

MANAGEMENT EFFECTIVENESS EVALUATION OF NATIONAL PARKS AND WILDLIFE SANCTUARIES IN INDIA

EVALUATED IN 2017-18

MANAGEMENT EFFECTIVENESS EVALUATION OF

NATIONAL PARKS AND WILDLIFE SANCTUARIES IN INDIA



PROCESS AND OUTCOMES
2017-2018

MANAGEMENT EFFECTIVENESS EVALUATION OF NATIONAL PARKS AND WILDLIFE SANCTUARIES IN INDIA

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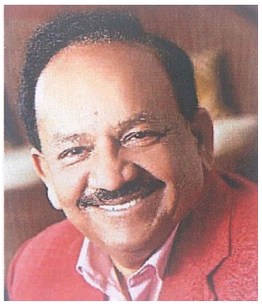
MESSAGE



Management Effectiveness Evaluation (MEE) has emerged as a key tool for protected area managers and is increasingly being used by governments and international bodies to understand the strengths and weaknesses of the protected area systems. I am pleased to state that India is amongst the few countries globally that have institutionalized the MEE process and has taken a lead in evaluating its National Parks, Wildlife Sanctuaries and Tiger Reserves.

India has completed evaluation of 330 Protected Areas (PAs) and a set another 146 PAs is ongoing in the country in 2018-19. This report presents the process and outcomes of MEE of 119 Protected Areas evaluated during 2017-18. The results of present assessment are also encouraging with overall mean of 58.03% ranging from 27.08% to 91.67%. Over the years, the outcomes of MEE process have demonstrated that despite all odds, India's PA management is successful in many aspects in meeting conservation goals.

Despite the threats and challenges faced by PAs in India, their critical role in fulfilling conservation goals cannot be undermined. Opportunities for enhancing management effectiveness through good governance have to be further strengthened. In order to better institutionalize the MEE process, there is a need to enhance the participation of a range of relevant stakeholders, disseminate the findings and bring in appropriate changes in policy, governance and management to enhance effectiveness of management of PAs. I encourage our field managers to actively participate in this process, which has been adapted and customized according to the needs and ground realities of Protected Area management and conservation in India.

I congratulate the Wildlife Division of our Ministry, Chief Wildlife Wardens of the States/UTs and the Protected Area managers and frontline staff for their participation and inputs. I compliment the Director, Wildlife Institute of India and his team for technical backstopping of the MEE process making it an important contribution from India to the global best practices in PA management.

21 January, 2019

(Dr. Harsh Vardhan)

MESSAGE



Protected Areas (PAs) are the cornerstone of most conservation strategies around the world. Improving the effectiveness of PA management has therefore become a priority throughout the conservation community. The process of Management Effectiveness Evaluation (MEE) was formally initiated in India in 2006 for evaluation of its National Parks, Wildlife Sanctuaries and Tiger Reserves with a view to improve PA management and governance. Information generated from the evaluation process has been found to be very useful in enhancing the understanding of PA network, the threats they face as well as used as the opportunities they generate for making management more effective.

The present MEE exercise included 119 National Parks and Wildlife Sanctuaries in 5 regions, Northern, Southern, Eastern, Western and North-eastern, covering 26 States and Union Territories of India. The overall mean MEE score is 58.03% with a range from 27.08% to 91.67%. Rating-wise, 9% PAs are in 'very good' category, 39% PAs are in 'good' category, 47% PAs in 'fair' category and only 5% PAs have been rated in 'poor' category.

I would like to express my appreciation of our managers and field staff for their sustained efforts in protection and management of PAs. At the same time, I urge them to seek ways and take up actions to plug gaps and improve and adapt management strategies and actions according to evolving needs and challenges. I thank the Director, Wildlife Institute of India and his team for guiding and providing technical support as well as all the independent evaluators who have contributed in making the MEE process successful.

21 January, 2019

(Siddhanta Das)

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We are grateful to the officials and staff of the Wildlife Division of the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India for providing technical guidance and financial assistance to accomplish this exercise.

We would like to specially thank to Chief Wildlife Wardens of all 31 States & Union Territories and all the park managers and frontline staff of 125 protected areas for their valuable contribution in carrying forward the Management Effectiveness Evaluation (MEE) process.

We express our sincere appreciation for the professional support and untiring efforts of the Independent teams (Chairman's and members) constituted by the MoEFCC for the five regions- Northern, Southern, Eastern, Western & North-eastern for the evaluation of national parks and wildlife sanctuaries (2017 to 2018).

We are especially indebted to the faculty and staff of the Wildlife Institute of India for their valuable support in accomplishing the task.

The Team

MANAGEMENT EFFECTIVENESS EVALUATION OF NATIONAL PARKS AND WILDLIFE SANCTUARIES IN INDIA

Editorial Support

Dr. Alok Saxena,
Senior Professional Fellow, WII

Shri P.C. Tyagi,
Senior Professional Fellow, WII

Dr. A.K. Bhardwaj,
Senior Professional Fellow, WII

Shri Ajay Srivastav,
Registrar, WII

Dr. Manoj Nair,
Scientist, UNESCO C2C, WII

Dr. Kaushik Banerjee,
Project Scientist, WII

Dr. Nehru Prabhakaran,
DST Inspire Faculty, WII

Dr. Tapajit Bhattacharya,
Project Scientist, WII

Dr. Niraj Kakati,
Technical Officer, UNESCO C2C, WII

Dr. Stotro Chakravarti,
Project Scientist, WII

Technical Support

Shri Jyoti Prasad Nautiyal,
Information Officer,
WII-ENVIS Centre

Shri Rajeev Thapa,
Information Technical Officer,
UNESCO C2C, WII

GIS Support

Dr. Panna Lal,
GIS & IT Cell, WII

Ms. Alka Aggarwal,
GIS & IT Cell, WII



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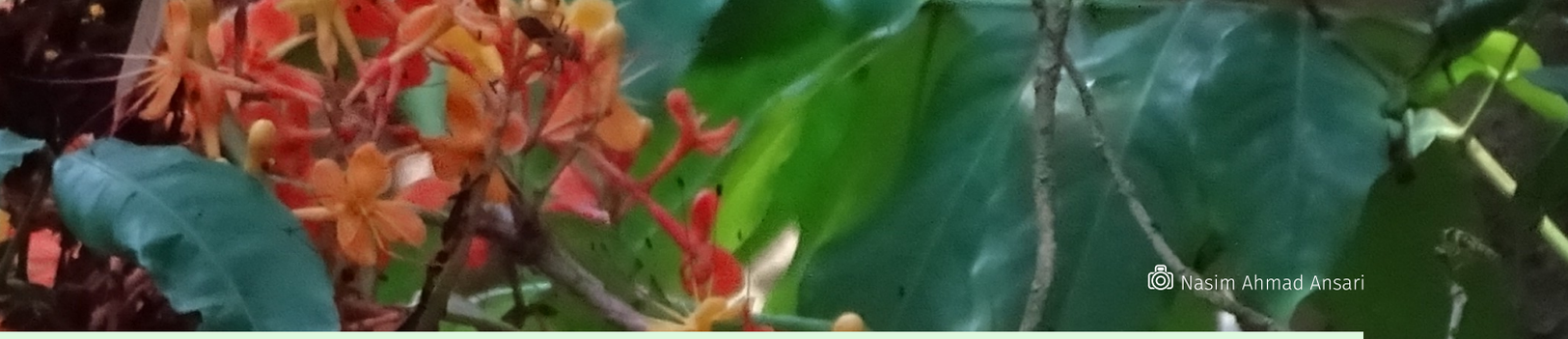
Nasim Ahmad Ansari

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INDEPENDENT REGIONAL EXPERT COMMITTEES

Thirteen (13) Independent Regional Expert Committees (RECs) have been constituted by Ministry of Environment, Forest and Climate Change, Government of India for Management Effectiveness Evaluation (MEE) of 125 National Parks and Wildlife Sanctuaries in 2017-18.

	Northern Region		
	Team 1	**Team 2**	**Team 3**
Chairman	Shri B.S. Bonal Former ADG (PT) & MS, NTCA	Dr. V.K. Melkani Former CWLW, Government of Tamil Nadu	Shri S.S. Srivastva Former PCCF & HoFF, Government of Odisha
Member 1	Dr. S.P.S. Kushwaha Former Scientist, IIRS, Dehradun	Dr. Vibhu Prakash Scientist, Vulture Breeding Centre, Chandigarh	Dr. D.S. Shrivastava Former Professor, Patna University, Patna
Member 2	Dr. Justus Joshua Independent Scientist, Green Peace Foundation, Gujarat	Dr. Jeet Ram Professor Kumaun University, Nainital	Dr. Afifullah Khan Professor Aligarh Muslim University, Aligarh
WII Faculty Member 3	Dr. S. Sathyakumar Scientist, Wildlife Institute of India, Dehradun	Dr. K. Sivakumar Scientist, Wildlife Institute of India, Dehradun	Dr. V.P. Uniyal Scientist, Wildlife Institute of India, Dehradun

	Southern Region		
	Team 1	**Team 2**	**Team 3**
Chairman	Dr. S.K. Khanduri Former IG (WL), MoEFCC, New Delhi	Shri Hari Kumar Former CWLW, Government of Kerala	Shri P. Anur Reddy Former PCCF, Government of Karnataka
Member 1	Dr. Madhusudan Scientist, NCF, Mysore	Dr. Rajah Jayapal Scientist, SACON, Coimbatore	Dr. S. Narendra Prasad Former Scientist, SACON, Hyderabad
Member 2	Dr. Arun Mani Dixit Scientist, Centre for Environment and Social Concerns	Dr. P.K. Mathur Former Dean-FWS, Wildlife Institute of India Dehradun	Shri B.C. Choudhury Former Scientist, Wildlife Institute of India Dehradun
WII Faculty Member 3	Dr. Parag Nigam Scientist, Wildlife Institute of India, Dehradun	Dr. Bitapi Sinha Scientist, Wildlife Institute of India Dehradun	Dr. C. Ramesh Scientist, Wildlife Institute of India Dehradun

	Eastern Region	
	Team 1	**Team 2**
Chairman	Shri Azam Zaidi Former CWLW, Government of West Bengal	Dr. Pradeep Vyas Former CWLW, Government of West Bengal
Member 1	Dr. Bibhav Talukdar Scientist, AARANYAK, Guwahati	Dr. R.S. Rawal Director, GBPHIED, Almora
Member 2	Dr. Diwakar Sharma Director, Programme Management, M&E, WWF-India, New Delhi	Dr. Jamal A. Khan Professor, Aligarh Muslim University, Aligarh
WII Faculty Member 3	Dr. Bilal Habib Scientist, Wildlife Institute of India, Dehradun	Dr. Bivash Pandav Scientist, Wildlife Institute of India, Dehradun

