

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

s t r i p e s

Volume 5 Issue 3

Mar-Apr 2014



PROFILE



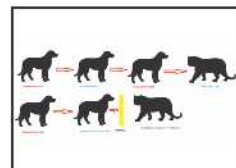
TIGER CONSERVATION
PLANNING



SUPERVISORY VISIT



WILDLIFE HEALTH





FUNDING ASSISTANCE UNDER THE CENTRALLY SPONSORED SCHEME OF PROJECT TIGER (TIGER RESERVE-WISE)

(Rs. in lakhs)

S. No.	Name of Tiger Reserve	State	Release 2013-14
1.	Achanakmar	Chhattisgarh	255.6320
2.	Anamalai	Tamil Nadu	252.8440
3.	Bandhavgarh	Madhya Pradesh	244.6120
4.	Bandipur	Karnataka	808.8410
5.	Bhadra	Karnataka	306.9850
6.	Biligiri Ranganatha Temple	Karnataka	183.5970
7.	Buxa	West Bengal	136.4700
8.	Corbett	Uttarakhand	377.6890
9.	Dampa	Mizoram	233.6800
10.	Dandeli-Anshi	Karnataka	434.5460
11.	Dudhwa	Uttar Pradesh	525.8760
12.	Indravati	Chhattisgarh	75.5500
13.	Kalakad Mundanthurai	Tamil Nadu	127.6950
14.	Kanha	Madhya Pradesh	3162.2040
15.	Kaziranga	Assam	708.9060
16.	Kawal	Andhra Pradesh	90.4300
17.	Manas	Assam	99.0765
18.	Melghat	Maharashtra	320.4880
19.	Mudumalai	Tamil Nadu	229.1160
20.	Nagarahole	Karnataka	251.1008
21.	Nagarjunsagar	Andhra Pradesh	121.3504
22.	Namdapha	Arunachal Pradesh	324.0137
23.	Nameri	Assam	0.000
24.	Pakke	Arunachal Pradesh	412.8568
25.	Palamau	Jharkhand	251.1680
26.	Panna	Madhya Pradesh	358.3480
27.	Parambikulam	Kerala	208.1840
28.	Pench(MP)	Madhya Pradesh	314.2390
29.	Pench(Mah.)	Maharashtra	343.4400
30.	Periyar	Kerala	271.4880
31.	Ranthambore	Rajasthan	304.5200
32.	Sahyadri	Maharashtra	136.7660
33.	Sanjay-Dubri	Madhya Pradesh	323.6850
34.	Sariska	Rajasthan	208.3280
35.	Satkosia	Odisha	191.3030
36.	Satpura	Madhya Pradesh	393.0500
37.	Simlipal	Odisha	556.8900
38.	Sunderban	West Bengal	211.3400
39.	Tadoba-Andheri	Maharashtra	2564.4383
40.	Udanti-Sitanadi	Chhattisgarh	208.4560
41.	Valmiki	Bihar	284.7730
42.	Sathyamangalam	Tamil Nadu	144.0200
Total			16957.9955





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Profile
Nawegaon
Nagzira Tiger
Pg 4



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note from the editor

The National Tiger Conservation Authority has stressed on the need to adopt a landscape approach to tiger conservation in order to maintain tigers in a viable meta-population framework. The declaration of Nawegaon-Nagzira Tiger Reserve (NNTR) in Maharashtra, profiled in this issue, is a step in that direction. The NNTR population is connected to Kanha in the north and Tadoba-Andhari to the south and forms a viable population in the Central Indian landscape.

Planning for tiger conservation is of utmost importance which is institutionalized through the Tiger Conservation Plan (TCP) as enshrined under section 38V of the Wildlife (Protection) Act, 1972. A meeting in this regard was held wherein issues pertaining to framing this document were discussed threadbare. Valuable inputs from managers and scientists were received and grievances were redressed.

Routine monitoring works took the officers of this Authority to Biligiri Ranganathaswamy Temple Tiger Reserve in Karnataka, which has innovated in use of a software 'HULI' on lines of the M-STriPES propagated by this Authority.

Canine distemper continues to be a clear and present danger to our tiger populations at their interface with humans. A concept of creating immunization buffers around tiger reserves has been highlighted in this issue to address this problem.

