

# Review of Tiger Reserve Assessment Reports

*Prepared by*  
**International Union for  
Conservation of Nature and Natural Resources (IUCN)**



**Project Tiger Directorate**

**Ministry of Environment & Forests  
Government of India**



जहाँ है हरियाली ।  
वहाँ है खुशहाली ॥

**IUCN**  
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| Front Cover:                           | - Vijay Cavale |
| Back Cover: Ranthambhore Tiger Reserve | - V.B. Mathur  |

### ***Design and Layout***

V.B. Mathur and Rajeev Thapa  
Wildlife Institute of India, Dehradun

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# **Review of Tiger Reserve Assessment Reports**

*Prepared by*  
**IUCN - The World Conservation Union  
Asia Regional Office, Bangkok**

*At the request of*  
**Ministry of Environment & Forests Government of India  
November 2005**



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# Foreword



Project Tiger was launched on April 1, 1973, based on the recommendation of a Special Task Force of the Indian Board for Wildlife to ensure maintenance of a viable population of tigers in India. Initially, the project was launched in nine tiger reserves, covering an area of 16,339 sq. km., which has now increased to 28 tiger reserves, encompassing 37,761 sq.km. of tiger habitat distributed in 17 States.

Despite several constraints, the project has put the tiger on an assured course of recovery from the brink of extinction, apart from conserving the floral and faunal genetic diversity in some of our unique and endangered wilderness ecosystem. Effective protection and concerted conservation measures inside the Tiger Reserves have brought about considerable intangible achievements also, i.e, arresting erosion, enrichment of water regime, and overall habitat resurrection. Labour oriented activities in Tiger Reserves have helped in poverty alleviation of the most backward section, and their dependence on forests has also reduced. The project has been instrumental in mustering people's support for nature conservation in general.

Though the Project has been assessed and evaluated several times, a more systematic approach for monitoring and evaluation of Tiger Reserves was undertaken by the Ministry. A panel of independent experts, selected on the basis of their professional expertise, and ensuring absence of conflict of interests, empanelled in accordance with the prescribed norms of the Ministry, were mandated with the task of carrying out the monitoring. As many as 45 criteria were used for evaluating planning, input, process and output, with different weight ages.

The criteria, based on the World Commission on Protected Areas (IUCN) framework, were adapted to the Indian context. The scoring criteria on each parameter were included in the methodology to reduce subjectivity. Different experts were allocated to different Tiger Reserves and the assessment based on their field visits were received in prescribed criteria

based proforma. The appraisal reports were subsequently peer reviewed by international experts nominated by the IUCN.

Out of the 28 Tiger Reserves, 10 have been rated as "Very Good", 10 as "Good", 6 as "Satisfactory" and 2 as "Poor". The evaluation has also brought out several concerns, i.e, late release of Central Assistance to the Tiger Reserves by the States, inability of some States to provide matching grant, dual control of buffer zones by parks and territorial divisions, encroachment, fires and poaching in some areas, reduced manpower owing to ban on recruitment, inadequate logistics, and lack of basic amenities for field staff, apart from insurgency problems at some places.

The IUCN has peer reviewed the assessment, and I wish to quote their remarks –

"For those seeking to save the wild tigers, tiger conservation in India has been the touchstone. Both the Project Tiger and the Government of India should be commended for encouraging independent evaluations and subsequent peer reviews of the current management of the Tiger Reserves in a country that now holds the key to the future of tigers in the wild. These conservation efforts must continue to be supported through adequate resources, adaptive management and a strong political will. It also bears mention that India is one of the first countries in Asia that has attempted to adopt the WCPA Management Effectiveness Assessment Framework to its system of protected areas".

It is my proud privilege as the Minister of Environment and Forests to lay this report on the table of the House.

A handwritten signature in black ink, appearing to be 'A. Raja', with a long horizontal stroke extending to the right.

(A. RAJA)

# Executive Summary

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*In July 2004, the Project Tiger Directorate appointed eight wildlife professionals to undertake an independent assessment of all 28 Tiger Reserves in India. The monitors were selected based on their professional background, expertise, absence of conflict of interest and independence from the Ministry of Environment and Forests, Government of India, which has been mandated to provide funding support and guidance to States for managing the Tiger Reserves. The assessment was based on the Management Effectiveness Assessment Framework (MEAF) developed by the IUCN World Commission on Protected Areas, adapted to the Indian context, as a standardized approach (and toolkit) to help managers evaluate the effectiveness of protected area management. A total of 45 parameters were used to arrive at an aggregated score for evaluating the management effectiveness of each Tiger Reserve.*

*IUCN was asked by the Government of India to use its in-house expertise as well as its network of international experts to undertake a peer review of the Tiger Reserve assessments done by the monitors. Accordingly, IUCN Asia Regional Office (Bangkok) arranged to review all 28 Tiger Reserve assessments and, specifically, comment on the compliance of criteria used, the plausibility of the overall results, the methodology followed, and to make recommendations on the future use of the MEAF for Tiger Reserves in India. This report represents a synthesis of the findings of the IUCN review.*

*In regard to the Management Effectiveness Assessment Framework (MEAF), the methodology for assessment of the Reserves focused on four of the, six evaluation elements. As a result, the assessments provide good information on management "efficiency" (comparison of inputs to outputs) but only limited guidance on management "effectiveness" (comparison of outputs to outcomes). While the overall results provided by the monitors are plausible, suggestions have been made for further improvements in the evaluation methodology to ensure consistency of application among evaluators.*

*The independent assessment carried out by the Project Tiger Directorate found that out of 28 reserves, 10 may be rated as 'Very Good', 10 as 'Good', 6 as 'Satisfactory and 2 as 'Poor'.*

*The peer review by IUCN applied a tool called 'Community Analysis Package' to ascertain whether there were management characteristics that could predict success or failure. This analysis shows that the reserves would be classified into three primary 'management clusters'. There are 11 Tiger Reserves viz. Kanha (Madhya Pradesh), Dudhwa (Uttar Pradesh), Corbett (Uttaranchal), Sunderbans (West Bengal), Palamau (Jharkhand), Valmiki (Bihar),*



*Kalakad (Tamil Nadu), Buxa (West Bengal), Periyar (Kerala), Bandipur (Karnataka) and Bhadra (Karnataka) which are doing well; 8 Tiger Reserves viz. Panna (Madhya Pradesh), Tadoba-Andhari (Maharashtra), Bori-Satpura (Madhya Pradesh), Bandhavgarh (Madhya Pradesh), Pench (Madhya Pradesh), Pench (Maharashtra), Melghat (Maharashtra) and Simlipal (Orissa) are doing reasonably well; and 9 Tiger Reserves viz. Dampa (Mizoram), Nameri (Assam), Manas (Assam), Pakke (Arunachal Pradesh), Nagarjunsagar-Srisailem (Andhra Pradesh), Namdapha (Arunachal Pradesh), Ranthambhore (Rajasthan), Indravati (Chhattishgarh) and Sariska (Rajasthan) which are at considerable risk and require immediate remedial action.*

*A number of recommendations have been made for enhancing the MEAF evaluation parameters and methodology for future assessments. In essence, these relate to (a) providing contextual narrative with scoring to avoid ambiguity and misinterpretation; (b) refinements to the MEAF Review Fields to accommodate reviewer's comments; (c) inclusion of Review Fields to assess cross-border issues; (d) standardization of the evaluation procedures and providing clear guidelines to the monitors; and (e) full use of Strengths, Weakness, Opportunities, Threats (SWOT) analysis. The evaluation process at the Reserve level should involve all stakeholders, and should take into account the actual tiger population. The results of the survey are valuable, and should be shared with the managers as lessons learnt, to improve the conditions of the Reserves through adaptive management, particularly in those Reserves that are at immediate risk. The results should also be used by the Reserves in their regular reporting structures to the Project Tiger Directorate.*