	Western Region		
	Team 1	**Team 2**	**Team 3**
Chairman	Shri V.B. Sawarkar Former Director, Wildlife Institute of India Dehradun	Dr. Alok Saxena Former PCCF, Govt. of Andaman & Nicobar Islands	Shri U.M. Sahai Former CWLW, Government of Rajasthan
Member 1	Dr. Ashish David Scientist, IIFM, Bhopal	Dr. Jayant Kulkarni Independent Scientist, Pune	Dr. Advait Edgoankar Scientist, IIFM, Bhopal
Member 2	Dr. Nita Shah Scientist, BNHS, Mumbai	Shri Ajay Desai Independent Scientist, Belgaum	Ms. Seema Bhatt Independent Scientist New Delhi
WII Faculty Member 3	Dr. Gautam Talukdar Scientist, Wildlife Institute of India, Dehradun	Dr. Suresh Kumar Scientist, Wildlife Institute of India, Dehradun	Dr. S.P. Goyal Emeritus Scientist, Wildlife Institute of India, Dehradun

	North-Eastern Region	
	Team 1	**Team 2**
Chairman	Shri V. Gopinath Former CWLW, Government of Kerala	Shri T.T.C. Marak Former CWLW, Government of Meghalaya
Member 1	Dr. P.C. Bhattacharya Former Professor, University of Guwahati	Dr. B.K. Mishra Former Scientist, Wildlife Institute of India, Dehradun
Member 2	Dr. Goutam Narayan Independent Scientist, Guwahati	Dr. Yogesh Dubey Scientist, IIFM, Bhopal
WII Faculty Member 3	Dr. B.S. Adhikari Scientist, Wildlife Institute of India, Dehradun	Dr. Abhijit Das Scientist, Wildlife Institute of India, Dehradun

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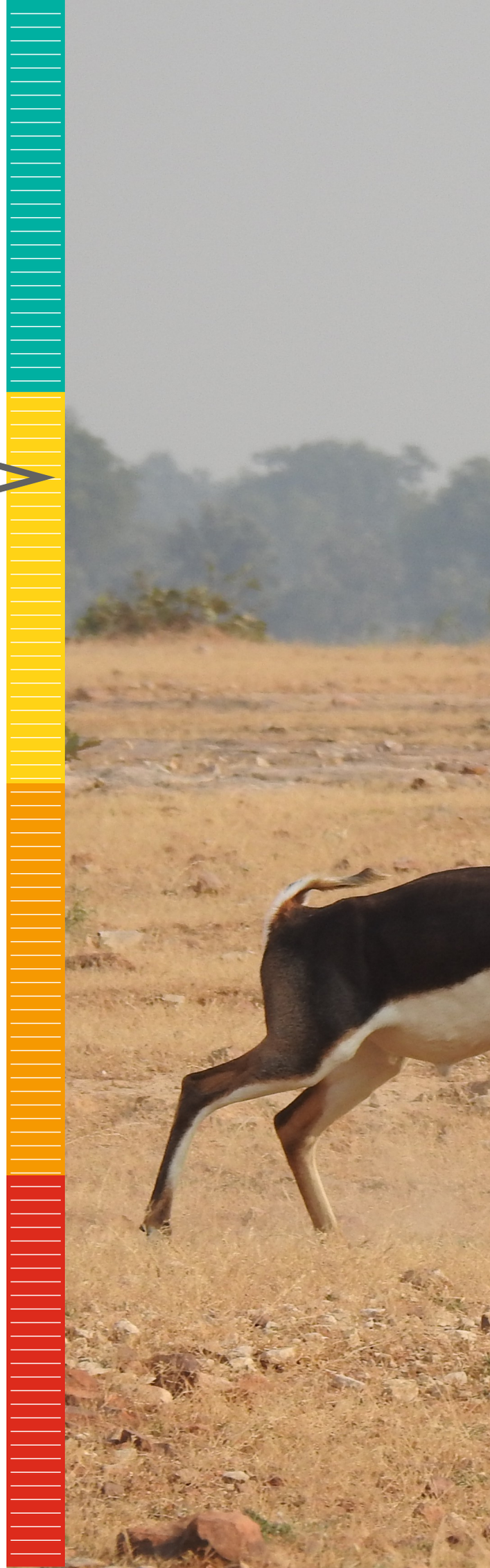
PROCESS OF MANAGEMENT EFFECTIVENESS EVALUATION OF NATIONAL PARKS AND WILDLIFE SANCTUARIES IN INDIA



Khurshid Alam Khan



INTRODUCTION

1.1

Protected areas (PAs) are the basis of most conservation strategies. They protect biodiversity, safeguard ecosystem health and provide an array of ecosystem services such as food, clean water supply, medicines, livelihood, protection from the impacts of natural disasters and mitigating climate change (Hockings 2003). Protected areas are critical for maintaining a healthy environment for people and nature. They are essential for biodiversity conservation and vital to the cultures and livelihoods of indigenous peoples and local communities. They also deliver clean air and water, bring benefits to millions of people through tourism, and provide protection from climate change and natural disasters (UNEP-WCMC and IUCN 2016).

Over the past 20 years, there has been a dramatic increase in the number and extent of protected areas established globally, representing a growing recognition of the value of protection as a way to safeguard nature and cultural resources and mitigate human impacts on biodiversity. There are 2,36,204 terrestrial and inland water protected areas recorded in the World Database on Protected Areas (WDPA), covering almost 7% of the global ocean and terrestrial protected areas covering just under 15% of global land and spread in 245 countries and territories (UNEP-WCMC and IUCN March 2018). They store more than 15% of the global terrestrial carbon stock, help reduce deforestation, habitat and species loss, and support the livelihoods of over one billion people.

K. Sivakumar



1.2

WHAT IS MANAGEMENT EFFECTIVENESS EVALUATION (MEE)?

Assessment of management effectiveness has emerged as a key tool for PA managers and is increasingly being required by governments and international bodies. For example, the Convention on Biological Diversity (CBD) Programme of Work for Protected Areas calls on all State Parties to continue to expand and institutionalize management effectiveness assessments to work towards assessing 60% of the total area of PAs using various national and regional tools and report the results into the global database on management effectiveness maintained by the World Conservation Monitoring Centre of the United Nations Environment Programme (WCMC UNEP) (http://www.cbd.int/decision/ cop/?id=12297). Evaluation of management effectiveness is generally carried out by assessing a series of criteria (represented by carefully selected indicators) against agreed objectives or standards.

Protected area (PA) management effectiveness evaluation (MEE) is defined as the assessment of how well PAs are being managed—primarily, whether they are protecting their values and achieving the goals and objectives agreed upon. The term 'management effectiveness' reflects three main themes of PA management:

- Design issues relating to both individual sites and PA systems
- The adequacy and appropriateness of management systems and processes
- Delivery of the objectives of PAs, including conservation of values.

1.3

WHY DO WE NEED EVALUATION OR/ AND ASSESSMENT?

The need to evaluate PA management effectiveness has become increasingly well recognised internationally over the past one and a half decades. In both developed and developing countries it has been seen that declaration of PAs does not always result in adequate protection (Hockings and Phillips 1999, Hockings et al. 2000, Ervin 2003). Evaluation is necessary because PAs face many threats. However, evaluation is not simply a way of looking for problems; it is as important to identify when things are going well. Assessment of management effectiveness should include both issues within and/or beyond the control of individual managers. This approach facilitates a range of responses to threats and deficiencies in management, from site-based actions to broad political and policy reviews (Hockings et al. 2000).

There are many reasons why people want to assess management effectiveness (Hockings et al. 2000). These different purposes may require different assessment systems and varying degrees of detail. Funding bodies, policy makers and conservation lobbyists may use the results to highlight problems and to set priorities, or management agencies may use them to promote better management policies and practices. Managers may wish to use the results of evaluations to improve their performance or to report on achievements to senior managers, the government or external stakeholders (Hockings et al. 2006). Local communities and other stakeholders, including civil society, need to establish how far their interests are being taken into account. The increased emphasis on evaluation is in part due to changes in society, especially the increased demand for accountability, transparency and demonstrated 'value for money' (Hockings et al. 2006).

Broadly speaking, MEE can:

- Enable and support an adaptive approach to management
- Assist in effective resource allocation
- Promote accountability and transparency
- Help involve the community and build constituencies
- Promote the values of PAs.

In addition to these substantive benefits, the process of assessing management effectiveness can also deliver a number of procedural benefits. Improved communication and cooperation between managers and other stakeholders is a common outcome of evaluation processes. Managers also have an opportunity to 'step back' from the day-to-day concerns of their jobs and consider the issues and challenges that they face in a new light. Many managers have commented that they have derived the major benefits during the process rather than from any formal report written at the end of the exercise (Hockings et al. 2006).

In practice, evaluation results are usually used in more than one way. Information used by managers to improve their own performance (adaptive management) can also be drawn on for reporting (accountability) or can be used to improve the way funds and other resources are allocated either within a single reserve or across a PA system (resource allocation). Whatever purposes it may serve, evaluation should be seen primarily as a tool to assist managers in their work, not as a system for watching and punishing managers for inadequate performance. Evaluation must be used positively to support managers and be seen as a normal part of the process of management. Nonetheless, funding agencies, NGOs and others have a legitimate right to know whether a PA is achieving its stated objectives, and it should be recognised that evaluation findings will inevitably also be used for advocacy. Recent experiences around the world have demonstrated that involving external stakeholders in the assessment process and transparent sharing of the results of assessment can help build cooperation and support for PAs (Hockings et al. 2006).

In recent years there has been a growing concern amongst PA professionals and the public that many PAs are failing to achieve their objectives and, in some cases, are actually losing the values for which they were established (Hockings et al. 2008). As a result, improving the effectiveness of PA management has become a priority throughout the conservation community. One important step in this process is the carrying out of an assessment of the current status and management of the PA to understand better what is and what is not working, and to plan any necessary changes as efficiently as possible (Hockings et al. 2008).

However, assessments should not primarily be about reporting on or judging the managers and/or frontline staff (Mathur et al. 2011). As important as reporting requirements are, assessment of management effectiveness should primarily be used to assist managers to work as effectively as possible. Monitoring threats and activities affecting a PA and using the results to manage challenges, threats and pressures are increasingly being seen as being at the core of good site management (Mathur et al. 2011). Assessments help managers and stakeholders reflect on their experience, allocate resources efficiently and plan for effective management in relation to potential threats and opportunities (Hockings et al. 2008).