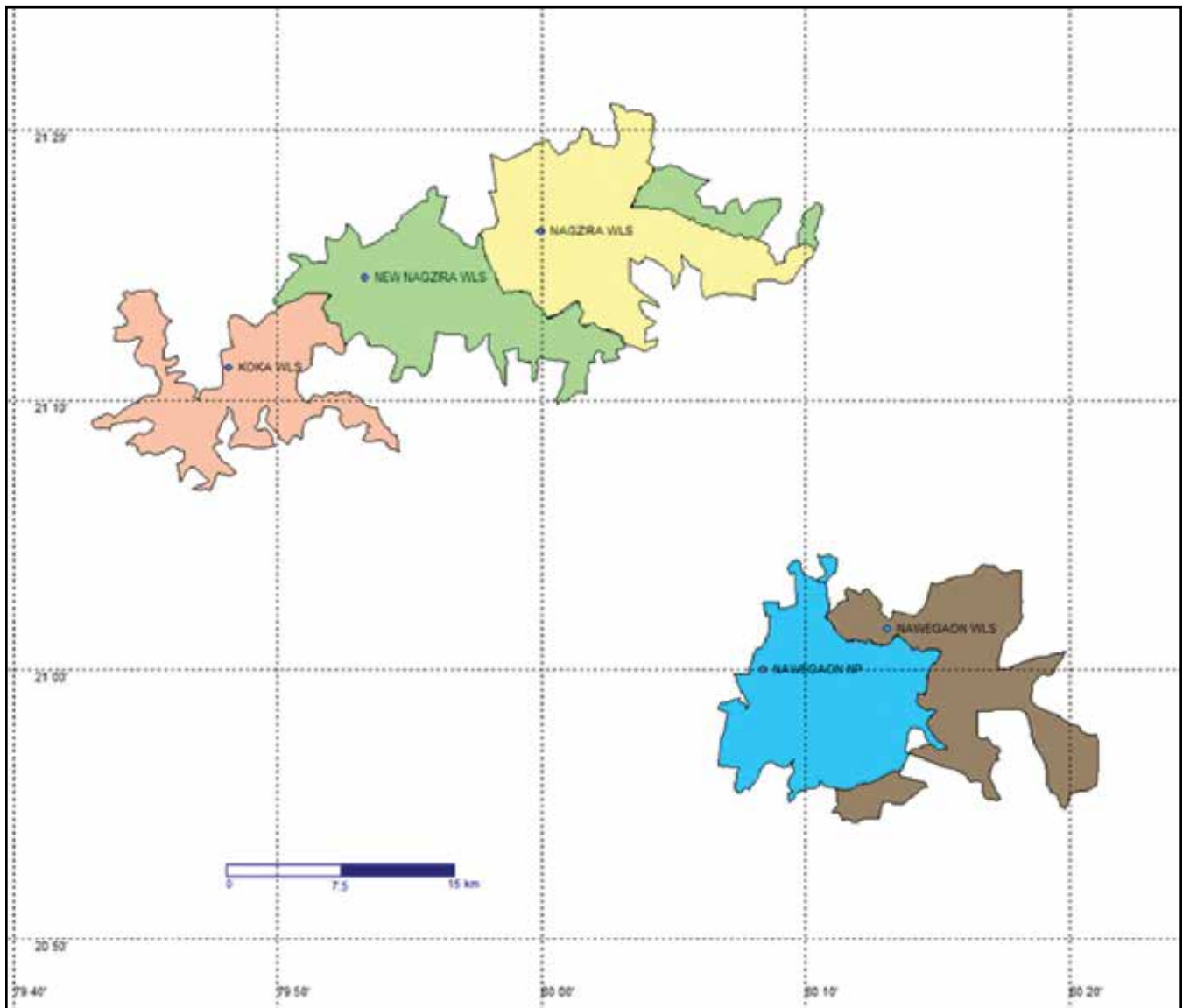
(Dr. Rajesh Gopal)
Member Secretary (NTCA)

NAWEGAON NAGZIRA TIGER RESERVE

Nawegaon-Nagzira Tiger Reserve, declared in 2013 is situated in the Gondia and Bhandara Districts of Maharashtra. The reserve is rich in bio-diversity and has linkages with Kanha, Pench and Tadoba Tiger Reserves.

The area of the tiger reserve is 653.67 sq km which is constituted entirely of the core/critical tiger habitat, as the buffer is yet to be notified. The topography is undulating, and the highest point viz.

‘Zenda Pahad’ is around 702 m above MSL. The reserve is made up of five protected areas which occur in two disjunct patches made of three and two protected areas each as shown in the map.



The area statement of these five constituent units is as follows

Sr. No.	Name of Wildlife Sanctuary/ National Park	Area of Tiger Reserve in Sq.Km.
1.	Nawegaon National Park	129.55
2.	Nagzira Wildlife sanctuary	152.41
3.	Nawegaon Wildlife Sanctuary	122.76
4.	New Nagzira Wildlife Sanctuary	151.33
5.	Koka Wildlife Sanctuary	97.62
	Total Area	653.67



Flora and Fauna

The forests are “Southern Tropical Dry Deciduous” (Champion and Seth, 1968). There are 364 species of plants and the major trees are: *Terminalia tomentosa*, *Lagerstroemia parviflora*, *Anogeisus lotifolia*, *Pterocarpus marsupium*, *Diospyrus melanoxylon*, *Ougeinia oogenesis*, *Tectona grandis*, *Bombax ceiba*, *Lannea grandis*, *Boswellia serrata*, *Adina cordifolia*, *Xylia xylocarpa*, *Terminalia arjuna*, *Syzygium cuminii*, *Schleichera oleosa*, *Terminalia chebula* and *Sterculia urens*. The prominent shrubs are: *Holarrhena antidysenterica*, *Wrightia tinctoria*, *Woodfordia fruticosa* and *Helicteres isora*. The climber species include: *Butea* and *Bauhinia*, while the grass species are: *Themeda*, *Iseilema*, *Apluda*, *Eragrostis*, *Cynodon*, *Imperata*, *Vetiveria* and *Heteropogon*.