*With further standardization and minimal expansion, the MEAF toolkit could become the backbone of a regular and credible assessment programme for the Tiger Reserves in India. The Reserve Managers should incorporate in their annual plans future management effectiveness assessments. Where the results show the need for more information, the next assessment should refocus on designing clearer criteria to capture such information.*

*For those seeking to save the wild tigers, tiger conservation in India has been the touchstone. Both the Project Tiger and the Government of India should be commended for encouraging independent evaluations and subsequent peer reviews of the current management of the Tiger Reserves in a country that now holds the key to the future of tigers in the wild. These conservation efforts must continue to be supported through adequate resources, adaptive management and a strong political will. It also bears mention that India is one of the first countries in Asia that has attempted to adopt the WCPA Management Effectiveness Assessment Framework to its system of protected areas.*

# I. Background

## Project Tiger

Project Tiger<sup>1</sup> was launched on April 1, 1973, based on the recommendations of a Special Task Force of the Indian Board for Wildlife. Initially, the project included nine Tiger Reserves, covering an area of 16,339 km<sup>2</sup> with a population of 268 tigers, which has now increased to 28 Tiger Reserves, distributed in 17 States in India and encompassing 37,761 km<sup>2</sup> of land with an estimated population of 1,498 tigers. The land area under reference amounts to 1.14% of the total geographical area of the country.

The Project Tiger seeks to ensure a viable population of tiger in India for *"scientific, economic, aesthetic, cultural and ecological values and to preserve for all time, areas of biological importance as a natural heritage for the benefit, education and enjoyment of the people"*. Towards this end, the main activities of the Project include, *inter alia*, wildlife management, protection measures and site specific eco-development to reduce the dependency of local communities on tiger reserve resources. With the current population of tigers, this project holds the most important tiger gene pool in the country, together with biodiversity-rich ecosystems and habitats for wildlife.

Project Tiger has a holistic ecosystem approach. Though the main focus is on the flagship species tiger, the project strives to maintain the stability of ecosystems by also supporting abundant prey populations. This

is essential to ensure an ecologically viable population of tiger, which is at the 'apex' of the ecological food chain.

## Assessment of the Impacts of the Project

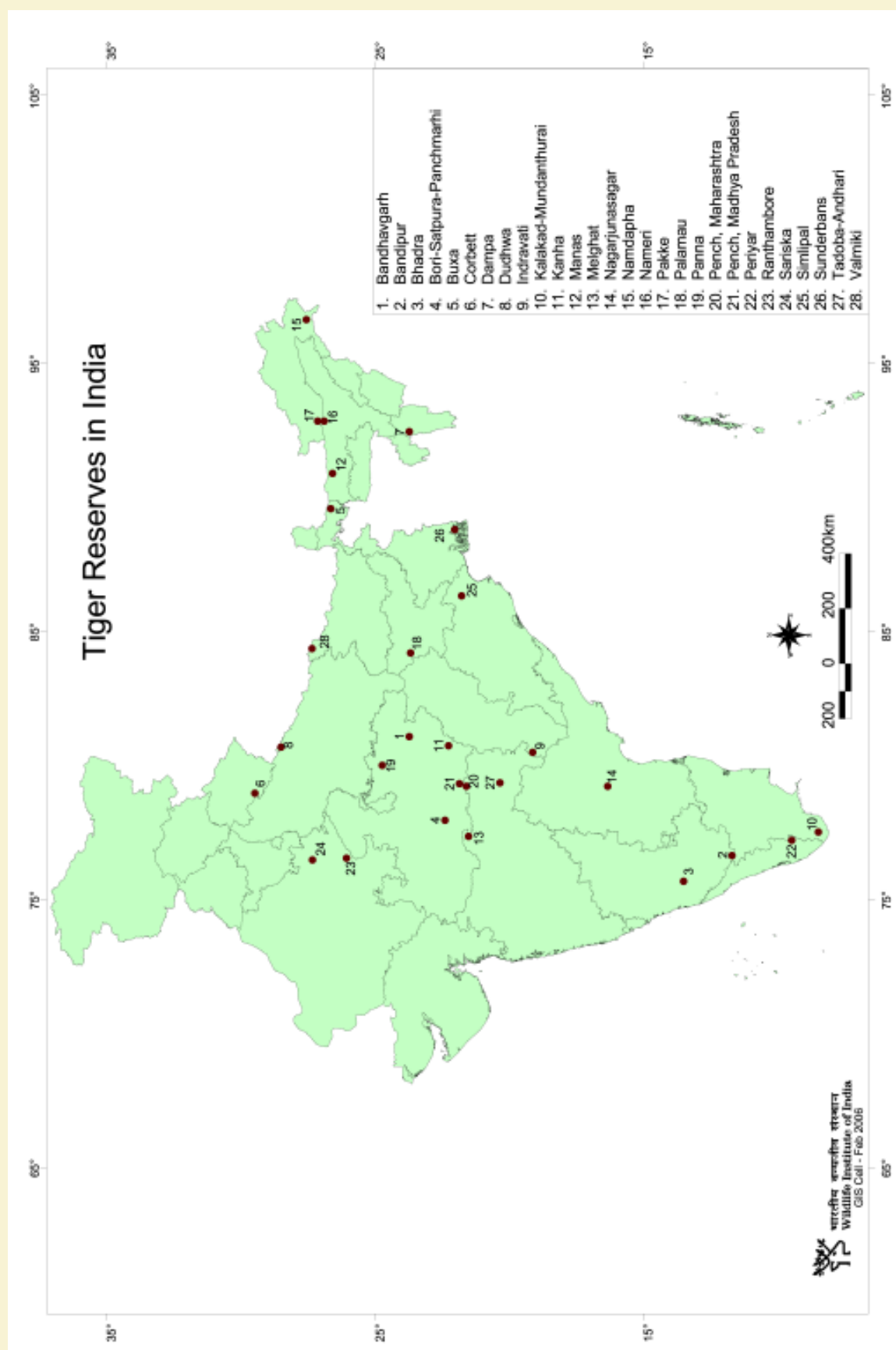
In order to assess the impact and overall contribution of the Project Tiger, an independent evaluation of Tiger Reserves was launched in July 2004 through national experts selected for their professional background, relevant experience and absence of conflicts of interest (**Annexure-I**). The assessment guidelines were developed by the Ministry of Environment and Forests, Government of India.

In all, 45 parameters have been used to assess the evaluation elements pertaining to **planning, inputs, processes and outputs** in each Tiger Reserve (**Annexure-II**). The scoring criteria on each individual parameter have been standardized in the methodology to reduce subjectivity of the evaluation and are assessed quantitatively to arrive at a composite score for each Reserve. The composite score is then assessed on a scale of 4 grades: **Very Good, Good, Satisfactory and Poor**.