1.4

THE WCPA FRAMEWORK FOR ASSESSING MANAGEMENT EFFECTIVENESS

The precise methodology used to assess effectiveness differs between PAs and depends on factors such as the time and resources available, the importance of the site, data quality and stakeholder pressures. The differing situations and needs for PAs thus require different methods of assessment. As a result, a number of assessment tools have been developed to guide and record changes in management practices.

A uniform theme has been provided to these assessments by the IUCN World Commission on Protected Areas (WCPA) Framework for Assessing the Management Effectiveness of Protected Areas (Figure 1.1 and Table 1.1), which aims both to give overall guidance in the development of assessment systems and to encourage basic standards for assessment and reporting.

The WCPA Framework for Assessing Management Effectiveness is a system for designing PA management effectiveness evaluations with six elements: context, planning, inputs, processes, outputs and outcomes. It is not a methodology but is a guide for developing assessment systems.

The WCPA Framework sees management as a process or cycle with six distinct stages, or elements:

- It begins with establishing the context of existing values and threats,
- progresses through planning and
- allocation of resources (inputs)
- as a result of management actions (process) and
- eventually produces goods and services (outputs)
- that result in impacts or outcomes.

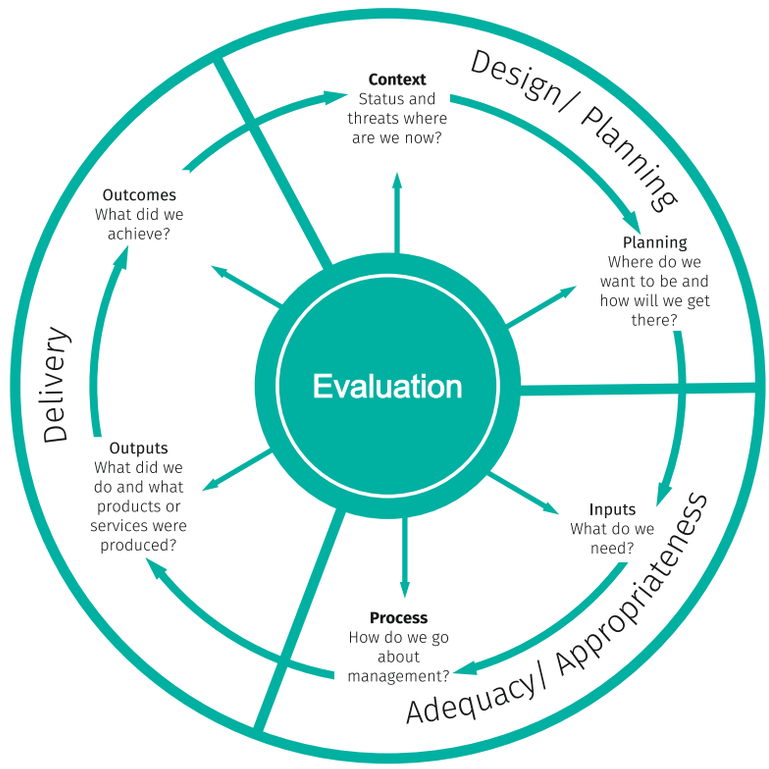


Figure 1.1 The WCPA Framework for Assessing Management Effectiveness (Source Hockings et al. 2006).

Table 1.1 Summary of the WCPA Framework (Source: Stolton et al. 2007)

Elements of evaluation	Explanation	Criteria that are Assessed	Focus of evaluation
Context	Where are we now? Assessment of importance, threats and policy environment	- Significance - Threats - Vulnerability - National context - Partners	Status
Planning	Where do we want to be? Assessment of protected area design and planning	- Protected area legislation and policy - Protected area system design - Reserve design - Management planning	Appropriateness
Inputs	What do we need? Assessment of resources needed to carry out management	- Resourcing of agency - Resourcing of site	Resources
Processes	How do we go about it? Assessment of the way in which management is conducted	- Suitability of management processes	Efficiency and appropriateness
Outputs	What were the results? Assessment of the implementation of management programmes and actions; delivery of products and services	- Results of management actions - Services and products	Effectiveness
Outcomes	What did we achieve? Assessment of the outcomes and the extent to which they achieved objectives	- Impacts: effects of management in relation to objectives	Effectiveness and appropriateness

Of these elements, the outcomes most clearly indicate whether the site is maintaining its core values, but the outcomes can also be the most difficult element to measure accurately. However, the other elements of the framework are all also important for helping identify particular areas where management might need to be adapted or improved.

Over the past 10 years, numerous assessment systems have been developed, most based at least to some extent on the WCPA Framework. They vary from simple questionnaire-type approaches suitable for individual PAs, through workshop-style approaches aimed at whole PA systems, to detailed monitoring systems. The approach described here is a fairly detailed monitoring and evaluation system, suitable for sites of particular importance (Hockings et al. 2008).

1.5

MANAGEMENT EFFECTIVENESS EVALUATION (MEE) ACROSS THE WORLD AND INDIA

Evaluation of PA management effectiveness did not gain real momentum until after the issue was highlighted at the 1992 World Parks Congress, in Caracas, Venezuela. Since then, more than 40 methodologies have been developed and applied to the assessment of the management effectiveness of PAs (Leverington et al. 2008). In response to these initiatives, work on management effectiveness assessment has become an increasingly common component of PA management worldwide.

According to the global database of Protected Area Management Effectiveness (PAME) of the CBD Programme of Work on Protected Areas, evaluations have now been undertaken in over 9037 PAs around the World (UNEP-WCMC and IUCN 2016). The result indicated that only 17.5% of the countries have achieved the 60% score of management effectiveness (Coad et al. 2015).

India has also made a beginning in evaluating the management effectiveness of its national parks, wildlife sanctuaries, tiger reserves (TRs) and world heritage sites (Mathur 2008). The MEE of national parks and wildlife sanctuaries was initiated in 2006 and till 2017, 205 sites have been evaluated. In 2017-18, the MoEFCC with the technical assistance from Wildlife Institute of India has conducted the MEE of 125 NPs and WLS presented in this report. Under India's Project Tiger, management effectiveness assessment of 28 TRs in 2006, 39 TRs in 2010 and 43 TRs in 2014 was carried out. The fourth cycle of MEE of 50 Tiger Reserves in 2018 has been completed and draft report is under submission to the National Tiger Conservation Authority (NTCA). Three Natural World Heritage sites in South Asia, namely Keoladeo National Park, Rajasthan, Kaziranga National Park, Assam and Chitwan National Park, Nepal were evaluated in 2002-2007.

(http://www.wii.gov.in/protected_download/publications/researchreports/2011/tiger/mee_tiger_2011); (http://www.wii.gov.in/ release_mee_tiger_report_2014)

(https://cmsdata.iucn.org/downloads/keoladeo_eoh_second_assessment_oct07.pdf; https://cmsdata.iucn.org/downloads/kaziranga_second_eoh assessment_nov07.pdf; https://cmsdata.iucn.org/downloads/chitwan_eoh_ second_assessment_oct07.pdf)

1.6

ASSESSMENT PROCESS FOR NATIONAL PARKS AND WILDLIFE SANCTUARIES IN INDIA

The evaluation of 125 National Parks and Wildlife Sanctuaries (Figure 1.2) was made in 2017-2018 covered 28 States and Union Territories of India (Table 1.2). In order to ensure credibility of the assessment process 13 Independent Regional Expert Committees had been constituted in 5 regions of the India viz., 3 teams in Northern, 3 teams in Southern, 2 teams in Eastern, 3 teams in Western and 2 teams in North-eastern Regions (Table 1.3), by Ministry of Environment, Forest and Climate Change, Government of India. Wildlife Institute of India (WII) team provided the technical backstopping to the MEE process to these committees. Considering the growing importance of addressing issues relating to Climate Change, Carbon Capture, Preventing Carbon Loss and Encouraging further Carbon Capture in PAs, two additional criteria have been developed. These criteria were not included in the formal MEE process but the information gathered helped to sensitize the conservation community about the significance of these issues and to plan next steps for addressing them. A Technical Manual 'Management Effectiveness Evaluation (MEE) of



Priyank Kapdi

National Parks and Wildlife Sanctuaries in India' was prepared by Wildlife Institute of India to guide the MEE process.

The 13 Independent Expert MEE teams visited these National Parks/ Wildlife Sanctuaries for conducting MEE as per the prescribed assessment criteria form and completing the MEE Score Card. In addition to the specially customised 30 'Headline Indicators' for India, the MEE teams have also assessed the Strengths, the Weaknesses and the Immediate Actionable Points in respect of each PA and these are presented in Chapter 3 of this report. The attached CD contains the filled in questionnaires of all 125 PAs included in evaluation from 2015 to 2017. All efforts have been made by 4 member Independent Expert MEE team visit the PA together to ensure that there is no individual bias in evaluation. At the end of the site visit, an interaction has been organized with Site Managers and his/her representatives and discussed the findings of the evaluation and to seek additional information/ clarifications. The Site Manager may also make a written submission to the team.