The faunal species include:

mammals (34), reptiles and amphibia (36), birds (202) and butterflies (49). The major wild animals are: Tiger, Panther, Small Indian Civet, Palm Civet, Wolf, Jackal, Wild Dog, Sloth Bear, Ratel, Common Giant Flying Squirrel, Gaur, Sambar, Chital, Four Horned Antelope, Mouse Deer and Pangolin.

Significance for Tiger Conservation

The five protected areas forming the Nawegaon Nagzira Tiger Reserve are located in the heart of the Central Indian Tiger landscape. The NTCA-Wildlife Institute of India study in 2010, has recognized important corridor connectivities between this tiger reserve and two important source areas of Kanha in Madhya Pradesh and Tadoba Andhari in Maharashtra. When viewed synoptically, the Nawegaon-Nagzira Tiger Reserve falls between nine tiger reserves i.e. Achankamar,

Kanha, Bor, Satpuda, Melghat, Pench, MP and Maharashtra, Tadoba-Andhari, Indrawati and Udanti-Sitanadi. In fact this landscape connects the tiger populations of Maharashtra, Madhya Pradesh and Chhatisgarh. Hence, long term survival of tigers in this meta population has a bright future as the area is going to further strengthen from the inputs provided by the ongoing Centrally Sponsored Scheme of Project Tiger.

The NTCA-Wildlife Institute of India study in 2010, has recognized important corridor connectivities between Nawegaon -Nagzira tiger reserve and two important source areas of Kanha in Madhya Pradesh and Tadoba- Andhari in Maharashtra. Hence, long term survival of tigers in this meta population has a bright future as the area is going to further strengthen from the inputs provided by the ongoing Centrally Sponsored Scheme of Project Tiger.