Panna Tiger Reserve: Pushp K. Jain

<sup>1</sup> Project Tiger is an initiative of the Ministry of Environment & Forests, Government of India. More details are available @ <http://projecttiger.nic.in/>



These parameters are meant to assess the management effectiveness of each Reserve and have been adapted to the Indian context from the Management Effectiveness Assessment Framework (MEAF) provided by the World Commission on Protected Areas (WCPA). The elements of evaluation *vis-a-vis* percentage weighting and criteria are outlined below:

| Evaluation          | Planning        | Inputs    | Process    | Output        |
|---------------------|-----------------|-----------|------------|---------------|
| Weighting           | 16%             | 15%       | 50%        | 19%           |
| Criteria            | 5               | 9         | 21         | 10            |
| Focus of evaluation | Appropriateness | Resources | Efficiency | Effectiveness |

## Review Assignment

IUCN - the World Conservation Union, Asia Regional Office, was requested by the Government of India to provide an

independent review of these Tiger Reserve assessment reports. Accordingly, the Director of Project Tiger, Ministry of Environment and Forests, Government of India provided 28 Tiger Reserve assessment reports to IUCN for external peer review (see Table 2). These reports range in length from 3 to 12 pages and some also include general comments on management

effectiveness. At the request of the Project Tiger, the focus of this external review is to provide:

- Comments on the compliance of criteria used for evaluating reserves.
- Observations on the plausibility of the overall results.



Nagarjuna Srisaillam Tiger Reserve: B.C. Choudhury



Namdapha Tiger Reserve: S. Sathyakumar

- Observations on the methodology followed; and
- Recommendations on the future use of MEAF for Tiger Reserves in India.

## Methodology

IUCN used its in-house expertise to review the 28 reports by engaging Dr. Keith Williams (Head, Regional Protected Areas Programme) and Dr. Ranjith Mahindapala (Deputy Regional Programme Coordinator). Additionally, it sought technical advice from its network of experts, in particular the following:

- Dr John Seidensticker, Senior Scientist, Smithsonian's National Zoological Park & Chairman, Save the Tiger Fund Council, together with his colleagues, Dr Brian Gratwicke (Assistant Director, Save the Tiger Fund) and Dr Matt Birnbaum (Head, Programme Evaluations, National Fish & Wildlife Foundation);
- Dr Jose Courrau, PA management specialist and post-doctorate fellow under Dr Marc Hockings (Senior Lecturer, School of Natural and Rural Systems Management, University of Queensland, Australia);
- Mr. Moses Mapesa, Executive Director of the Uganda Wildlife Authority and member of the Management Effectiveness Task Force; and
- Dr William Schaedla, Ecologist & Conservation Biologist, WildAid Asia.



## II. Review Findings

The following review findings are reported under four categories, as below:

1. Comments on the compliance of criteria used for evaluating reserves.
2. Observations on the plausibility of the overall results.
3. Observations on the methodology followed; and
4. Recommendations on the future use of MEAF for Tiger Reserves in India.

### A. Comments on the compliance of criteria used for evaluating the reserves

#### *Introductory comments*

Since the early 1990s, Protected Area management authorities have experimented with methodologies to assess the management effectiveness of protected areas, adapted to regional or local areas and conditions. The need for a standardized approach for PA evaluation was addressed by the World Commission on Protected Areas (WCPA) through the development of an evaluation framework allowing specific evaluation methodologies to be designed within a consistent overall approach (Hockings, 2003)<sup>2</sup>. This development of the Management Effectiveness Assessment Framework (MEAF) over a period of several years, took into cognizance the design issues relating to both individual sites and to protected area systems, appropriateness of

management systems and processes, and delivery of protected area objectives. In essence, the evaluations were centered on the following criteria (see Hockings *et.al.*, 2000)<sup>3</sup>:

- **Context** - to provide the protected area's current status and importance and the threats and opportunities that are affecting it;
- **Planning** - to provide an analysis on the appropriateness of national protected area policies, plans for protected area systems, etc.
- **Input** - to provide an insight into the adequacy of resources and the standards of management systems,



Kalakad Tiger Reserve: Sushma H.S.

<sup>2</sup> Hockings, M (2003) Systems for Assessing the Effectiveness of Management in Protected Areas; *Bio-Science*; 53 (9); 823-832

<sup>3</sup> Hockings, M, N Dudley & S Stolton (2000) The WCPA Management effectiveness framework - where to from here?; In: *Design and Management of Protected Areas*; Proceedings of the Conference on Beyond the Trees; Bangkok, Thailand, November, 2000

- **Process** - to examine the adequacy of management processes that can be assessed through issues such as day-to-day maintenance and the adequacy of approaches to local communities;
- **Output** - to ensure whether the PA management has reached the targets and objectives established through a management plan, national plans and ultimately the aims of the IUCN category of the protected area; and

In order to evaluate management effectiveness in a holistic fashion, methodologies incorporating all of the above elements are needed. As Hockings *et al.* (2000) have indicated each type of evaluation has a different focus; they are complementary rather than alternative approaches to evaluating management effectiveness. The framework for assessment is given in **Table 1**.

**Table 1: Framework for assessing management effectiveness of Protected Areas Systems**

| Elements of evaluation            | Context  | Planning   | Input   | Process  | Output  | Outcome  |
|-----------------------------------|--|--|---|--|---|--|
| <b>Explanation</b>                | <i>Where are we now?</i><br>Assessment of importance, threats and policy environment | <i>Where do we want to be?</i><br>Assessment of PA design and planning   | <i>What do we need?</i><br>Assessment of resources needed to carry out management | <i>How do we go about it?</i><br>Assessment of way in which management is conducted. | What were the results?<br>An assessment of the quantity of achievements | What did we achieve ? An assessment of the quality of achievements |
| <b>Criteria that are assessed</b> | Significance<br>Threats<br>Vulnerability<br>National policy                          | Protected area legislation and policy<br>Protected area system design<br>Reserve design<br>Management planning | Resourcing of agency<br>Resourcing of site<br>Partners                            | Suitability of management processes  | Results of management actions<br>Services and products                  | Impacts: effects of managements in relation to objectives          |
| <b>Focus of evaluation</b>        | Status   | Appropriateness  | Economy   | Efficiency   | Effectiveness   | Effectiveness<br>Appropriateness                                   |

- **Outcome** - to grasp long-term effects and monitoring of the condition of biological and cultural resources of the site/system, socio-economic aspects of use and impacts of the site/system's management on local communities.

**Source: Hockings *et al.*, (2000)**

### ***Criteria used for Tiger Reserve Assessments, India***

The criteria used for the assessment are based on the WCPA's Management Effectiveness Assessment Framework (MEAF) and have been adapted to the

Indian context. However, only four of the six criteria have been used, and the 'context' and 'outcome' have not been used. Nevertheless, some of the elements used are 'context' and 'outcome' elements even though this was not planned. The



initial 14 elements have a fit into the 'context' category. Elements 41- 45 similarly appear to address some areas of outcomes. In fact, almost all the Tiger Reserve reports presented information suitable for the category of 'Context'. Some sites also referred to, research, studies and monitoring that has taken place in these sites. These are efforts worth reporting under the 'Outcome' component in order to assess 'effectiveness' (normally defined as the relationship between Outputs and Outcomes).

## ***Review Findings***

(a) All six components of the WCPA

Management Effectiveness Assessment Framework (MEAF) should be included separately to enhance understanding of the management effectiveness of the Tiger Reserves.

(b) Detailed notes should be included in the guidelines provided to the evaluators to enable them to standardize their work. In this regard, we note the following:

1. Although the sample sizes are too small for a definitive conclusion, statistical analysis of data from the evaluators who undertook evaluation of more than one PA indicate some degree of consistency in their own way of application of criteria.
2. Yet, as an overall comment, it would appear that different evaluators were not consistent in their application of the evaluation methodology. Three basic approaches to the evaluation process were adopted by the evaluators:
  - Some evaluators gave straight numerical scores in the evaluation fields. They provided little supplemental information or commentary explaining the specifics for any given score.
  - Others provided a 2-3 page narrative of supplementary observations in addition to completed evaluation tables.
  - Still others commented extensively within the evaluation tables, fields, giving exact location data, numbers, personal observations, and suggestions for future actions.