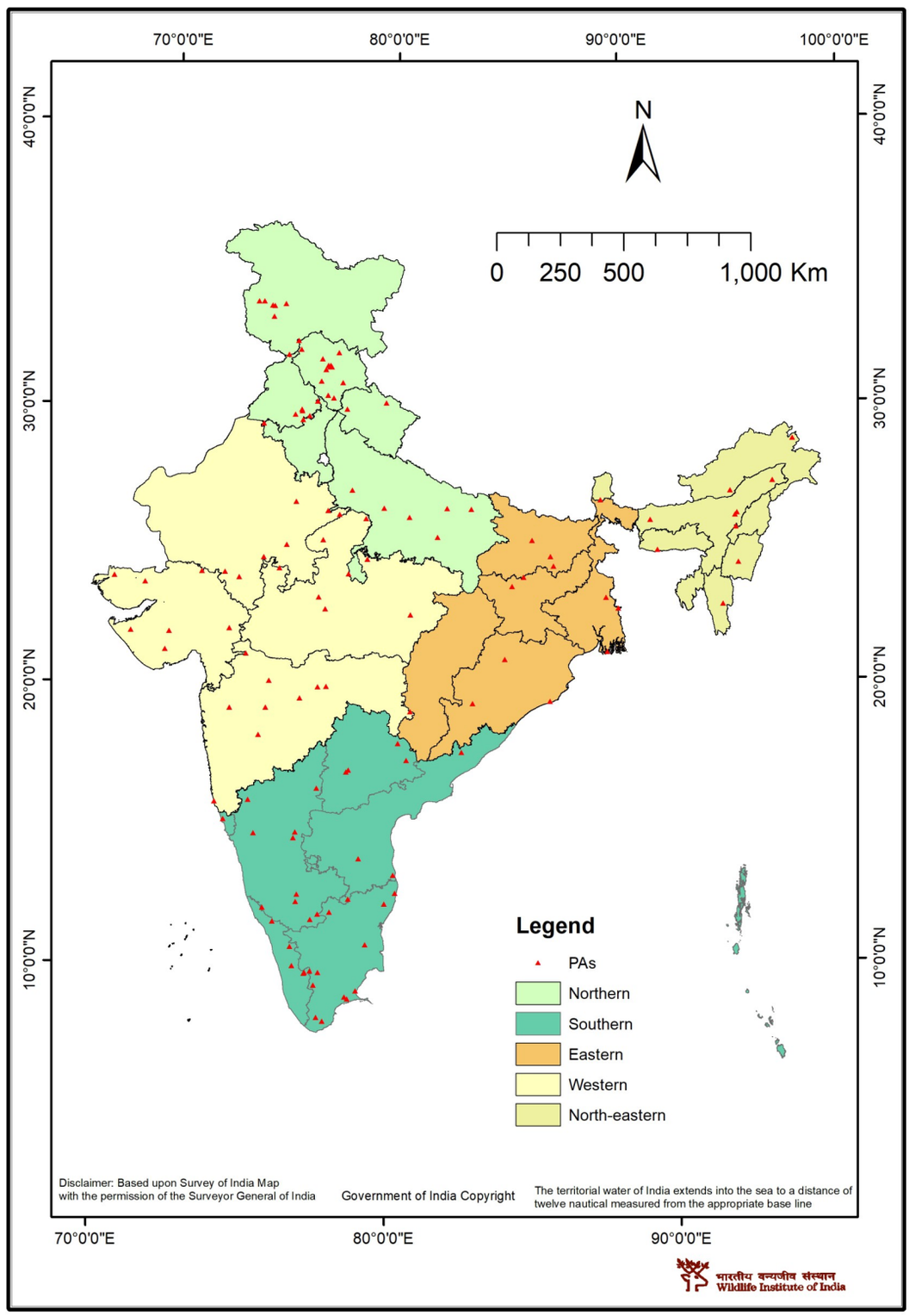
Table 1.2 List of States involved in MEE Exercise, 2017-18

S. No.	Region	No. of PAs in Year 2017-18 in MEE
NORTHERN REGION		
1.	Chandigarh	1
2.	Haryana	1
3.	Himachal Pradesh	13
4.	Jammu & Kashmir	7
5.	Punjab	5
6.	Uttar Pradesh	7
7.	Uttarakhand	2
	Total Northern	**(4 NP+ 32 WLS) = 36 PAs**
SOUTHERN REGION		
8.	Andhra Pradesh	4
9.	Goa	1
10.	Karnataka	10
11.	Kerala	6
12.	Tamil Nadu	11
13.	Telangana	4
	Total Southern	**(6 NP+ 30 WLS) = 36 PAs.**
EASTERN REGION		
14.	Bihar	3
15.	Jharkhand	2
16.	Odisha	3
17.	West Bengal	3
	Total Eastern Region	**(11 WLS) = 11 PAs**
WESTERN REGION		
18.	Gujarat	7
19.	Madhya Pradesh	7
20.	Maharashtra	10
21.	Rajasthan	7
	Total Western Region	**(2 NP+29 WLS) = 31 PAs**
NORTH-EASTERN REGION		
22.	Arunachal Pradesh	2
23.	Assam	4
24.	Manipur	1
25.	Meghalaya	1
26.	Mizoram	1
27.	Nagaland	1
28.	Sikkim	1
	Total North-eastern Region	**(11 WLS) = 11 PAs**
	Grand Total	**125 PAs**

Table 1.3 List of MEE Teams and number of PAs included in MEE Process 2017-18

Region	Teams	States	No. of PAs	Total PAs
Northern	1.	Chandigarh	1	12
		Himachal Pradesh	11	
	2.	Haryana	1	12
		Himachal Pradesh	2	
		Jammu & Kashmir	7	
		Punjab	2	
	3.	Punjab	3	12
		Uttar Pradesh	7	
		Uttarakhand	2	
Southern	4.	Karnataka	3	12
		Kerala	6	
		Tamil Nadu	3	
	5.	Andhra Pradesh	4	12
		Goa	1	
		Karnataka	7	
	6.	Tamil Nadu	8	12
		Telangana	4	
Eastern	7.	Odisha	2	5
		West Bengal	3	
	8.	Bihar	3	6
		Jharkhand	2	
		Odisha	1	
Western	9.	Gujarat	7	10
		Madhya Pradesh	3	
	10.	Maharashtra	4	11
		Rajasthan	7	
	11.	Madhya Pradesh	4	10
		Maharashtra	6	
Norther-eastern	12.	Manipur	1	5
		Meghalaya	1	
		Mizoram	1	
		Nagaland	1	
		Sikkim	1	
	13.	Arunachal Pradesh	2	6
		Assam	4	
Total 5 Regions	**13 Teams**	**28 States**	**125**	**125**

Figure 1.2: Map of India showing 125 PAs evaluated in 2017-18



1.7

ASSESSMENT CRITERIA FOR NATIONAL PARKS AND WILDLIFE SANCTUARIES IN INDIA

For assessment of each of the six elements of the MEE Framework, the following criteria have been developed for MEE process. Explanatory notes, wherever needed, are provided to guide the assessment process. Against each 'Criteria' the evaluation team should indicate 'Reference document(s)' and also provide 'Remarks', as appropriate. The scores by themselves will not help in providing the complete picture unless supported by considered observations (remarks) that qualify such scores.

Management Effectiveness Evaluation (MEE) of National Parks and Wildlife Sanctuaries in India (2017-18): Assessment Framework and Criteria

1

Context

1.1

Are the values of the site well documented, assessed and monitored?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
Values not systematically documented, assessed or monitored.	Poor			
Values generally identified but not systematically assessed and monitored.	Fair			
Most values systematically identified and assessed and monitored.	Good			
All values systematically identified and assessed and monitored.	Very good			

**Values would also include geo-morphological, historico-cultural and faunal and floral species.*

Score: *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

1.2

Are the threats to site values well documented and assessed?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
Threats not systematically documented or assessed.	Poor			
Threats generally identified but not systematically assessed.	Fair			
Most threats systematically identified and assessed.	Good			
All threats systematically identified and assessed.	Very good			

** This assessment should be based on number, nature and extent of threats. Threats within and outside PA should both be considered. Impacts, if any on the population abundance of key species may be indicated in the remarks.*

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

1.3

Is the site free from human and biotic interference?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
The site has extensive human and biotic interference.	Poor			
The site has some human and biotic interference.	Fair			
The site has little human and biotic interference.	Good			
The site has no human and biotic interference.	Very good			

*This assessment should be based on existence of human settlements/ villages; livestock grazing, cultivation, encroachments etc, resource extraction/ livelihood dependence of local communities and should reflect the overall interference due to all the above factors. Number and size of human settlements/ enclaved villages and their impacts on the site may be indicated in the Remarks.

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2

Planning

2.1

Is the site properly identified (NP/WLS) and categorized (in terms of zonation) to achieve the objectives

Assessment criteria*

Condition	Category⁺	(Tick✓)	Reference document(s)	Remarks
Site not identified correctly or categorized.	Poor			
Site identified correctly but not categorized.	Fair			
Site identified correctly but not systematically categorized.	Good			
Site identified correctly and systematically categorized with proper zonation plans.	Very good			

**Management prescriptions for various zones (Core, Buffer, Tourism etc) may be carefully assessed.*

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2.2

Does the site have a comprehensive Management Plan?

Assessment criteria*

Condition	Category⁺	(Tick✓)	Reference document(s)	Remarks
No relevant Management Plan in place.	Poor			
Management Plan exist but not comprehensive.	Fair			
Site has a comprehensive Management Plan.	Good			
Site has a comprehensive, science based Management Plan prepared through a participatory process.	Very good			

**Is the Management Plan consistent with WII Guidelines or not? The extent to which the concerns of the stakeholders, if any have been incorporated in the Management Plan may be commented upon.*

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2.3

Is the Management Plan routinely and systematically updated?

Assessment criteria

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
No process in place for systematic review and update of Management Plan.	Poor			
Management Plan sometimes updated in adhoc manner.	Fair			
Management Plan routinely and systematically updated.	Good			
Management Plan routinely, systematically and scientifically updated through a participatory process.	Very good			

Score: *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2.4

Does the management plan elaborate on safeguarding the threatened biodiversity values?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
The plan does not safeguard the threatened biodiversity values.	Poor			
The plan safeguards a few threatened biodiversity values.	Fair			
The plan safeguards a large number of threatened biodiversity values.	Good			
The plan safeguards all threatened biodiversity values.	Very good			

** Remarks need to elaborate on the kind of safeguards and how they work or are intended to work*

Score: *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2.5

Are stakeholders given an opportunity to participate in planning?

Assessment criteria*

Condition	Category*	(Tick ✓)	Reference document(s)	Remarks
Little, if any opportunity for stakeholder participation in planning.	Poor			
Stakeholders participate in some planning.	Fair			
Stakeholders participate in most planning processes.	Good			
Stakeholders routinely and systematically participate in all planning processes.	Very good			

** The result of participation must show in the field and not merely reported as a routine exercise. Further, is there a system/scope of putting the draft Management Plan in Public Domain in place?*

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2.6

Are habitat restoration programmes systematically planned and monitored?

