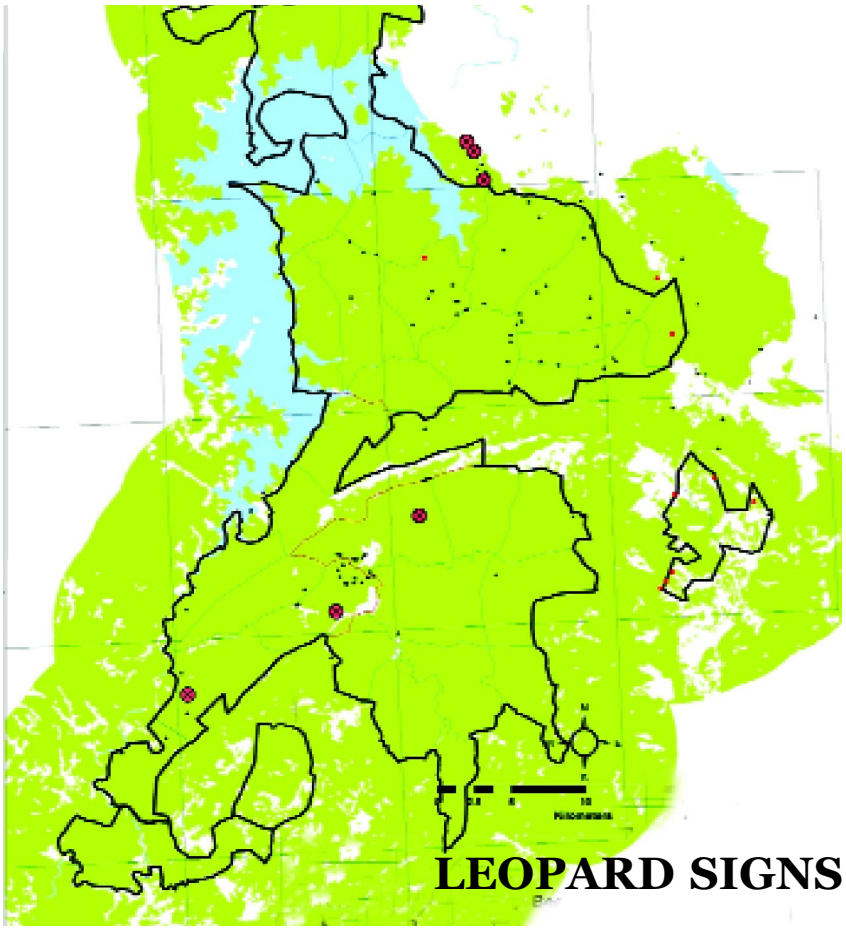
TIGER SIGNS

More signs & sign types recorded in Sept compared to August



ELEPHANT SIGNS

Elephant signs recorded in Sept but not in August



LEOPARD SIGNS

- FOOTPRINTS
- CALLS
- Other signs such as dung, feeding,

CONCLUSIONS

Data loss faced in tanigebyle range highlights need to improve storage and backup system. From results and maps prepared we can conclude that:

- Though data collection has improved it still needs improvement
- Further training is still required and needs to become a continuous process
- Data collection and processing needs to be systematized so as to improve efficiency of management inputs
- The training for ecological data collection for winter season needs to be conducted and data has to be collected.

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(Top) Hon'ble minister Jayanthi Natarajan releasing the Phase-IV tiger monitoring reports. The Phase-IV monitoring of tiger reserves is aimed at intensive, annual monitoring of tigers at the Tiger Reserve level, across 41 protected areas in the country. The objective of the NTCA exercise is to, at the very least, obtain a minimum number of tigers in a Tiger Reserve, but also aims to estimate the tiger population size and prey densities in a reserve using spatially-explicit capture-recapture approaches using software tools such as spacecap/density for estimating tiger population size and distance for estimating densities of prey

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