While all three methods for completing the forms are technically compliant with India's MEAF based methodology, they were not equally valuable from an evaluation standpoint, for the following reasons:

- Evaluators taking the first approach and giving little or no supplemental information essentially negated the comparative value of their reports. Without some explanation of the specific reasons for given scores, there will be no means to ascertain how future scores relate to the present ones. For example, in the field indicating *Human Pressure*, the score may indicate the reserve is subject to encroachment. However, if the type of encroachment and its exact location are not noted, there is no way to determine whether a similar *Human Pressure* score given at a later date refers to a chronic situation or to a new and separate encroachment event.
- The second approach also limited the potential value of the evaluation. When authors added supplemental

narratives, they essentially buried their commentary about reserve dynamics and management in a series of other remarks about the area's history, aesthetic value, and cultural significance. While these are definitely important considerations in reserve design and interpretation, they are not part of the straightforward mechanical approach mandated in the MEAF review. They are also not salient to any given reserve's day-to-day effectiveness as a protected area.

- By far the most useful evaluation approach was the structured table format, the distribution of the variables in the different MEAF components of Planning, Inputs, Process and Output was not clear. The sites used the variables as a continuous list of indicators which did not allow clear evaluation of the appropriate coverage of different components.
- (d) The assessment in general was designed to focus mainly in the 'Process' component of the WCPA MEAF with a weightage of 50%. Excessive focus on the 'Process' gives an indication in which management was conducted but lacks information on the delivery of protected area objectives.

- (e) The different criteria should have been assessed independently of each other. The mixing up of the issues tends to cloud the direction of where the greatest weaknesses are.



Tadoba Tiger Reserve: V.B. Mathur

## B. Observations on the plausibility of the overall results

The scores given by the evaluators are shown in the table below:

**Table 2:**  
**Tiger Reserves, Evaluators and Scores**

| S.No. | Reserve                | Evaluator(s)                    | Score |
|-------|------------------------|---------------------------------|-------|
| 1.    | Sariska                | V B Sawarkar                    | 61    |
| 2.    | Indravati              | A S Negi and S K Chakrabarti    | 70    |
| 3.    | Ranthambhor            | V B Sawarkar                    | 89    |
| 4.    | Namdapha               | M K Ranjitsinh                  | 95    |
| 5.    | Nagarjun/Srisaillam    | A S Negi and S K Chakrabarti    | 98    |
| 6.    | Valmiki                | M K Naidu and S K Patnaik       | 105   |
| 7.    | Pakke                  | V B Sawarkar                    | 106   |
| 8.    | Manas                  | M K Ranjitsinh and V B Sawarkar | 106   |
| 9.    | Bhadra                 | P K Mishra and M G Gogate       | 106   |
| 10.   | Kalakad                | P K Mishra and M G Gogate       | 109   |
| 11.   | Nameri                 | V B Sawarkar                    | 110   |
| 12.   | Dampha                 | M K Ranjitsinh                  | 121   |
| 13.   | Buxa                   | V B Sawarkar                    | 124   |
| 14.   | Pench (Maharashtra)    | A S Negi                        | 125   |
| 15.   | Rajiv Gandhi           | P K Mishra and M G Gogate       | 126   |
| 16.   | Bandhavgarh            | A S Negi and S K Chakrabarti    | 127   |
| 17.   | Bori-Satpura           | A S Negi and S K Chakrabarti    | 128   |
| 18.   | Periyar                | P K Mishra and M G Gogate       | 129   |
| 19.   | Tadoba-Andhari         | A S Negi                        | 135   |
| 20.   | Panna                  | A S Negi & S K Chakrabarti      | 135   |
| 21.   | Melghat                | A S Negi                        | 137   |
| 22.   | Simlipal               | A S Negi and S K Chakrabarti    | 140   |
| 23.   | Palamau                | M K Naidu and S K Patnaik       | 141   |
| 24.   | Pench (Madhya Pradesh) | A S Negi and S K Chakrabarti    | 144   |
| 25.   | Sunderbans             | V B Sawarkar and M K Ranjitsinh | 150   |
| 26.   | Corbett                | M K Naidu and S K Patnaik       | 152   |
| 27.   | Dudhwa                 | M K Naidu and S K Patnaik       | 154   |
| 28.   | Kanha                  | A S Negi and S K Chakrabarti    | 163   |

### Review Findings

(a) The findings of the evaluators were generally plausible, but not always consistent with one another. Discrepancies apparently arose as a result of variation in the ways different evaluators interpreted their mandate. Some saw it fit to address evaluations

in the light of tiger census data<sup>4</sup>, while others restricted their evaluations more to straightforward scoring of reserves' management activities. They simply evaluated the various fields on encroachment, monitoring, tourism, restoration, etc. without much

discussion of tiger presence or absence. Some of these aspects are given below:

- The **Sariska** tiger reserve received a 'Poor<sup>1</sup>' rating (61) with highly critical commentary from the evaluator in light of the apparent extirpation of tigers in this reserve.

- **Indravati** also received a 'Poor' rating (70), and an unfavourable commentary. In this case, however, the low score was derived largely from the fact that the reserve is currently held beyond the control of Forest Department authorities due to naxalite separatist activities. According to the evaluators, this

<sup>4</sup> The importance of accurate tiger census data needs to be emphasized here, as it is a pivotal requirement for assessments. An excerpt from Sariska evaluation, reproduced here, amply demonstrates this. "...No cubs were reported since 2002. The figures have faithfully been recorded while in reality the tigers were being poached with impunity. This leads to only one conclusion -extreme neglect and unethical stewardship."

situation makes planned management “not possible” and census figures “unverifiable.” The evaluators were unable to fully evaluate the reserve due to external conditions; yet marks have been allocated.

- On the other end of the spectrum, **Palamau** got a ‘Very Good’ rating (141), in spite of issues involving separatists and poor law and order situation, encroachers, and declining tiger numbers. The favourable evaluation is terse and carries little explanatory information. However, it is understandable given Palamau’s strong ongoing community development, outreach, and enforcement activities.
- **Dudhwa** also ranked a high ‘Good’ rating (154) on the strength of its well-organized and coherent management in spite of some issues raised by one of our reviewers.

All of this notwithstanding, evaluation results from the current 28 reports are plausible in the light of different evaluator interpretations of the MEAF methodology.

- (b) Some reports have included a brief analysis of strengths and weaknesses and in one case an analysis of opportunities and threats has been provided. An analysis is critical in gaining an

appreciation of an assessment and should be done for each evaluation report.