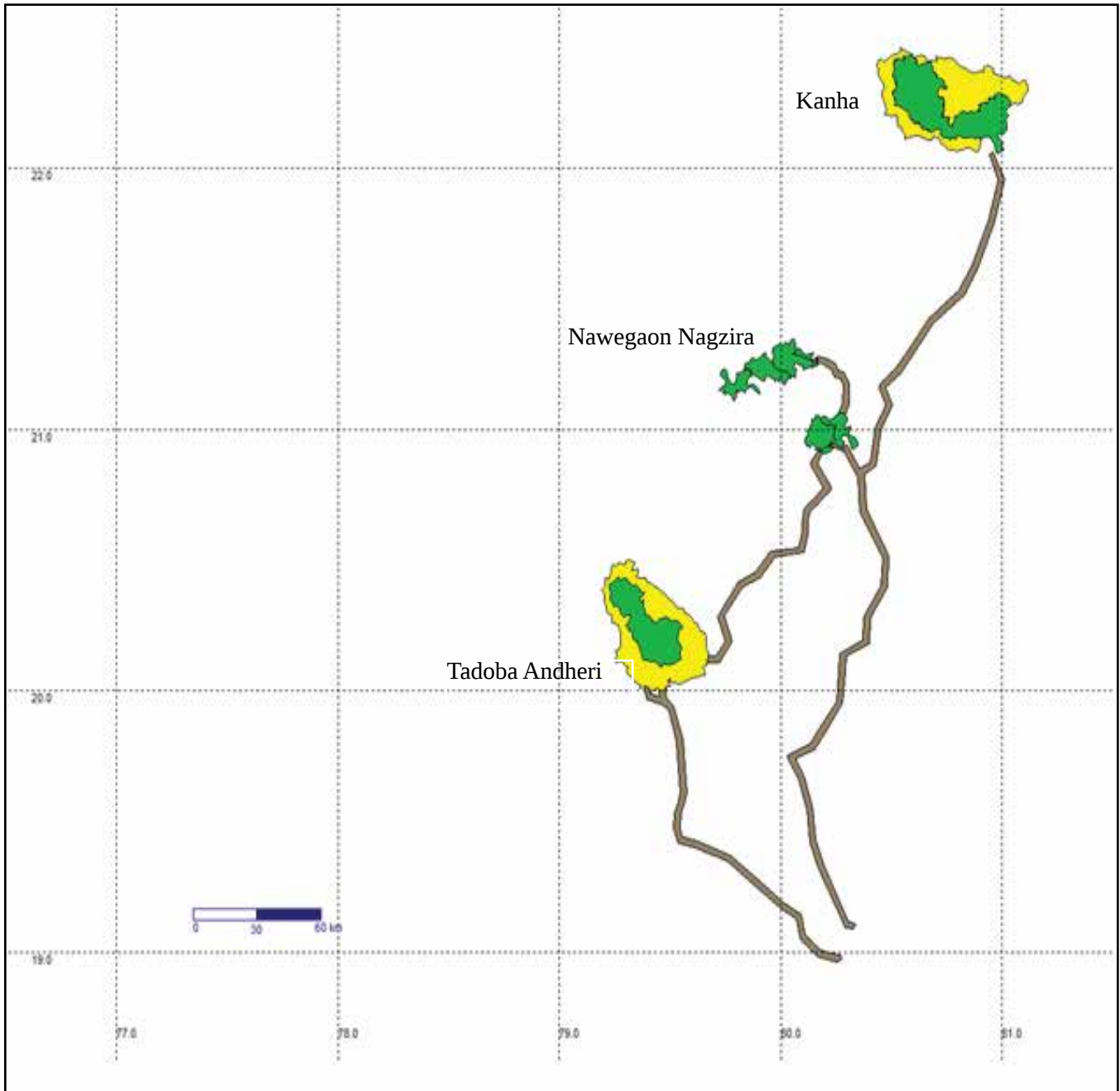
Challenges

The peripheral areas need to be brought under the buffer zone for actively addressing the people oriented agenda (human-wildlife conflicts, eco-development – livelihood options), to benefit local people and wild animals, besides fine tuning the ongoing

forestry practices. Day to day monitoring of tiger and wild animals is important in the core as well as in the peripheral areas with stepped up protection.

The forests of Gondia, Bhandara forest divisions (including those under Forest

Corporation) adjoining the reserve have important corridor value owing to their linkages with other tiger reserves in the region. Hence, a restorative management on the lines of the buffer is required in such areas.



MEETING OF CHIEF WILDLIFE WARDENS AND FIELD DIRECTORS



A meeting was held with Chief Wildlife Wardens / Field Directors on draft Tiger Conservation Plans of tiger reserves at the Scope Complex, New Delhi on 11th and 12th March, 2014. The importance of Tiger Conservation Plan (TCP) as the blue print for managing tiger reserves, vis-à-vis the provisions of the Wildlife (Protection) Act, 1972, was stressed upon.

Dr. Rajesh Gopal, ADG (Project Tiger) and

Member Secretary (NTCA) made a presentation on the emerging thematic areas in tiger conservation. The presentation, interalia, covered:

- TCP : a statutory requirement in 2006, specific for a tiger reserve
- Addresses core, buffer and beyond (corridor)
- Requires the approval of NTCA
- Timeline for submission : submission made in the Hon'ble Apex Court
- Salient features of a recent case in the NGT
- Guidelines of NTCA
- Review of TCPs by NTCA and comments communicated to States
- Need for more clarity on interventions / implementation strategy in core, buffer and corridor
- Need for comprehending the agenda of core, buffer and corridor
- Core agenda : exclusively tiger

- Buffer agenda : aggressive co-occurrence
- Corridor agenda : as in buffer
- Land tenure dynamics of tiger, source-sink dynamics
- Requirements in the core: protection, very limited habitat intervention as per carrying capacity for tiger, fostering the area for a reproductive surplus to populate promising source areas within the landscape
- Requirements for the buffer: inclusive agenda to benefit people and dispersing wild animals, no intervention to be done for elevating the wildlife status of buffer at par with the core, interventions should be limited to facilitate tiger gene porosity / meta population dynamics by fostering productive habitat patches, retrofitting measures in existing heavily used infrastructure, offsite / onsite safeguards for ecologically unsustainable land uses, should be otherwise ‘no go area’ for industrial development, sectoral integration for fine tuning working plans, industrial / non-industrial developmental works ongoing in the area
- Requirements for the corridor : strategy as for buffer which should be reflected in various district level plans, working plans to be implemented by respective agencies, should be ‘no go areas’ for industrial development, ground truthing for floral / faunal spatial presence to be done as a part of micro appraisal
- Enlarged mandate for a Field Director (FD) in the present context, involvement required at various levels, viz. State / GOI (NTCA) and WII
- FD to act as an anchor with a naturalist’s vision for a tiger landscape while ensuring the TCP as a component of a larger multi stakeholder landscape plan

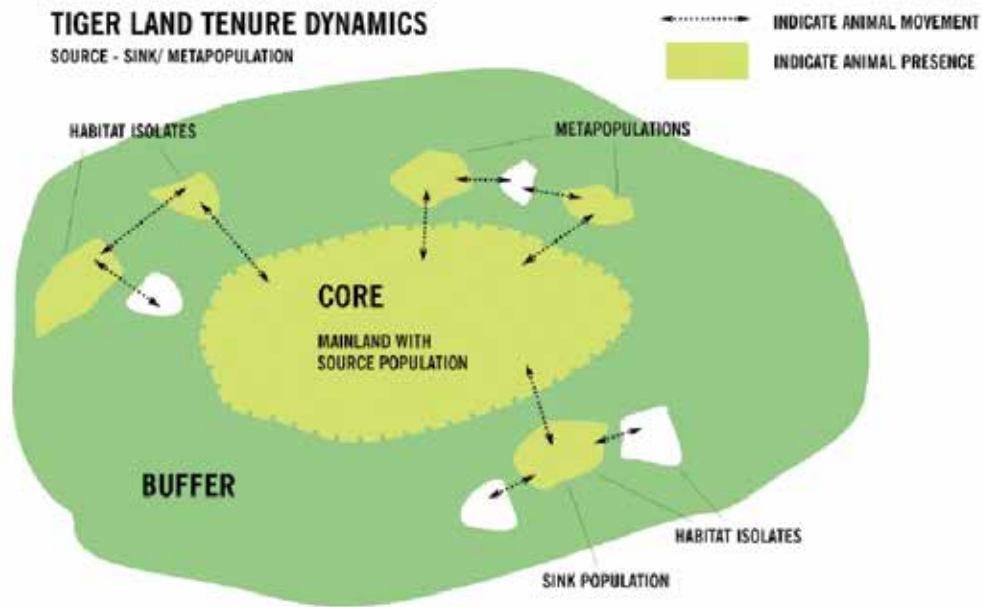
Shri Sudhanshu Mohanty, AS & FA shared his experience, based on visits to Corbett, Kaziranga, Sundarbans and Satkosia Tiger Reserves. While appreciating the problems and difficulties faced by field officials, several suggestions were made by him:

1. Exploring possibilities of an insurance policy for livestock / human depredation (including casualties of frontline staff / daily wagers working in tiger reserves)
2. Providing good health facilities to staff through convergence with the ongoing National Health Mission, including telemedicine facility in nearby hospitals with a view to improve the skills of local doctors
3. Leveraging technology in collaboration with the Ministry of New and Renewable Energy
4. Securing financial assistance from the Fourteenth Finance Commission, while treating tiger conservation as an ecosystem service
5. Replicating the 24X7 e-surveillance as installed in Corbett
6. Availing chopper service during rainy season in difficult areas
7. Collaborating with the Border Road Organisation for works relating to road widening in difficult terrain
8. Innovative use of flexi-funds
9. Adopting innovative awareness programme and creation of interpretation centres
10. Floating tax free ‘tiger bonds’ for liquidity
11. Striving for self sustainability through recycling of tourism gate receipts, sale of souvenirs
12. Renaming ‘Project Tiger’ as “Tiger Ecosystem Service”

The participants were also briefed about the recent approval regarding support to ration allowance under Project Tiger @ Rs. 836/person/month to staff on regular pay rolls (Forester and below). The AS & FA stated that the intangible benefits from tiger reserves are not readily discernible, and it is important to highlight the need for fund to the Ministry of Finance, while striving to secure support from the Finance Commission and the CAMPA.

Dr. Rajesh Gopal, ADG (Project Tiger) and Member Secretary (NTCA) made a presentation on the landscape approach for tiger conservation. The presentation was divided into four parts and, interalia, covered:

Part –A



- Urgent need for a landscape approach to factor in tiger concerns amongst various sectors
- Importance of sink tiger populations vis-à-vis genetic / demographic viability
- Need for landscape specific mitigation strategy
- Tiger meta-populations
- Securing tiger source areas for reproductive surplus and landscape specific strategies to improve productivity and prey base of poorer sink habitats through an inclusive agenda involving all stakeholders
- Possible funding sources for landscape approach : CSS, State Plan, Finance Commission, CAMPA, RDD+, corporate sectors
- Articulation on source-sink dynamics of tiger
- Habitat dynamics in a tiger landscape, components of habitat heterogeneity, mapping of tiger corridor at a macro level during country level tiger assessments
- Demands on tiger landscape : people agenda, non-industrial development agenda, industrial development agenda

- Mitigation strategy : proposal for categorizing a landscape into four priority areas (P1: source areas; P2: buffer, corridor; P3: forest / non-forest areas beyond corridor and P4: existing industrial areas, urbanized landscape)
- Need for coordinated approach between GOI and States : evolving tiger landscape specific mitigation principles with a monitoring mechanism
- Coordination at GOI level involving NTCA
- Coordination between NTCA and State Steering Committees constituted under the Wildlife (Protection) Act, 1972
- Evolving tiger sub-landscape plan by integrating Tiger Conservation Plans, Management Plans of protected areas, District Plans, Forest Working Plans, other ongoing schemes/ projects, industrial projects
- Suggested three tiered institutional framework for States : Level 1 – State level Steering Committee; Level 2 – Tiger landscape level-under the senior most DC/DM or Commissioner and Level 3 – District level under the respective DM / Collector
- Recognized goals of ecosystem management

Part-B

- Mitigation strategy : delineation of tiger corridors at macro level



- Mitigation strategy for P1 areas (No-go areas for development) with exclusive tiger agenda, computation of tiger carrying capacity, augmenting prey base, strengthening protection, providing inviolate space
- Mitigation strategy for P2 areas (No-go areas for development) with co-occurrence agenda for dispersing tiger / wildlife and people; legal basis, micro-level ground truthing, fine tuning of forestry operations, mainstreaming tiger concerns in sectors of development
- Details of fine tuning in the context of ongoing forestry operations including

MFP collection, importance of patch size / shape, importance of landscape patterns and considering them in temporal / spatial scales, influence of forestry operations on landscape patterns, relative sizes of core / buffer areas, appraisal at larger / finer levels