Assessment criteria*

Condition	Category*	(Tick ✓)	Reference document(s)	Remarks
Habitat restoration programmes are entirely adhoc.	Poor			
Limited planning and monitoring programmes are in place for habitat restoration.	Fair			
Habitat restoration programmes are generally well planned and monitored.	Good			
Habitat restoration programmes are thoroughly planned and monitored.	Very good			

** This assessment should be primarily based on habitat management programmes in relation to habitats for species that are threatened (IUCN categories), are habitat specialists, subjected to seasonal movements, wide ranging with emphasis on the breeding and rearing habitat and may include factors such as food, water, shelter (all connotations).Habitat structure, composition, unique patches of vegetation and sensitive sites, sources of water and their distribution are integral. Corridors within buffer zone are critically important. For example, all riparian habitats. Have these been addressed? Is their a planning process in place? What is the extent of 'invasive species in the Site? Are there any measures to reduce/ remove them? Have these been successful?*

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2.7

Does the site has an effective protection strategy?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
Site has no protection strategy.	Poor			
Site has an adhoc protection strategy.	Fair			
Site has a comprehensive protection strategy but is not very effective.	Good			
Site has a comprehensive and very effective protection strategy.	Very good			

** This assessment takes inter-alia into account the nature of threats, the number and location of patrolling camps and foot and mobile patrolling, needs that relate to available manpower, terrain difficulties, practicability of area coverage, readiness to contain specific threats with necessary support and facilities. Is there any coordination with other wings of the Forest Department/ Police/ Customs etc? Are these effective?*

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2.8

Does the management plan integrate the site into a wider ecological network/ landscape following the principles of the ecosystem approach?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
The plan does not integrate the site into a wider network/ landscape.	Poor			
The plan makes some limited attempts to integrate the site into a network/ landscape.	Fair			
The plan integrates the site generally quite well into a network/ landscape.	Good			
The plan fully integrates the site into a wider network/ landscape.	Very good			

** Assessment needs to consider the scope of opportunities on the landscape scale that exist. Consider whether any attempts have been made and what are these? Have all the important corridors been identified? What actions are planned/implemented for their security? Have the Forest Working Plans and Forest Development Corporation Plans within the identified landscapes taken cognizance of such new requirement? What kind of relationship exists with the District Administration and other Line Departments? Does the Site get any funds from these agencies?*

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

3

Inputs

Are personnel adequate, well organised and deployed with access to adequate resources in the site?

3.1

Assessment criteria*

Condition	Category⁺	(Tick✓)	Reference document(s)	Remarks
Few, if any, personnel explicitly allocated for PA management.	Poor			
Some personnel explicitly allocated for PA management but not systematically linked to management objectives.	Fair			
Some personnel explicitly allocated towards achievement of specific management objectives.	Good			
Adequate personnel explicitly allocated towards achievement of specific management objectives.	Very good			

** This assessment should inter-alia be based on number of personnel allocated for attainment of PA objectives at the Range, Round, Beat and Patrolling camps levels or as relevant to the needs (sanctioned posts vis- a- vis existing personnel and needs beyond the sanctioned strengths. It is possible that posts have last been sanctioned several years back that do not now account for the current needs)*

⁺**Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

Does the site have trained manpower resources for effective PA management?

3.2

Assessment criteria*

Condition	Category⁺	(Tick✓)	Reference document(s)	Remarks
Very few trained officers and frontline staff in the site.	Poor			
Few trained officers and frontline staff, who are posted in the site.	Fair			
A large number of trained officers and frontline staff are posted in the site.	Good			
All trained managers and frontline staff posted in the site.	Very good			

** Indicate % of trained staff in various categories. i.e. Higher Management: ACF/ DCF/ CF/ CCF; Frontline Staff: Range Officer; Beat Officer; Forest Guard; Casual Daily Labour (CDL); Others.*

⁺**Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

3.3

Are resources (vehicle, equipment, building etc.) adequate, well organised and managed with access to adequate resources?

Assessment criteria*

Condition	Category⁺	(Tick✓)	Reference document(s)	Remarks
Few, if any, resources explicitly allocated for PA management.	Poor			
Some resources explicitly allocated for PA management but not systematically linked to management objectives.	Fair			
Some resources explicitly allocated towards achievement of specific management objectives.	Good			
Adequate resources explicitly allocated towards achievement of specific management objectives.	Very good			

** These form a variety of resources. These may be segregated into immovable (structures) and movable categories and each further may be considered under the essential and desirable categories. It is best to start with what are the minimum needs to attain each objective, what is available and manner of use/deployment. The proportions of the 'essentials' and 'desirables' along the importance gradient of objectives would serve as pointers for score categories. Specific remarks would be vitally important.*

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

3.4

Are resources (human and financial) linked to priority actions and are funds released timely?

Assessment criteria*

Condition	Category⁺	(Tick✓)	Reference document(s)	Remarks
Resource allocation is adhoc, funds are inadequate and seldom released in time and not utilized.	Poor			
Some specific allocation for management of priority action. Funds are inadequate and there is some delay in release, partially utilized.	Fair			
Comprehensive planning and allocation that meets the most important objectives. Generally funds released with not much delay and mostly utilized.	Good			
Comprehensive planning and allocation of resources for attainment of most objectives. Funds generally released on-time and are fully utilized.	Very good			

**Obtain details of funds released by MoEF and their utilization by site in the last 3 years and indicate them under 'Remarks'. Also comment on the problems associated with funds and their mitigation.*

⁺***Score:*** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

3.5

What level of resources is provided by NGOs?

Assessment criteria*

Condition	Category+	(Tick✓)	Reference document(s)	Remarks
NGOs contribute nothing for the management of the site.	Poor			
NGOs make some contribution to management of the site but opportunities for collaboration are not systematically explored.	Fair			
NGOs contributions are systematically sought and negotiated for the management of some site level activities.	Good			
NGOs contributions are systematically sought and negotiated for the management of many site level activities.	Very good			

**Details of contributions (cash/kind) made by the NGOs in the last 3 years may be collected.*

*+**Score:** Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

3.6

Does PA manager considers resources (human and financial) to be sufficient?

Assessment criteria

Condition	Category+	(Tick✓)	Reference document(s)	Remarks
Resources insufficient for most tasks.	Poor			
Resources sufficient for some tasks.	Fair			
Resources sufficient for most tasks.	Good			
Resources are in excess for most tasks.	Very good			

*+**Score:** Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

4

Process

4.1

Is PA staff performance management linked to achievement of management objectives?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
No linkage between staff performance management and management objectives.	Poor			
Some linkage between staff performance management and management objectives, but not consistently or systematically assessed.	Fair			
Performance management for most staff is directly linked to achievement of relevant management objectives.	Good			
Performance management of all staff is directly linked to achievement of relevant management objectives.	Very good			

**Has the PA staff received award/ appreciation from any agency in the last 3 years?*
**Score: Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

4.2

Is there effective public participation in PA management?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
Little or no public participation in PA management.	Poor			
Opportunistic public participation in some aspects of PA management.	Fair			
Systematic public participation in most aspects of PA management.	Good			
Comprehensive and systematic public participation in all important aspects of PA management.	Very good			

** Participation would include Conservation & awareness programmes, Census operations, Intelligence gathering, Forest fire control etc.*
**Score: Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

4.3

Is there a responsive system for handling complaints and comments about PA management?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
No systematic approach to handling complaints.	Poor			
Complaints handling system operational but not responsive to individual issues and limited follow up provided.	Fair			
Coordinated system logs and responds effectively to most complaints.	Good			
All complaints systematically logged in coordinated system and timely response provided with minimal repeat complaints.	Very good			

** Number of queries made and response thereof under the Right to Information (RTI), Act in the last 3 years may be compiled.*

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

4.4

Does PA management addresses the livelihood issues of resource dependent communities especially of women?

Assessment criteria

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
No livelihood issues are addressed by PA management.	Poor			
Few livelihood issues are addressed by PA management.	Fair			
Substantial livelihood issues are addressed by PA management.	Good			
Livelihood issues of resource dependent communities especially women are addressed effectively by PA managers.	Very good			

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

5

Output

5.1

Is adequate information on PA management publicly available?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
Little or no information on PA management publicly available.	Poor			
Publicly available information is general and has limited relevance to management accountability and the condition of public assets.	Fair			
Publicly available information provides detailed insight into major management issues for most PAs or groups of PAs.	Good			
Comprehensive reports are routinely provided on management and condition of public assets in all PAs or groups of PAs.	Very good			

** Does the Site has a website? If yes, is it comprehensive, well-managed and periodically updated?*

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

5.2

Are visitor services (tourism and interpretation) and facilities appropriate for the relevant protected area category?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
Visitor services and facilities are at odds with relevant PA category and/or threaten PA values.	Poor			
Visitor services and facilities generally accord with relevant PA category and don't threaten PA values.	Fair			
All visitor services and facilities accord with relevant PA category and most enhance PA values.	Good			
All visitor services and facilities accord with relevant PA category and enhance PA values.	Very good			

** Include the existence and quality of visitor and interpretation centers, including skills and capabilities of personnel manning these, site related publications, films, videos; arrangements of stay (including places serving refreshments and food owned and managed by site), watch towers and hides including safety factors, vehicles assigned for visitors including riding elephants, if any and their deployment, drinking water, rest rooms, garbage disposal, attended and self guided services in the field, visitor feed back on the quality of wilderness experience. Details of numbers of visitors/ tourists(both domestic and overseas) coming in the last 3 years and the revenue earned may be compiled.*

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

5.3

Are research/ monitoring related trends systematically evaluated and routinely reported and used to improve management?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
Little or no systematic evaluation or routine reporting of trends.	Poor			
Some evaluation and reporting undertaken but neither systematic nor routine.	Fair			
Systematic evaluation and routine reporting of management related trends undertaken.	Good			
Systematic evaluation and comprehensive reporting of trends undertaken and attempts made at course corrections as relevant.	Very good			

** Not all site attract projects and researchers and with exceptions, little research takes place on the site own steam because of systemic limitations. However, monitoring of some critical issues is expected e.g. population of tiger, co-predators and prey with insights into their demography and distribution (some opportunistic sampling by sightings, signs and spatial distribution during assessment would be extremely useful in terms of expert impression and as a pulse), monitoring incidence of livestock grazing, fires, weeds, sources of water, a variety of illegal activities typically associated with the reserve, wildlife health (e.g. epidemics, immunization of livestock) regeneration and change in vegetation, visitors and their activities, offence cases, ex-gratia payments etc. Details of number of research projects in the last 3 years, institutions involved, salient outcomes may be collected and used in awarding scores.*

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

5.4

Is there a systematic maintenance schedule and funds in place for management of infrastructure/assets?

Assessment criteria

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
No systematic inventory or maintenance schedule.	Poor			
Inventory maintenance is adhoc and so is the maintenance schedule.	Fair			
Systematic inventory provides the basis for maintenance schedule but funds are inadequately made available.	Good			
Systematic inventory provides the basis for maintenance schedule and adequate funds are made available.	Very good			

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

6

Outcomes

6.1

Are populations of threatened species especially key faunal species declining, stable or increasing?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
Threatened/ endangered species populations declining.	Poor			
Some threatened/ endangered species populations increasing, most others stable.	Fair			
Most threatened/ endangered species populations increasing, most others stable.	Good			
All threatened/ endangered species populations either increasing or stable.	Very good			

** This needs to practically relate to the natural ecosystem potential rather than being driven merely by numbers and visibility. The assessment score may be elaborated under remarks. Comments on the population trends may be made under Remarks.*

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

6.2

Have the threats to the site being reduced/ minimized or is there an increase?