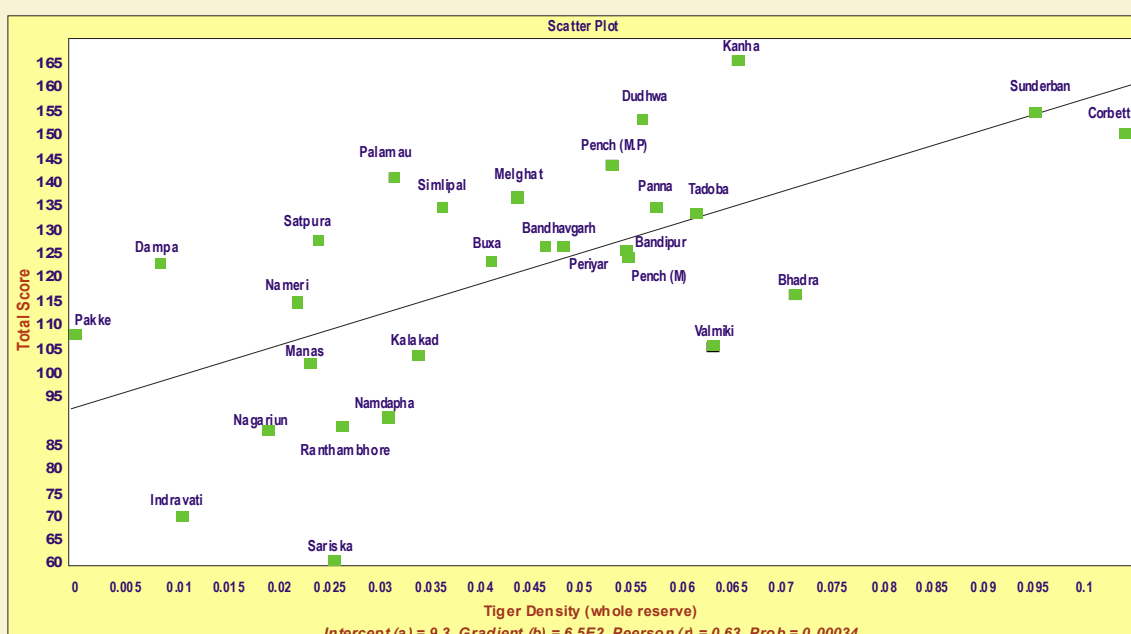
- (c) Analysis of the results also indicate the following:

- It appears that, whilst there seems to be management effectiveness at some level, the management outcome, i.e. the maintenance of a healthy tiger population, is yet clearly not shown. A case in point is the Sariska Reserve (60 points) with an outcome failure. The results indicate that reserves with less than about 110 points are at high risk of failure.
- The results from the evaluators were analysed to examine any relationships between the perceived tiger density (data obtained from the Project Tiger website) and the management score. The results (Fig. 1) show that the evaluators did give higher management effectiveness



scores to Tiger Reserves with perceived higher tiger populations. This may be an evaluator's bias regardless of the uncertainty pertaining to reported tiger densities; e.g. while there are no tigers left in Sariska now, the census data continue to indicate presence of tigers<sup>5</sup>.

**Fig. 1: Scatter Plot - Management Effectiveness Score vs Tiger Density**



- An interesting analysis carried out with this large body of valuable data was to ascertain whether there were management characteristics that predict success or failure. This analysis was done with a Community Analysis Package (Wards Clustering, Euclidean Distance, and Untransformed Data), and the results are in Fig. 2. It is evident that there are essentially three major management clusters, or

- Equally, the results showed a positive significant relationship between funding level and perceived tiger density. This means there is an incentive for reserve managers to report high numbers of tigers living in their reserves, even if those numbers are not warranted, such as was the case with Sariska.

rather "management paradigms". It is striking that Sariska and Ranthambhore reserves are clustered close to each other, and considering the current situation of Sariska, it would appear that Ranthambhore is at immediate risk with urgent remedial actions needed. Equally, the entire cluster of reserves including Dampa, Pakke,

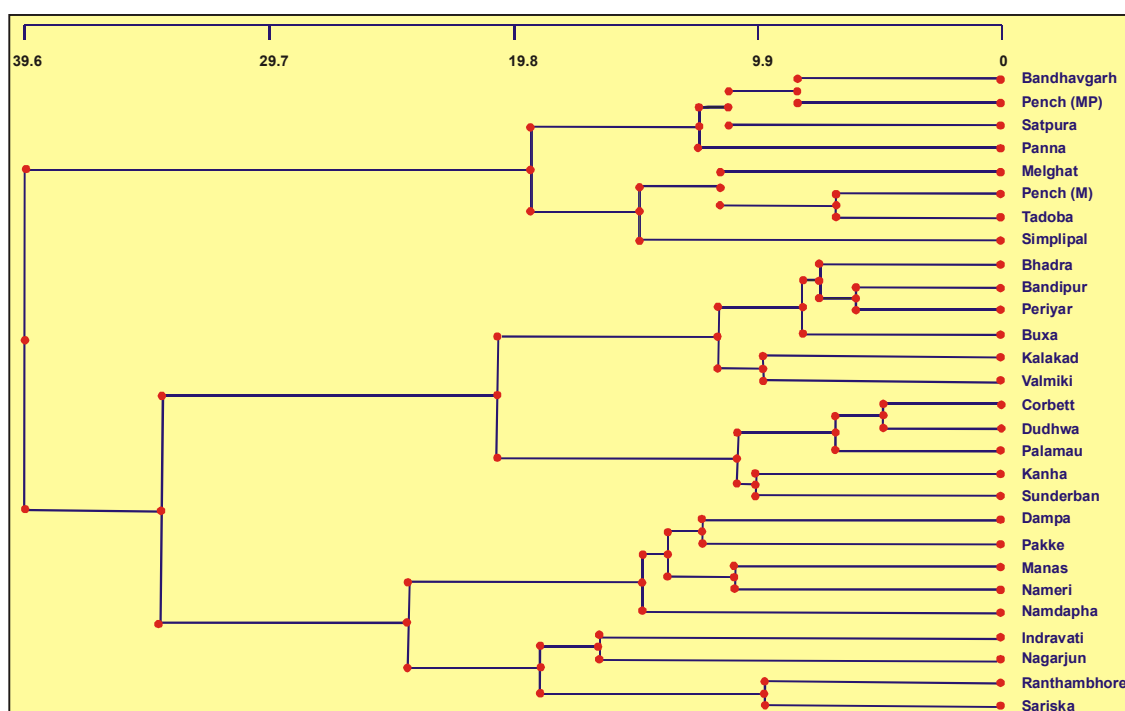
<sup>5</sup> The recently published Tiger Task Force Report, joining the Dots, <http://projecttiger.nicm/TTF2005/index.html> provides three compelling reasons on what happened in Sariska, viz. (a) complete breakdown in the internal management system of the park, (b) faulty and fudged system to count the number of tigers, as a result of which tigers were disappearing in the reserve but appearing in the census reports of the park authorities; and (c) complete breakdown in the relationship between villagers and the park management. This report also highlights (page 12) the crucial need for an efficient methodology to estimate tiger populations, as official census continued to indicate presence of tigers when the situation was otherwise.

Manas, Nameri, Namdapha, Indravati and Nagarjun/Srisaillam should be graded as at severe risk with immediate remedial action needed.

made by improving the following:

- The assessments would have further value with clarification statements to avoid ambiguity. Many failures and successes have

**Fig. 2 - Cluster Analysis**



## C. Observations on the methodology followed

### Review Findings

- (a) The use of a consultative forum of national experts, who have had long and distinguished services on protected area/tiger management, to determine the basic set of criteria is welcome and strongly supported. The criteria are also very robust for the measurement and evaluation of inputs and outputs. Overall, further refinements to the methodology (and concomitantly plausibility of results) could have been

been identified using the criteria but without an assessment of the context, it is somewhat difficult to comment on the appropriateness of the parameters used for these elements, [please see A (b) 2].

- The elements are a comprehensive list and, if they have been interpreted uniformly, have the potential to give a robust evaluation of the **efficiency** of the reserve management. The possibility that several or many of the issues have been misinterpreted by those completing the



assessments, due to a lack of clarity in the issue statement cannot be ruled out. Without clarity those completing the reports could have given inappropriate scoring. An example is '3. Human pressures'. Some criteria here appear to have a maximum score indicated by 0, yet a score of 2 was given in one report. The meaning of a 0 maximum score is unknown. Most reports simply grouped the criteria under this element but some deleted the criteria altogether. This adversely affects the robustness of the results.