- Appraisal for interventions at larger spatial scales (buffer size, natural species composition, age structure, detention of old stands, maintaining spatial heterogeneity, edges / ecotones, existing corridors,

riparian zones, unique habitats, human settlements, villages / towns / private estates / agriculture land, special projects, rail/rail infrastructure, industries, juxtaposition, interspersion)

- Importance of formation levels, relationship between ungulate habitat use and cover availability
- Habitat appraisal at finer spatial scale : forestry practices, edge effect, species diversity, location of human settlements, infrastructure

- Summary of managerial interventions in buffer and corridor
- Principles of buffer / corridor management : Zone and Theme Plans
- Data collection for zone / theme planning in P2 areas
- Ecological availability of trees vis-à-vis stem removal
- Buffer not to be managed for 'core like' wildlife status, but at a wild ungulate density which is 30% lower than optimal density levels in core areas



- Use of regeneration / status and relationship between canopy class and wild ungulate dung presence in the core to be used as a guide to prescribe stem removal
- NTFP collection and sustainable levels while treating core as a base line
- Fuel-fodder collection
- Details of zone / theme plans
- District level developmental works and ecodevelopment
- Factoring tiger source areas / buffer / corridor in district level stock taking report
- Addressing forestry dependency / human-wildlife conflict at Gram Panchayat level
- Addressing urban forestry / wildlife issues at ward level Details of zone plan for retrofitting measures, avoidance
- Retrofitting measures for coal mining, dams and hydro power sectors, linear infrastructure / other projects
- Water shed and soil conservation
- Tourism / temple visitation
- Suggested theme plans

The tiger should never be seen as a drag on development but as a symbol of the ecosystems well being

Part-C

- Strategy for forest / non-forest areas beyond corridors
- Working plans
- District level schemes
- Notifications under EPA
- Categories of industries : green, orange and red
- CSR : investments in P1 and P2 areas within tiger landscapes
- P4 areas : inputs for urban ecology, monitoring compliance of conditions imposed on project proponents, support for petty production in urban / semi-urban areas
- PHAV models highlighting the need for corridor

Part-D

- Tiger not to be seen as a 'drag' on development
- Need for green infrastructure
- Retrofitting for existing 'gray' infrastructure
- Tiger forests are natural capital providing goods and services
- Importance of green accounting and green GDP
- Wild tiger symbolic of ecosystem well being
- Future strategy
Dr. Y.V. Jhala, Sr. Scientist, Wildlife Institute of India made a presentation, interalia, covering:
- Use of predictive equation (Hayward et. al. 2007) in computing carrying capacity for large predators like the tiger and its limitations
- Computation of ungulate density
- Use of DENSITY 5 programme in determining the limits of ecosensitive zone in tiger habitats
- Delineation of ecosensitive zone (Goa example)

BILIGIRI RANGANATHASWAMY TEMPLE TIGER RESERVE

Supervisory visit to Biligiri Ranganathaswamy Temple Tiger Reserve was carried out on 15th and 16th April, 2014. During the visit to the tiger reserve, issues related to the protection of tiger reserve, adherence to Tripartite MoU, preparation of the TCP, implementation of APO (CSS-PT) and monitoring of tiger co-predator and prey were reviewed. Various works executed under CSS-PT were also inspected. The detailed observations made during the visit are given below:

1. Anti Poaching Camps and protection of tiger reserve:

There are 25 Anti Poaching Camps (APCs) in the tiger reserve located at strategic locations from the protection point of view. In each Anti Poaching Camp four Anti Poaching watchers are being deployed to take care of regular perambulation and protection under the leadership of Forest Guard and which is being monitored regularly by Section Forest Officer. On

inspection it was found that all basic amenities for APC watchers have been provided and APCs are connected by good wireless network. In APC no patrolling records/ registers are maintained, as the “Huli” smart patrolling tool is being used to track the patrolling schedule of APCs watchers.

2. Adherence to Tripartite MoU

During the visit, compliance of the obligations of Tripartite MoU related Field Director of the tiger reserve (Article-III) were reviewed and found that the following obligations need to be complied with.



- a. Security plan needs to be prepared for the reserve.
- b. Staff development plan needs to be prepared and submitted to the State Government.
- c. Records of all assets acquired out of the grant released by the NTCA needs to be maintained for necessary security audit.

per the latest guidelines of NTCA and it will be completed within the time limit prescribed by the NTCA.

6. Implementation of HULI software:



3. Preparation for fire season:

All the fire lines have been maintained as per norms and fire watchers have been engaged.

4. Status of monitoring of tiger co-predator & prey in tiger reserve:

Phase-I monitoring had been completed during December, 2013. The data

“Huli” is being implemented as a smart patrolling tool in the tiger reserve. For this purpose Samsung tablets loaded with “Huli” software have been provided to the APCs. The Anti Poaching watchers carry those tablets whenever they go for patrolling in a track log mode and enter all animal sighting details in the tablet along with photographs. Once in a week all the tablets from the APCs are taken to the

gathered from Phase-I is being entered in to requisite software. Phase-IV monitoring was being done in the tiger reserve in a phased manner because of shortage of camera traps.