Assessment criteria

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
Threats to the Site have not abated but have enhanced.	Poor			
Some threats to the Site have abated, others continue their presence	Fair			
Most threats to the Site have abated. The few remaining are vigorously being addressed	Good			
All threats to the Site have been effectively contained and an efficient system is in place to deal with any emerging situation	Very good			

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

6.3 Has the site been effective in the mitigation of human-wildlife conflicts?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
Human-wildlife conflicts are rampant.	Poor			
Site has been able to mitigate few human-wildlife conflicts.	Fair			
Site has been able to mitigate many human-wildlife conflicts.	Good			
Site has been able effective in mitigating all human-wildlife conflicts.	Very good			

** Details of compensation paid for human injury/ death and property damage in the last 3 years may be collected.*

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

6.4 Are the expectations of visitors generally met or exceeded?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
Expectations of visitors generally not met.	Poor			
Expectations of many visitors are met.	Fair			
Expectations of most visitors are met.	Good			
Good expectations of most visitors are met.	Very good			

** Is there any system of receiving/ analyzing visitor feedback?*

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

6.5 Are local communities supportive of PA management?

Assessment criteria*

Condition	Category*	(Tick✓)	Reference document(s)	Remarks
Local communities are hostile.	Poor			
Some are supportive.	Fair			
Most locals are supportive of PA management.	Good			
All local communities supportive of PA management.	Very good			

** There could be many reasons for disenchantment. It could be real because of managerial neglect or the managerial efforts could be appropriate but there could be local elements/organizations who would like to keep the dis-affectation simmering for their own ulterior motives. Likewise success could be entirely because of the efforts of managers or they might be fortunate in striking partnerships with credible NGOs. Assessment may take the prevailing causes into account.*

***Score:** *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

1.8

MEE SCORE CARD

Framework Element Number	Framework Element Name	Number of Questions (a)	Maximum Mark per question (b)	Total (a x b)	Marks obtained for the Element	Overall Score %
1.	Context	03	10	30		
2.	Planning	08	10	80		
3.	Inputs	06	10	60		
4.	Process	04	10	40		
5.	Outputs	04	10	40		
6.	Outcomes	05	10	50		
Total	**30**		**300**			

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1.9 ASSESSMENT CRITERIA FOR ADDRESSING ISSUES RELATING TO CLIMATE CHANGE & CARBON CAPTURE IN THE PROTECTED AREAS

1

Additional Criteria on Climate Change: Is the protected area being consciously managed to adapt to climate change?

Condition	Category*	(Tick✓)	Comment/ Explanation	Next Steps
There have been no efforts to consider adaptation to climate change in management	Poor			
Some initial thought has taken place about likely impacts of climate change, but this has yet to be translated into management plans	Fair			
Detailed plans have been drawn up about how to adapt management to predicted climate change, but these have yet to be translated into active management.	Good			
Detailed plans have been drawn up about how to adapt management to predicted climate change, and these are already being implemented	Very good			

Score: *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

2

Additional Criteria on Climate Change: Is the protected area being consciously managed to prevent carbon loss and to encourage further carbon capture?

Condition	Category*	(Tick✓)	Comment/ Explanation	Next Steps
Carbon storage and carbon dioxide capture have not been considered in management of the protected area	Poor			
Carbon storage and carbon dioxide capture have been considered in general terms, but has not yet been significantly reflected in management	Fair			
There are active measures in place to reduce carbon loss from the protected area, but no conscious measures to increase carbon dioxide capture	Fair			
There are active measures in place both to reduce carbon loss from the protected area and to increase carbon dioxide capture	Very good			

Score: *Poor: 2.5; Fair: 5; Good: 7.5; Very Good: 10*

1.10

REFERENCES

Coad L, Leverington F, Knights K, Geldmann J, Eassom A, Kapos V, et al. 2015. Measuring impact of protected area management interventions: current and future use of the Global Database of Protected Area Management Effectiveness. Philos Trans R Soc London B.; p. 370.

Ervin, J. 2003. *WWF Rapid Assessment and Prioritization of Protected Area Management (RAPPAM) Methodology.* Gland, Switzerland: WWF.

Hockings M. 2003. Systems for assessing the effectiveness of management in protected areas. Bioscience; 53: 823-832.

Hockings, M., James, R., Stolton, S., Dudley, N., Mathur, V., Makombo, J., Courrau, J., Parrish, J., & Patry, M. 2008. Enhancing Our Heritage Toolkit: Assessing Management Effectiveness of Natural World Heritage Sites. World Heritage Paper 23. Paris: UNESCO World Heritage Centre.

Hockings, M., & Phillips, A. 1999. How well are we doing: some thoughts on the effectiveness of protected areas. Parks, 9, 5-14.

Hockings, M., Stolton, S., & Dudley, N. 2000. *Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas.* Gland, Switzerland and Cambridge, UK: IUCN. x + 121 pp.

Hockings, M., Stolton, S., Leverington, F., Dudley, N., & Courrau, J. 2006. Evaluating Effectiveness: *A Framework for Assessing Management Effectiveness of Protected Areas.* 2nd edition. Gland, Switzerland and Cambridge, UK: IUCN. xiv + 105 pp.

Leverington, F., Hockings, M., & Costa, K.L. 2008. Management Effectiveness Evaluation in Protected Areas: Report for the Project 'Global Study into Management Effectiveness Evaluation of Protected Areas'. Gatton, Australia: The University of Queensland, IUCN WCPA, TNC, WWF.

Mathur, V.B. 2008. *Management Effectiveness Evaluation (MEE) of Protected Areas Network in India: Recent Experiences.* Implementation of the CBD Programme of Work on Protected Areas: Progress and Perspectives. Abstracts of poster presentations at the second meeting of the Ad Hoc Open-Ended Working Group on Protected Areas, 11-15 February 2008 in Rome, Italy. Technical Series No. 35, 106 pages. Secretariat of the Convention on Biological Diversity.

Mathur, V.B., Gopal., R. Yadav, S.P and P.R.Sinha 2011. *Management Effectiveness Evaluation (MEE) of Protected Areas Network in India: Process and Outcomes.* 97 pages. National Tiger Conservation Authority, Government of India. http://projecttiger.nic.in

Stolton, S., Hockings, M., Dudley, N., MacKinnon, k., Whitten T. and Leverington F. 2007. Management Effectiveness Tracking Tool, Reporting Progress at Protected, Area Sites: Second Edition, Revised Edition published by WWF International

UNEP-WCMC and IUCN (2018), Protected Planet: The World Database on Protected Areas (WDPA) [On-line], January 2018, Cambridge, UK: UNEP-WCMC and IUCN.

Web links referred to:

http://www.wii.gov.in/images//images/documents/mee_report_2006_14.pdf

https://cmsdata.iucn.org/downloads/keoladeo_eoh_second_ assessment_oct07.pdf

https://cmsdata.iucn.org/downloads/kaziranga_second_eoh_assessment_nov07.pdf

https://cmsdata.iucn.org/ downloads/chitwan_eoh_second_assessment_oct07.pdf

http://www.wii.gov.in/protected_download/publications/researchreports/2011/tiger/mee_tiger_2011

http://www.wii.gov.in/release_mee_tiger_report_2014

http://www.wiienvis.nic.in/userlogin.aspx?Page=MEE_PA_Technical%20Manual_30%20August2016.pdf&file=pdf

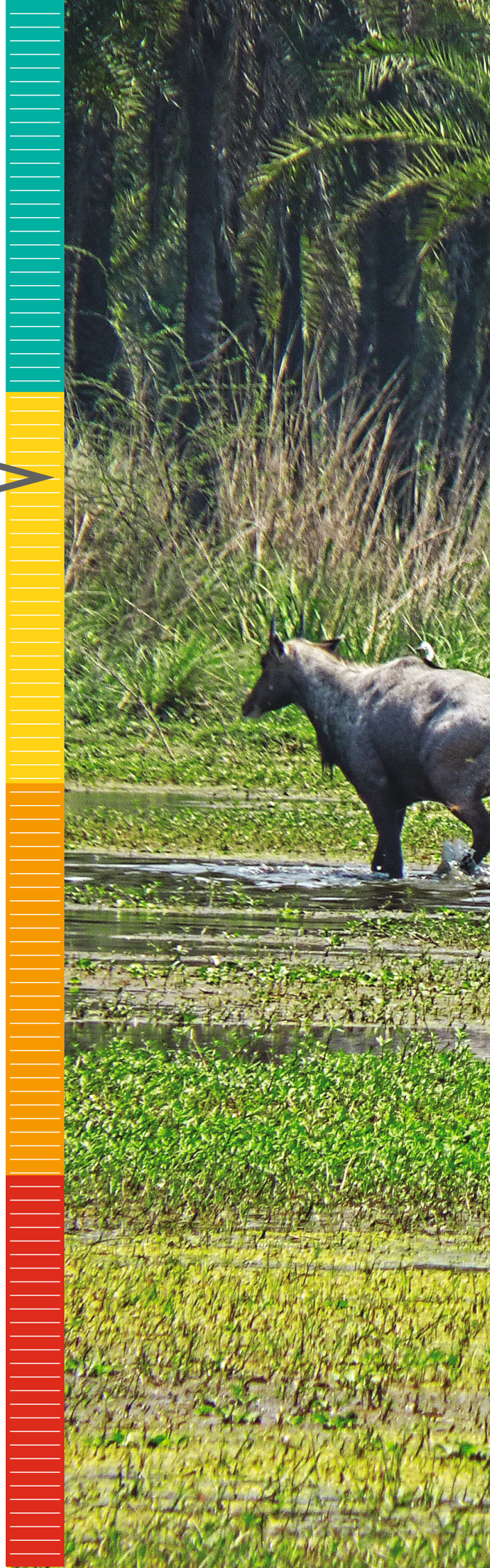
http://www.cbd.int/decision/cop/?id=12297: Convention on Biological Diversity. Decision X/31. Protected Areas. 2010. Decision X/31. Available: https://www.cbd.int/decision/ cop/?id=12297



Suresh Kumar

02

RESULTS AND OUTCOMES OF MANAGEMENT EFFECTIVENESS EVALUATION OF NATIONAL PARKS AND WILDLIFE SANCTUARIES IN INDIA, 2017-18



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INTRODUCTION

2.1

Management Effectiveness Evaluation (MEE) of 125 National Parks and Wildlife Sanctuaries conducted during 2017-2018. Earlier from 2006 to 2014, MEE of 125 National Parks and Wildlife Sanctuaries conducted. In previous MEE cycle from 2015 to 2017, evaluation of 80 National Parks and Wildlife Sanctuaries conducted in the country. Therefore, till date, a total of 330 Protected Areas have been evaluated in India. Another round of evaluation is ongoing for 146 Protected Areas during 2018-19 in the country. This report includes the results of 125 National Parks and Wildlife Sanctuaries which are evaluated in 2017-18.