- In order to standardize the application of criteria, a set of 'trainer' evaluators could, on a pilot basis, separately undertake evaluation of one reserve to ensure that all evaluators understand scoring on a common base. This way, subjectivity among evaluators could be reduced.

(b) The MEAF evaluation criteria are useful in so far as they address the majority of management decisions, threats, and issues *proximate* to Tiger Reserves. Even so, they could stand improvement. In this regard, the following two points are made:

- ***Potential Refinements to Existing MEAF Evaluation Fields***

Evaluations of law enforcement in the *Daily Patrolling* and *Patrolling Camps Present* fields would carry more value if they were presented in terms of a reserve's size and potential susceptibility to encroachment. For example, the *Daily Patrolling* score might be figured as the ratio of law enforcement personnel in the field to the area of the reserve. This would give some indication of coverage obtained from patrolling activities. As it stands, the MEAF currently allows only a 'yes' or 'no' response. Partial points can be given for a qualified 'yes,' but most evaluators eschewed this approach.

*Wildlife Estimation* is another area in need of refinement. This important aspect of reserve management currently allows only 'Done regularly' or 'Irregular' as possible responses. Where, when and how estimates are conducted do not figure into the assessment scoring criteria.



Corbett Tiger Reserve: P.K. Mathur

- ***Peripheral Factors in Need of Consideration***

One of the short-comings of the evaluation criteria is the lack of specific fields related to frontier reserves like Dudhwa, Valmiki, Buxa, Manas, Nandapha, Dampa, and Sunderbans. All of these areas lie on India's borders with neighbouring countries, and are certainly subject to unique management problems as a result. While a few evaluators addressed cross-border issues in the *Compatible Land Use* field of the MEAF table, or in supplementary commentary, others did not.

MEAF evaluation criteria also focus strictly on local actions. While important, decisions taken at this level are not the only management choices affecting protected areas.

*Use of the Area by Other Departments* needs to be looked at from a broader perspective to include development projects, like highways, power plants, communication lines, etc. as these will influence reserves' viability as conservation zones. Their implementation also has cascading effects on subsequent management decisions.

- (c) The implementation of the approach was not consistent across the sites. It was evident that the evaluators tried to present the information following the

common format. However, that was not always the case. In some cases, the comments that should accompany each score was presented in the "Comments" column; in other cases, it was presented as a narrative at the end of the form. There were even cases in which very little or no comments were provided. This condition limits the capacity to fully understand each score and further use of the comments as part of an assessment. It limits the use of the comments (and even the scores) for comparability with future assessments.

- (d) There was no consistency in the partial use of the SWOT analysis. In some cases, the opportunities and threats for the site were identified but not in other cases. In those reports where the opportunities and threats were included, the information in each section included a mixture of external and internal aspects while they normally refer specifically to **external** aspects of the protected area.

- (e) Some minor issues that could be addressed are as follows:

- The total tally was 185, and not 180. This may have created some skewing in the results. Also, on 10 sheets, the additions were not correct.
- It was not possible to clearly discern (from the power-point presentation) the instructions given

to the evaluators. Hopefully, adequate and clear instructions were given.

- It was unclear what maximum score evaluators were using on different sheets for different questions. There was a failure of consistency - for example what were the rules for calculating total score if an evaluator selected N/A instead of a score?
- There is a problem with different scales being used for some variables. The maximum scores possible for the variables were different. Some variables are scaled from 0 to 3; others cover a scale from 0 to 6; others from 0 to 8. This limits the capacity to combine the scores of all the variables in a total score that can be easily understood and compared. Therefore, the total scores, which result from adding all the scores of the different variables, and the grades associated to them, are difficult to interpret and compare.
- One question relates to staff age. Whilst age and performance are linked, performance-related judgment would be preferred for assessments.

## **D. Recommendations on the future use of MEAF for Tiger Reserves in India**

The implementation of the management effectiveness assessment frameworks has been a very significant and forward-looking step in the management of Indian Tiger Reserves. It has been an essential step, and the Government of India is to be applauded for moving forward with this initiative. The Tiger Reserves are under great pressure and this approach to evaluation allows a regular assessment of actual needs. It can be used as a predictor and a director of critical resources within the system. There are a number of recommended improvements to the methodology, as well as some recommendations on the use of the results, as follows:

### **Methodology**

- (a) Consistency and comprehensiveness make the MEAF a valuable methodology. With further standardization and minimal expansion (see C), it could become the backbone of a regular assessment programme for India's Tiger Reserves. It is important to include the six components of the WCPA MEAF in the management effectiveness assessments of the Tiger Reserves of India.
  - Standardisation of the MEAF should focus on obtaining consistent results



from different evaluators. In this regard, firm guidelines for the addition of commentary should be issued. This will ensure that results are comparable not only within a single lot of evaluations, but also across time. Other points relating to standardisation are as follows:

- The criteria used need to be reassessed to include specific, identified criteria for measuring (estimating) management outcomes. These should be derived from objectives statements in management plans, revised as necessary.
- Issues addressed and the criteria used should be subdivided to clearly show which evaluation elements align with them. This will not only assist the evaluators but will assist in developing sufficient and better targeted issues and criteria.
- The issues require better definition as they are open to different interpretations.
- A standard evaluation format should be submitted for all reserves with no columns deleted for some assessments or reformatting for others. This will improve reporting, reading and collation of

assessment reports. The columns for the maximum score and the current score should not be swapped between reserve assessments as it leads to confusion in interpretation.

- Instructions for completing the assessments should be clearly described on the form and a single person should be assigned to answer questions about completing the assessments so that uniformity is obtained.
- 'Best practice' completion of assessments should be required and the 'Comments' column should be completed for all issues to assist with the validation of assigned scores.
- The reserves that ranked 'Poor' and 'Satisfactory' in this exercise should be reassessed as soon as is practicable to include specific, identified outcomes.
- The reserves that ranked 'Good' and 'Very Good' likely are meeting their objectives better but this cannot be ascertained from the current evaluation. They should be reassessed in 2-3 years time using a full set of criteria.
- An analysis of strengths, weaknesses, opportunities and

threats (SWOT analysis) for each Tiger Reserve should be made, following each assessment. Guidelines for these should be developed.

- Regarding the scales used for the variables, it is recommended to “normalize” the scales. In other words, in order to be able to add the different scores and make inferences about the “total” score, it is necessary to have the variables with the same levels of the ranking scale (from 0 to 3, for instance). This will permit more useful and transparent comparison of “Total scores”. In the cases of the variables with a longer scale (minimum score 0, maximum score 6, 8 or 9), since they appear to be very important issues for the reserves, it is recommended to review them and consider breaking them up into different variables. This will allow better analysis of these issues and also will help to design the variables with a standard scale (from 0 to 3, for instance).
- If considered necessary to emphasize the value of some variables (considered critical or most important), an option would be to add weights to the

variables. For example, those variables that are at a basic level of importance could be assigned a weight of “1”; for those with a medium level of importance a weight of “2” could be assigned; and for those with the utmost importance, a weight of “3” could be assigned.

Combining the actual score assigned to the variable with its weight (multiplication) will yield an “adjusted” score. The division of the variables into the three levels mentioned in the example above (or any other classification) must be part of a participatory process.

- Expansion should focus on areas where the MEAF currently provides incomplete information. It should also add to the evaluation table more comprehensive treatment of factors like reserve border proximity and infrastructure projects.
- It is recommended to start developing the assessment of ecological integrity of the Tiger Reserves as an integral part of the Outcomes component of management effectiveness.