5. Progress of TCP preparation:

The Director informed that, TCP is being prepared as

range office/ Director Office, where the data from tablets is transferred to main system/ computer through “wi-fi” network to generate maps for the patrolling effort. Since “Huli” is being used in the APCs, no patrolling registers are maintained at APC level. If a tablet goes corrupt, then the entire data will be lost for that period. Hence, it is necessary to maintain manual patrolling log at each APC in addition to “Huli” software.



IMMUNIZATION BUFFERS: NEED OF THE HOUR TO SAFEGUARD TIGER POPULATIONS

The ever expanding interface between wildlife and livestock poses a serious health risk to our existing wild populations. There is an urgent need to factor in animal health surveillance and monitoring protocols in day to day management interventions. The rationale of core and buffers have protected our tigers and other animals from pressures of development but would fail in context of diseases which have potential to assume epidemic forms in small isolated populations of tigers. There is already a threat of diseases like Canine Distemper looming large, and which has taken a toll on the Amur tiger (*Panthera tigris altaica*) in Siberia. Hence, there is a need to safeguard these population by devising immunization buffers around core areas of our tiger reserves.

The concept of creating immunization buffers around Tiger Reserves should be initiated keeping in mind the principles of herd immunity; the latter is briefly discussed as follows:

- i. Herd immunity concept proposes that in contagious diseases such as Canine Distemper (CD), the chain of infection is likely to be disrupted when large numbers of a population are immune (vaccinated) or less susceptible to the disease (due to vaccination).
- ii. The rationale behind this is that the **exposure** of unvaccinated /susceptible animals (tigers in the case of tiger reserves) to infected animals shall be **substantially reduced**. Hence, greater the proportions of individuals which are vaccinated/resistant/immune to the disease, lesser are the chances of its transmission. In essence vaccinated animals act as a firewall between tigers and stray animals
- iii. Therefore, a policy of herd immunity can be formulated for stray dogs and cats around Tiger Reserves to prevent the spread of CD and other diseases and provide a level of protection to a vulnerable, unvaccinated group like tigers/wild animals
- iv. However, the **herd immunity threshold** i.e. proportion of immune individuals in a population (in the instant case population includes all animals susceptible to the disease including tigers) above which a disease may no longer persist needs to be arrived at in and around Tiger Reserves. Possible source of information can be retrospective data available with the local Veterinary & Animal Husbandry office or Veterinary Colleges, which shall help to see secular trends of disease cases in the said geographical area. Analysis of disease data can help establish
 - Virulence of the disease prevalent in the area and
 - The efficacy of commonly

used vaccines to see number of cases contracting the disease in spite of vaccination

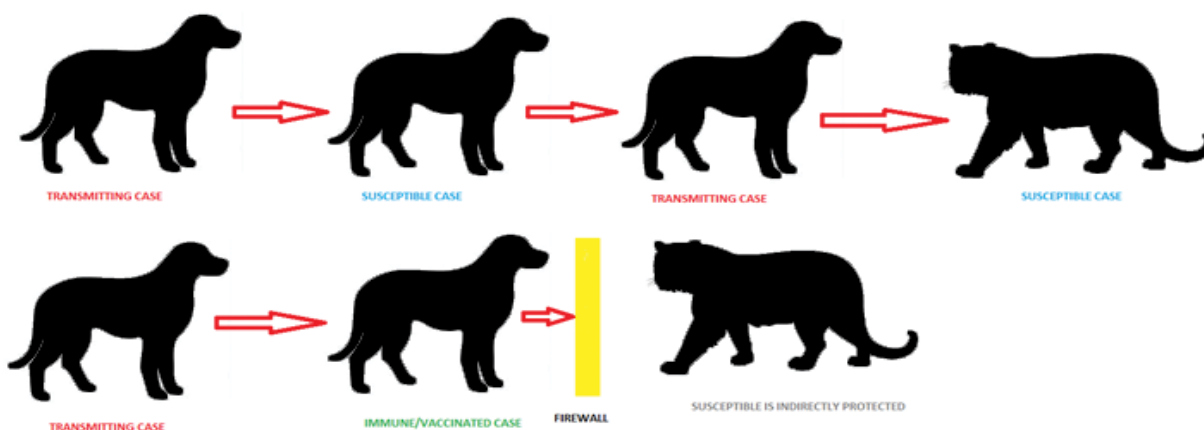
- Empirical data of different diseases however, has shown that vaccinating 70 to 80% of the population helps in reduction of transmission of the disease. This shall help in designing a vaccination protocol for the envisaged immunization

buffers with optimum costs as the entire population need not be vaccinated

- v. If retrospective data is not available, then support from Veterinary Colleges/ Animal Husbandry Departments needs to be solicited in conducting a **sero-prevalence study** of animals around the TR for diseases. The sylvatic presence of diseases in tiger