Thirteen Independent Regional Expert Committees (REC) constituted for evaluation of 125 National Parks and Wildlife Sanctuaries in 2017-18 in 5 regions of the country, viz., Northern, Southern, Eastern, Western and North-eastern region (Table 2.1).

Table 2.1: List of 125 National Parks and Wildlife Sanctuaries arranged in five Regions

Regions	States	No. of PAs
Northern	Chandigarh, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Uttar Pradesh and Uttarakhand	36
Southern	Andhra Pradesh, Goa, Karnataka, Kerala, Tamil Nadu and Telangana	36
Eastern	Bihar, Jharkhand, Odisha and West Bengal	11
Western	Gujarat, Madhya Pradesh, Maharashtra and Rajasthan	31
North-eastern	Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Sikkim	11
Total 5 Region	**28 States**	**125 PAs**


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The thirteen Independent Regional Expert Committees (REC) conducted field visit studies and interactions made with Park Managers and concerned State Chief Wildlife Wardens for 125 National Parks and Wildlife Sanctuaries in 2017-18. But due to some issues, committee could not undertaken the assessments of 6 National Parks and Wildlife Sanctuaries through the MEE process (Table 2.2), viz., the two National Parks of Himachal Pradesh, *viz*., Inderkilla and Khirganga National Parks, Abubshahar Wildlife Sanctuary of Haryana, City Forest (Salim Ali) National Park, Jammu & Kashmir, Dr. Abhimrao Ambedkar Wildlife Sanctuary, Uttar Pradesh and Rangapahar Wildlife Sanctuary, Nagaland. The MEE scoring of these PAs were not made by REC, however, the detail description and specific recommendations are given in next chapter (Chapter 3) and the brief of these PAs given in Table 2.2.

Table 2.2: List of PAs, of which MEE was not conducted during 2017-18

Region	Team	State	Name of PA	Reasons for not evaluation
Northern Region	Team 1	Himachal Pradesh	1. Inderkila NP	Gazette Notification of the Park made by the Govt. but the area has never been transferred to Wildlife wing and this area is still under Kullu Territorial Forest Division as Reserve Forest.
	Team 1	Himachal Pradesh	2. Khirganga NP	Gazette Notification of the Park made by the Govt. but the area has never been transferred to Wildlife wing and this area is still under Parbati Territorial Forest Division as Reserve Forest.
	Team 2	Haryana	3. Abubshahar WLS	The Government of Haryana has already decided for de-notification of this sanctuary because it mainly falls in private lands and or some other reasons. Govt. is trying to re-notify the area as a Community Reserve.
	Team 2	Jammu & Kashmir	4. City Forest (Salim Ali) NP	Gazette Notification of the Park made by the Govt. but the Park has never physically handed over to the Department of Wildlife Protection for management. Due to some encroachment issues, the Govt. wants to de-notify some area of the Park.
	Team 3	Uttar Pradesh	5. Dr. Bhimrao Ambedkar Bird WLS	Gazette Notification of the Sanctuary made by the Govt. but the access to the sanctuary for the Staff and visitors is restricted because of the possession of the area by the local influential land owner.

Region	Team	State	Name of PA	Reasons for not evaluation
North-eastern Region	Team 12	Nagaland	6. Rangapahar WLS	Gazette Notification of the Sanctuary made by the Govt. but the Sanctuary does not exist in the field. An area of 176 ha converted in Zoological Park and the remaining area of 470 ha notified as the PA in 1986 has been encroached and developed into a thriving township.

2.2 OVERALL RESULTS OF MEE OF NATIONAL PARKS AND WILDLIFE SANCTUARIES, 2017 - 2018

Thus by reducing the above 6 PAs from 125 PAs, the results of 119 PAs are given in this chapter. The 119 National Parks and Wildlife Sanctuaries arranged in 5 regions including 26 States and Union Territories of India have the overall mean MEE score of 58.03% with a range from 27.08% to 91.67% (Table 2.3). Van Vihar National Park, Madhya Pradesh rated with highest MEE score of 91.67% and Khongjaingamba Ching Wildlife Sanctuary, Manipur rated with least MEE score of 27.08%. The top five and bottom five scored PAs are given in Table 2.4. In total 11 PAs (9.24%) scored in 'Very Good' category, 46 PAs (38.66%) in 'Good' category, 56 PAs (47.06%) in 'Fair' category and only 6 PAs (5.04%) in 'Poor' category (Table 2.5).

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Table 2.3: Overall mean MEE Score and range in percentage

Region	Total Score	No. of States	No. of PAs	Mean MEE Score %	MEE Score Range %
Northern*	Chandigarh, Himachal Pradesh, Jammu & Kashmir, Punjab, Uttar Pradesh and Uttarakhand	7	31	54.91	34.17 - 72.41
Southern	Andhra Pradesh, Goa, Karnataka, Kerala, Tamil Nadu and Telangana	6	36	62.25	35.00 - 90.00
Eastern	Bihar, Jharkhand, Odisha and West Bengal	4	11	59.77	42.50 - 73.33
Western	Gujarat, Madhya Pradesh, Maharashtra and Rajasthan	4	31	62.60	28.70 - 91.67
North-eastern*	Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram and Sikkim	6	10	50.63	27.08 - 62.50
	27 States and UTs		**119**	**58.03**	**27.08 - 91.67**

Note: **Evaluation was not carried out in 5 PAs in Northern Region and 1 PAs in North-eastern Region*

Table 2.4: Five highest scored and least score PAs

State	Protected Area	%	Rating
Five Highest Scored Pas			
Madhya Pradesh	Van Vihar NP	91.67	Very Good
Karnataka	Brahmagiri WLS	90.00	Very Good
Goa	Dr. Salim Ali Bird (Chorao) WLS	85.83	Very Good
Kerala	Chinnar WLS	84.17	Very Good
Gujarat	Hingolgadh WLS	81.90	Very Good
Five Least Scored Pas			
Manipur	Khongjaingamba Ching WLS	27.08	Poor
Maharashtra	Malvan Marine WLS	28.70	Poor
Himachal Pradesh	Dhauladhar WLS	34.17	Poor
Karnataka	Adichunchunagiri Peacock WLS	35.00	Poor
Uttar Pradesh	Bakhira WLS	36.67	Poor

Table 2.5: Overall Region-wise MEE Ratings

Regions	Total no. of PAs evaluated	Ratings*			
		Very Good	Good	Fair	Poor
Northern	31	0	10	19	2
Southern	36	6	16	13	1
Eastern	11	0	5	6	0
Western	31	5	14	10	2
North-eastern	10	0	1	8	1
Total No. of PAs	**119**	**11**	**46**	**56**	**6**
	Percentage	**9.24%**	**38.66%**	**47.06%**	**5.04%**

*Note: *Rating in %: Poor - Upto 40; Fair - 41 to 59; Good - 60 to 74; Very Good - 75 and above*

2.3 REGION-WISE PERFORMANCE OF NATIONAL PARKS AND WILDLIFE SANCTUARIES

The 119 National Parks and Wildlife Sanctuaries arranged in five regions viz. Northern, Southern, Eastern, Western and North-eastern for evaluation. The Southern region of India presents highest overall mean MEE Score percentage of 61.85% followed by Western Region 59.78% and the North-eastern region represents the lowest MEE Score of 48.17% (Figure 2.1). The region wise highest and lowest scored PAs are given in Table 2.11.

The 31 PAs included in Northern region, of which 10 PAs in 'Good' category, 19 PAs in 'Fair' and 2 PAs in 'Poor' category of MEE rating (Table 2.6). Kalatop-Khajjiar Wildlife Sanctuary, Himachal Pradesh represents highest MEE score of 72.41% rated in 'Good' category, followed by Valley of Flowers National Park, Uttarakhand of 70.83% also rated in 'Good' category and Dhauladhar Wildlife Sanctuary, Himachal Pradesh represents lowest MEE score of 34.17% in Northern region (Table 2.11).

The 36 PAs included in Southern region, among which 6 PAs are in 'Very Good' category, 16 PAs in 'Good' category, 13 PAs in 'Fair' category and only one PA in 'Poor' category (Table 2.7). Dr. Salim Ali Bird (Chorao) Wildlife Sanctuary, Goa rated highest with 85.83% score in 'Very Good' category, followed by Chinnar Wildlife Sanctuary, Kerala with 84.17% score in 'Very Good' category and Adichunchunagiri Peacock Wildlife Sanctuary, Karnataka rated as lowest MEE score of 35% in 'Poor' category in Southern region (Table 2.11).