## ***Evaluation Process***

- (b) Changes to the evaluation process may also need to include a ranking system that takes into account the status of tiger populations in different areas. A one-size-fits-all approach is probably inappropriate given the population variation in India's reserves. Managing for tigers verifiably present, managing for the potential presence of tigers, and managing for a day when extirpated tigers might again be present, are very different activities.
- (c) The participation of a diversity of stakeholders is very important. The assessments of the Tiger Reserves should continue engaging others in order to promote ownership among stakeholders as well as transparency.
- (d) It is important to conduct a session with the tiger reserve managers to evaluate the assessment process as well as the approach followed and define the next steps to continue implementation. During this session, an overall summary of the assessments results can be completed.
- (e) It is recommended to incorporate a section to identify the key points and conclusions that emerge from the assessments. These key points should be organized according to the WCPA MEAF components. As part of the overall assessment of the Tiger Reserves, lessons learnt should be drawn and documented.

## ***Use of the Results***

- (f) The agency responsible for the Tiger Reserves and especially the site managers must use the assessment results to improve the condition of the reserves. If the results are not used, the managers will not see change emerging from them and the assessments could become just more work for the managers. Follow-up on the results must be provided.
- (g) The most immediate use for the assessment results is adaptive management. Adaptive management is a basic foundation of management effectiveness. The reserves must learn, correct and enhance the management of their values based on the results provided by the assessments. The implementation of adaptive management is a means to shape the Tiger Reserves as learning organizations.
- (h) Another use of the assessment results is by incorporating them into the regular agency reporting requirements that include reporting to the agency hierarchy, to donors and stakeholders. The results can be used to report to local communities and indigenous groups as well. This effort will promote the accountability of the Tiger Reserves and will help constituency building.

## ***The Way Forward***

- (i) In case the assessment of management effectiveness of the Tiger Reserves continues into the future (annual iterations, for example), which we strongly recommend, it is advisable to design a means to store, process and make the information from present and future assessments readily available. It is recommended that the tiger reserve managers and the agency authorities define a schedule or an annual programme to complete future management effectiveness assessments. If possible, the assessments should be completed on an annual basis.
- (ii) Where the performance is good, the reserve managements should ensure that they maintain the status or further improve to achieve the desired mark. Where the assessments need more information, the next assessments should refocus on designing clear criteria that can widely be used by all reserves. If the assessment reports can be reviewed now, it is even better. This will give the correct picture of the reserves to enable the policy makers and managing authorities take appropriate policy decisions in their future management.



Dudhwa Tiger Reserve: S.P. Sinha



### III. Concluding Remarks

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For those seeking to save wild tigers, tiger conservation efforts in India has been the touchstone. These evaluations and a continued programme of evaluation with the objective of improving management effectiveness for securing the tiger's future are the right steps in ensuring the achievement of the objectives of the Project Tiger.

This programme is to be congratulated for its efforts, its contribution towards biodiversity conservation and ecosystem management, and should be continued even more vigorously.

### IV. Acknowledgements

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IUCN - The World Conservation Union is grateful to the Director, Project Tiger and the Ministry of Environment and Forests, Government of India for the opportunity afforded to it to be involved in this important initiative, which it hopes will be continued. It also wishes to place on record its appreciation to the reviewers of the assessment reports: Dr John Seidensticker and his colleagues, Dr Brian Gratwicke and Dr Matt Birnbaum; Dr Jose Courrau; Mr Moses Mapesa; Dr William Schaedia; as well as Drs Keith Williams and Ranjith Mahindapala, IUCN Asia for their valuable inputs into this review.



Kanha Tiger Reserve: Bitapi C. Sinha

# Annexure-I

**MoEF Order No. F.No. 1/16/2003-PT dated 15/07/2004  
constituting the 'Expert Committee'**

**F.No. 1/16/2003-PT  
Government of India  
Ministry of Environment & Forest  
(Project Tiger)  
\*\*\*\*\***

**Annex No. 5, Bikaner House,  
Shahjahan Road, New Delhi – 110011  
Telefax : 23384428  
E-mail : [dirpt-r@hub.nic.in](mailto:dirpt-r@hub.nic.in)  
Dated: 15.07.2004**

## **ORDER**

The Ministry of Environment & Forests has constituted an “Expert Committee” for the annual monitoring and evaluation of Project Tiger Reserves in accordance with the normative guidelines issued vide GC Division note No. 20011/3/2003-GC dated 01.04.2004. The composition of the Committee and the allocated regions for review are as below:

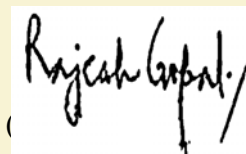
| Sno | Names                 | Allocated Region for review |
|-----|-----------------------|-----------------------------|
| 1.  | Shri V.B. Sawarkar    | Eastern Region              |
| 2.  | Dr. M.K. Ranjitsinh   |                             |
| 3.  | Shri S.C. Sharma      | Western Region              |
| 4.  | Dr. Asad A. Rahmani   |                             |
| 5.  | Shri S.K. Chakraborti | Central Region              |
| 6.  | Shri A.S. Negi        |                             |
| 7.  | Shri P.K. Mishra      | Southern Region             |
| 8.  | Shri M.G. Gogate      |                             |
| 9.  | Shri Kamal Naidu      | Northern Region             |
| 10. | Shri S.K. Patnaik     |                             |

2. The Expert Committee members would annually monitor and evaluate tiger reserves falling within the region allocated to them in a format prescribed by the Project Tiger Directorate, Ministry of Environment & Forests, Government of India. The period/dates for the field visits relating to monitoring and evaluation would be communicated to the members by the Project Tiger Directorate.

3. The “Term of References” for the Committee Members are as below:

The Committee Members are required to undertake the work within one month of receiving such a request from the Project Tiger Directorate, Ministry of Environment & Forests, Government of India.

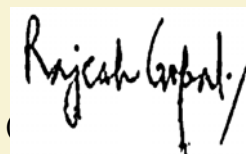
- The Committee Members are required to send their monitoring and evaluation report to the IGF & Director, Project Tiger, Annex – 5, Bikaner House, Shahajahan Road, New Delhi – 110011, within 30 days after the field visit.
  - The members of the committee would be paid TA/DA as per existing rules.
4. The term of the Expert Committee would be for a period of two years.



IGF & Director – Project Tiger

Copy To:

1. PPS to Secretary (E & F)
2. PPS to DG & SS
3. PPS to Addl. DG (WL)
4. PS to JS & FA
5. All Members of the Expert Committee
6. Chief Secretaries/Forest Secretaries/PCCFs/CWLWs of all Tiger Reserve States
7. Field Directors of all Tiger Reserves