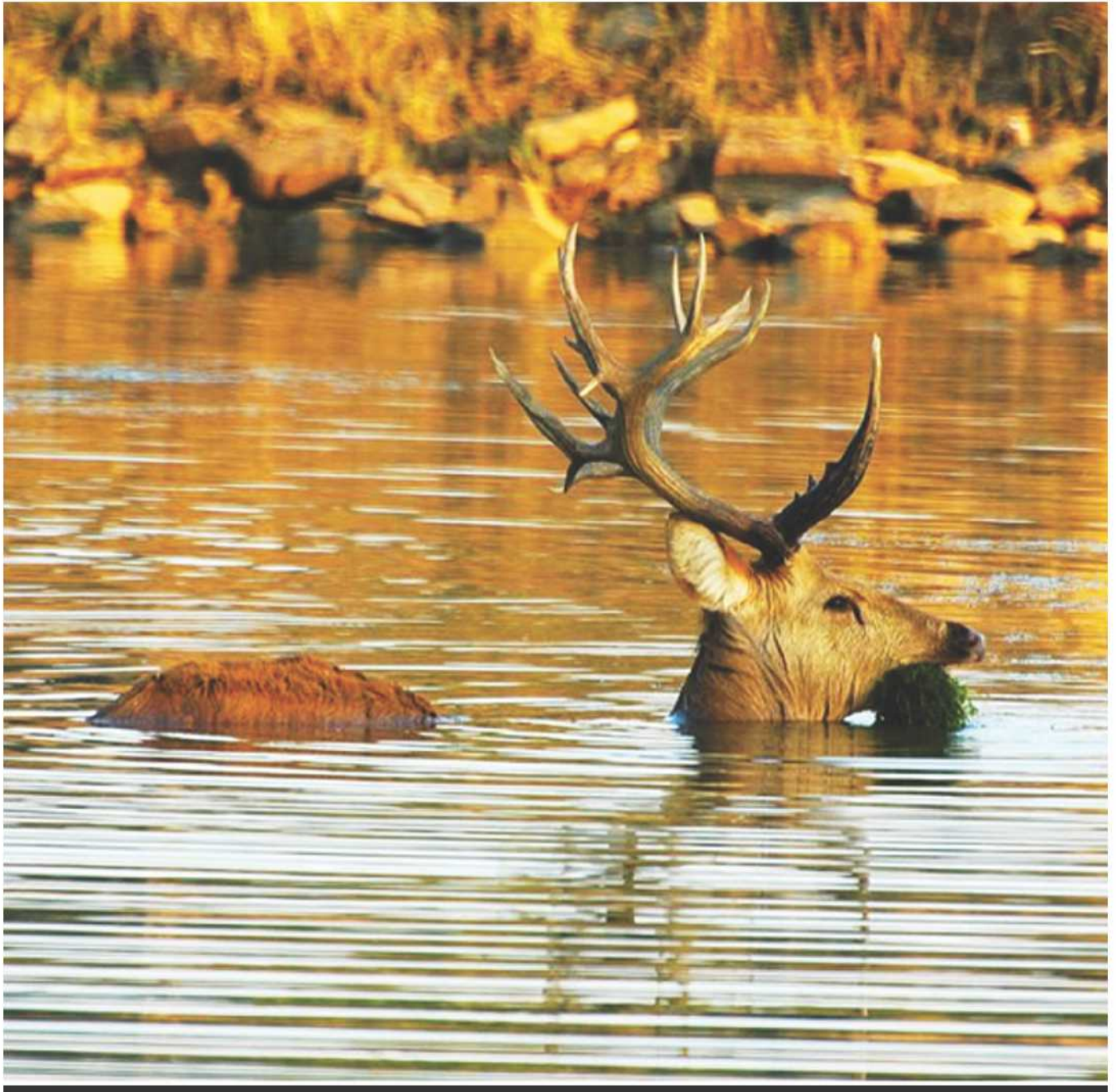
reserves can be established by;

- Retrospective data on wild animal mortality available with TR management
- Screening of serum samples of tigers and other wild animals after blood collection subsequent to immobilization



TIGER MORTALITY MARCH-APRIL 2014

DATE	STATE	LOCATION	INSIDE/OUTSIDE TIGER RESERVE
1 19 Apr 2014	Assam	Orang National Park	Outside
2 18 Apr 2014	Kerala	Chethalyath Forest Range Under the South Wayanad Forest division	Outside
3 15 Apr 2014	Uttarakhand	Gebua Terai West Forest Division	Outside
4 15 Apr 2014	Bihar	Valmiki Tiger Reserve	Inside
5 9 Apr 2014	Karnataka	Nagarhole Tiger Reserve	Inside
6 25 Mar 2014	Assam	Mora Gyati under Banshar Range of Manas Tiger Reserve	Inside
7 21 Mar 2014	East Uttarakhand	East Gadapu Beat Co. No. N-1, of Pipal Padav Range	Outside
8 19 Mar 2014	Assam	Kaziranga Tiger Reserve	Inside
9 17 Mar 2014	Tamil Nadu	Anamalai Tiger Reserve	Inside
10 11 Mar 2014	Madhya Pradesh	Digdola, Kisli, Kanha Tiger Reserve, 696	Inside
11 10 Mar 2014	Bihar	Bagaha 2 Block, Madanpur, Valmiki Tiger Reserve, M7	Inside



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