IGF & Director – Project Tiger

# Annexure-II

## Monitoring & Evaluation Parameters of Tiger Reserves

| Issue   | Criteria  | Maximum Score | Current Score | Effectiveness (%) | Comments |
|---|---|---------------|---------------|-------------------|----------|
| 1. Legal Status                                   | Completion of legal procedures  | 3             |               |                   |          |
|   | Delineation of buffer zone  | 3             |               |                   |          |
|   | Unified control of buffer   | 3             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>9</b>      |               |                   |          |
| 2. Compatible Land Use                            | In the buffer   | 3             |               |                   |          |
|   | The land use is totally incompatible in the buffer(includes forestry operations also) | 0             |               |                   |          |
|   | Beyond buffer (5km. radius)   | 3             |               |                   |          |
|   | Beyond buffer the landuse is detrimental  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>6</b>      |               |                   |          |
| 3. Human Pressure                                 | Habitation present within the core  | 0             |               |                   |          |
|   | No habitation within the core   | 4             |               |                   |          |
|   | Livestock Grazing pressure present within the core                                    | 0             |               |                   |          |
|   | No livestock grazing pressure within the core or adjoining areas                      | 4             |               |                   |          |
|   | Cultivation present in the core   | 0             |               |                   |          |
|   | Encroachment present  | 0             |               |                   |          |
|   | Collection of NTFP in the core  | 0             |               |                   |          |
|   | Quarrying present in the core   | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>8</b>      |               |                   |          |
| 4. Use of the Area by other Departments           | Yes   | 0             |               |                   |          |
|   | No  | 3             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>3</b>      |               |                   |          |
| 5. Management Plan Updated                        | Yes   | 3             |               |                   |          |
|   | No  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>3</b>      |               |                   |          |
| 6. Regeneration Status in the Core                | Satisfactory  | 3             |               |                   |          |
|   | Poor  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>3</b>      |               |                   |          |
| 7. Regeneration Status in the Buffer              | Satisfactory  | 3             |               |                   |          |
|   | Poor  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>3</b>      |               |                   |          |
| 8. Staff in Position                              | satisfactory  | 3             |               |                   |          |
|   | inadequate  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>3</b>      |               |                   |          |
| 9. Average Age of Staff                           | satisfactory  | 3             |               |                   |          |
|   | unsatisfactory  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>3</b>      |               |                   |          |
| 10. Equipments                                    | adequate  | 3             |               |                   |          |
|   | inadequate  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>3</b>      |               |                   |          |
| 11. Vehicles                                      | adequate  | 3             |               |                   |          |
|   | inadequate  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>3</b>      |               |                   |          |
| 12. Timely Release of CA                          | Yes   | 4             |               |                   |          |
|   | delayed   | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>4</b>      |               |                   |          |
| 13. Strike Force Available                        | yes   | 4             |               |                   |          |
|   | no  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>4</b>      |               |                   |          |
| 14. Disbursement of Salary/ Project Allowance/ TA | satisfactory  | 4             |               |                   |          |
|   | unsatisfactory  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>4</b>      |               |                   |          |
| 15. Field Data Collection & Research              | ongoing   | 3             |               |                   |          |
|   | Not ongoing   | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>3</b>      |               |                   |          |
| 16. Tourism Regulation                            | Done as per CC  | 5             |               |                   |          |
|   | Not done as per CC  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>5</b>      |               |                   |          |
| 17. Recycling of gate Receipts done               | yes   | 5             |               |                   |          |
|   | no  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>5</b>      |               |                   |          |
| 18. Field Staff Training                          | yes   | 3             |               |                   |          |
|   | Not done regularly  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>3</b>      |               |                   |          |
| 19. Weed Growth in the Habitat                    | present   | 0             |               |                   |          |
|   | Not seen  | 3             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>3</b>      |               |                   |          |
| 20. Gregarious Woodland Advancement in Meadows    | present   | 1             |               |                   |          |
|   | managed   | 4             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>4</b>      |               |                   |          |
| 21. Field Visits by Officers                      | adequate  | 4             |               |                   |          |
|   | inadequate  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>4</b>      |               |                   |          |
| 22. Staff Welfare Measures                        | satisfactory  | 4             |               |                   |          |
|   | unsatisfactory  | 0             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>4</b>      |               |                   |          |
| 23. Poaching                                      | Common  | 0             |               |                   |          |
|   | negligible  | 4             |               |                   |          |
|   | <b>Sub-Total</b>  | <b>4</b>      |               |                   |          |



| Issue  | Criteria                    | Maximum Score | Current Score | Effectiveness (%) | Comments |
|--|-----------------------------|---------------|---------------|-------------------|----------|
| 24. Fires  | common                      | 0             |               |                   |          |
|  | Less than 1% of the TR area | 5             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>5</b>      |               |                   |          |
| 25. Epidemics  | common                      | 0             |               |                   |          |
|  | rare                        | 3             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>3</b>      |               |                   |          |
| 26. Wildlife Estimation                              | Done regularly              | 3             |               |                   |          |
|  | irregular                   | 1             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>3</b>      |               |                   |          |
| 27. Patrolling Camps Present                         | yes                         | 5             |               |                   |          |
|  | no                          | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>5</b>      |               |                   |          |
| 28. Daily Monitoring done through Camps and Recorded | yes                         | 4             |               |                   |          |
|  | no                          | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>4</b>      |               |                   |          |
| 29. Networking Strategy Present                      | yes                         | 3             |               |                   |          |
|  | no                          | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>3</b>      |               |                   |          |
| 30. Daily Patrolling done                            | yes                         | 5             |               |                   |          |
|  | no                          | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>5</b>      |               |                   |          |
| 31. Court Cases Monitored                            | yes                         | 4             |               |                   |          |
|  | no                          | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>4</b>      |               |                   |          |
| 32. Ex-Gratia, Compensation                          | Paid promptly               | 5             |               |                   |          |
|  | Not paid promptly           | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>5</b>      |               |                   |          |
| 33. Tourist Facilities                               | adequate                    | 2             |               |                   |          |
|  | poor                        | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>2</b>      |               |                   |          |
| 34. Relationship with Police                         | good                        | 1             |               |                   |          |
|  | poor                        | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>1</b>      |               |                   |          |
| 35. Ecodevelopment Activities                        | ongoing                     | 6             |               |                   |          |
|  | lacking                     | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>6</b>      |               |                   |          |
| 36. Fulfilment of Reciprocal Commitments             | good                        | 5             |               |                   |          |
|  | poor                        | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>5</b>      |               |                   |          |
| 37. Cattle Immunisation In Villages                  | done                        | 5             |               |                   |          |
|  | Not done                    | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>5</b>      |               |                   |          |
| 38. Host Community Involvement In Ecotourism         | yes                         | 5             |               |                   |          |
|  | no                          | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>5</b>      |               |                   |          |
| 39. Registration of Arms                             | Done                        | 4             |               |                   |          |
|  | Not done                    | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>4</b>      |               |                   |          |
| 40. PM done in all Cases of Unnatural Mortality      | yes                         | 4             |               |                   |          |
|  | no                          | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>4</b>      |               |                   |          |
| 41. Trust Between Local People & TR Management       | good                        | 5             |               |                   |          |
|  | poor                        | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>5</b>      |               |                   |          |
| 42. Economic Benefits To Stake Holders               | good                        | 3             |               |                   |          |
|  | poor                        | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>3</b>      |               |                   |          |
| 43. Control Over Use / Access Of TR Resources        | good                        | 5             |               |                   |          |
|  | poor                        | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>5</b>      |               |                   |          |
| 44. Efforts Towards Sustainable Development          | good                        | 4             |               |                   |          |
|  | lacking                     | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>4</b>      |               |                   |          |
| 45. Restorative Inputs Beyond TR                     | Being done                  | 5             |               |                   |          |
|  | lacking                     | 0             |               |                   |          |
|  | <b>Sub-Total</b>            | <b>5</b>      |               |                   |          |
|  | <b>Grand Total</b>          | <b>185</b>    |               |                   |          |

|           |                        |   |             |
|-----------|------------------------|---|-------------|
| GRADE I   | GRADING                |   | SCORE       |
| GRADE II  | RESERVE (VERY GOOD)    | : | 135 & ABOVE |
| GRADE III | RESERVE (GOOD)         | : | 108 to 134  |
| GRADE IV  | RESERVE (SATISFACTORY) | : | 72 to 108   |
|           | RESERVE (POOR)         | : | 71 & BELOW  |



Project Tiger Directorate  
Bikaner House, Shahjahan Road,  
New Delhi  
[www.projecttiger.nic.in](http://www.projecttiger.nic.in)

Ministry of Environment & Forests  
Paryavaran Bhawan, CGO Complex,  
Lodi Road, New Delhi  
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