Figure 2.1: Overall Region-wise mean MEE Score

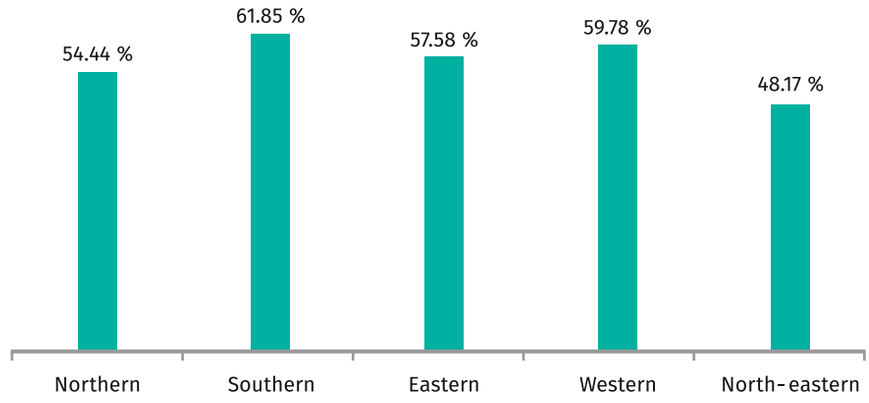


Table 2.6: Individual ratings of National Parks and Wildlife Sanctuaries in descending order of percentage score of PAs in Northern region

States	PAs	% Score	Rating
Himachal Pradesh	Kalatop-Khajjiar WLS	72.41	Good
Uttarakhand	Valley of Flowers NP	70.83	Good
Jammu & Kashmir	Jasrota WLS	70.69	Good
Punjab	Bir Aishvan WLS	65.83	Good
Himachal Pradesh	Gamgul Siyabehi WLS	65.74	Good
Punjab	Bir Bunerheri WLS	64.17	Good
Punjab	Bir Gurdialpura WLS	63.33	Good
Punjab	Bir Dosanjh WLS	62.50	Good
Punjab	Bir Mehaswala WLS	61.67	Good
Jammu & Kashmir	Limber WLS	60.00	Good
Jammu & Kashmir	Lachipora WLS	59.17	Fair
Uttar Pradesh	Patna WLS	57.50	Fair
Uttarakhand	Mussoorie WLS	57.50	Fair
Himachal Pradesh	Daranghati WLS	56.67	Fair
Chandigarh	City Bird WLS	55.00	Fair
Himachal Pradesh	Churdhar WLS	55.00	Fair
Jammu & Kashmir	Hirapora WLS	55.00	Fair

States	PAs	% Score	Rating
Himachal Pradesh	Chail WLS	53.33	Fair
Himachal Pradesh	Chandratal WLS	53.33	Fair
Jammu & Kashmir	Hokersar WLS	50.86	Fair
Uttar Pradesh	Mahavir Swami WLS	50.00	Fair
Himachal Pradesh	Kais WLS	49.17	Fair
Jammu & Kashmir	Baltal-Thajwas WLS	49.14	Fair
Uttar Pradesh	Lakh Bahosi Bird WLS	47.50	Fair
Uttar Pradesh	Nawabganj Bird WLS	46.67	Fair
Himachal Pradesh	Bandli WLS	45.83	Fair
Uttar Pradesh	Parvati Aranga WLS	45.83	Fair
Himachal Pradesh	Kanawar WLS	43.33	Fair
Himachal Pradesh	Khokhan WLS	43.33	Fair
Uttar Pradesh	Bakhira WLS	36.67	Poor
Himachal Pradesh	Dhauladhar WLS	34.17	Poor

Table 2.7: Individual ratings of National Parks and Wildlife Sanctuaries in descending order of percentage score of PAs in Southern region

States	PAs	% Score	Rating
Karnataka	Brahmagiri WLS	90.00	Very Good
Goa	Dr. Salim Ali Bird (Chorao) WLS	85.83	Very Good
Kerala	Chinnar WLS	84.17	Very Good
Kerala	Aralam WLS	78.33	Very Good
Tamil Nadu	Karaivetti Bird WLS	77.50	Very Good
Tamil Nadu	Koonthankulam-Kadankulam WLS	75.00	Very Good
Andhra Pradesh	Pulicat Lake WLS	73.33	Good
Telangana	Kasu Brahmananda Reddy NP	71.30	Good
Kerala	Pambadum Shola NP	70.83	Good
Karnataka	Chincholi WLS	69.17	Good
Kerala	Anamudi Shola NP	66.67	Good
Tamil Nadu	Kodaikanal WLS	66.67	Good
Tamil Nadu	Guindy NP	65.83	Good
Andhra Pradesh	Kambalakonda WLS	65.00	Good
Andhra Pradesh	Koundinya WLS	65.00	Good

States	PAs	% Score	Rating
Karnataka	Attiveri Bird WLS	63.33	Good
Karnataka	Malai Mahadeshwara WLS	62.50	Good
Karnataka	Gudekote Sloth Bear WLS	60.83	Good
Tamil Nadu	Gangaikondam Spotted Deer WLS	60.83	Good
Telangana	Mrugavani NP	60.83	Good
Tamil Nadu	Melaselvanoor-Keelaselvanoor WLS	60.34	Good
Tamil Nadu	Chitrangudi Bird WLS	60.00	Good
Karnataka	Melkote Temple WLS	56.67	Fair
Kerala	Chimmony WLS	56.67	Fair
Tamil Nadu	Megamalai WLS	56.67	Fair
Andhra Pradesh	Rajiv Gandhi (Rameswaram) NP	55.00	Fair
Karnataka	Daroji Bear WLS	55.00	Fair
Tamil Nadu	Kanjirankulam Bird WLS	54.31	Fair
Tamil Nadu	Karikilli Birds WLS	52.50	Fair
Karnataka	Arabithittu WLS	51.79	Fair
Kerala	Chulannur Peafowl WLS	50.83	Fair
Telangana	Kinnersani WLS	50.83	Fair
Tamil Nadu	Cauvery North WLS	48.33	Fair
Telangana	Eturnagaram WLS	43.33	Fair
Karnataka	Ghataprabha Bird WLS	40.83	Fair
Karnataka	Adichunchunagiri Peacock WLS	35.00	Poor

The 11 PAs included in Eastern region, among which 5 PAs rated in 'Good' category and 6 PAs in 'Fair' category (Table 2.8). Badrama Wildlife Sanctuary, Odisha rated highest with 73.33% score in 'Good' category and Nagi Dam Wildlife Sanctuary, Bihar rated as lowest MEE score of 42.50% in 'Fair' category in Eastern region (Table 2.11).

The 31 PAs included in Western region, among which 5 PAs rated in 'Very Good' category, 14 PAs in 'Good', 10 PAs in 'Fair' and 2 PAs in 'Poor' category (Table 2.9). Van Vihar National Park, Madhya Pradesh rated highest MEE score with 91.67% in 'Vey Good' category, followed by Hingolgarh Wildlife Sanctuary, Gujarat with 81.90% in 'Very Good' category and Malvan Marine Wildlife Sanctuary, Maharashtra rated as 'Poor' with lowest MEE score of 28.70% in Western region (Table 2.11).

The 10 PAs included in North-Eastern region, among which 1 PA rated in 'Good' category, 8 PAs in 'Fair' category and only one PA in 'Poor' category (Table 2.10). Bherjan-Borajan-Padumoni Wildlife Sanctuary, Assam rated best PA with 62.50% in Good category and Khongjaingamba Ching Wildlife Sanctuary, Manipur rated least MEE score with 27.08% in 'Poor' category in North-eastern region (Table 2.11).

Table 2.8: Individual ratings of National Parks and Wildlife Sanctuaries in descending order of percentage score of PAs in Eastern region

States	PAs	% Score	Rating
Odisha	Badrama WLS	73.33	Good
Odisha	Balukhand Konark WLS	70.00	Good
Bihar	Bhimbandh WLS	69.17	Good
West Bengal	Chintamani Kar Bird WLS	66.67	Good
Bihar	Barela Jheel Salim Ali Bird WLS	65.00	Good
West Bengal	Bibhuti Bhusan WLS	58.93	Fair
Odisha	Karlapat WLS	56.67	Fair
Jharkhand	Gautam Budha	56.67	Fair
West Bengal	Bethuadahari WLS	51.92	Fair
Jharkhand	Lawalong WLS	46.67	Fair
Bihar	Nagi Dam WLS	42.50	Fair

Table 2.9: Individual ratings of National Parks and Wildlife Sanctuaries in descending order of percentage score of PAs in Western region

States	PAs	% Score	Rating
Madhya Pradesh	Van Vihar NP	91.67	Very Good
Gujarat	Hingolgadh WLS	81.90	Very Good
Madhya Pradesh	Fossil NP	78.13	Very Good
Maharashtra	Gautala-Autramghat WLS	76.67	Very Good
Rajasthan	Bassi WLS	75.83	Very Good
Maharashtra	Katepurna WLS	73.33	Good
Maharashtra	Deulgaon-Rehekuri WLS	72.50	Good
Rajasthan	Ramgarh Vishdhari WLS	70.37	Good
Maharashtra	Karanja Sohal Blackbuck WLS	69.17	Good
Rajasthan	Jaisamand WLS	67.50	Good
Madhya Pradesh	National Chambal WLS	67.50	Good
Maharashtra	Lonar WLS	67.24	Good
Gujarat	Jambughoda WLS	66.67	Good
Maharashtra	Jaikwadi WLS	66.38	Good

States	PAs	% Score	Rating
Gujarat	Kachchh Desert WLS	65.52	Good
Gujarat	Kachchh (Lala) Great Indian Bustard WLS	63.89	Good
Gujarat	Mitiyala WLS	63.33	Good
Madhya Pradesh	Orcha WLS	62.96	Good
Rajasthan	Phulwari Ki Nal WLS	61.67	Good
Maharashtra	Kalsubai Harishchandragad WLS	59.17	Fair
Madhya Pradesh	Gandhi Sagar WLS	58.62	Fair
Gujarat	Jessore Sloth Bear WLS	57.76	Fair
Rajasthan	Bandh Baratha WLS	56.25	Fair
Rajasthan	Jamwa Ramgarh WLS	56.25	Fair
Madhya Pradesh	Narsighgarh WLS	53.45	Fair
Madhya Pradesh	Kheoni WLS	50.00	Fair
Maharashtra	Aner Dam WLS	49.14	Fair
Gujarat	Gaga (Great Indian Bustard) WLS	49.07	Fair
Rajasthan	Kesarbagh WLS	41.07	Fair
Maharashtra	Bhamragarh WLS	39.00	Poor
Maharashtra	Malvan Marine WLS	28.70	Poor

Table 2.10: Individual ratings of National Parks and Wildlife Sanctuaries in descending order of percentage score of PAs in North-Eastern region

States	PAs	% Score	Rating
Assam	Bherjan-Borajan-Padumoni WLS	62.50	Good
Assam	Chakrasila WLS	59.17	Fair
Arunachal Pradesh	Dibang WLS	55.56	Fair
Meghalaya	Baghmara Pitcher Plant WLS	53.45	Fair
Arunachal Pradesh	Itanagar WLS	52.59	Fair
Assam	Garampani WLS	51.85	Fair
Sikkim	Kitam Bird WLS	51.67	Fair
Assam	East Karbi Anglong WLS	49.07	Fair
Mizoram	Khawnglung WLS	43.33	Fair
Manipur	Khongjaingamba Ching WLS	27.08	Poor

Table 2.11: Top two highest and lowest score PAs in five regions

Region	Highest Scored PA	Lowest Scored PA
Northern	Kalatop-Khajjiar WLS, HP -72.41% (Good)	Bakhira WLS, U.P.- 36-67% (Poor)
	Valley of Flowers NP, Uttarakhand- 70.83% (Good)	Dhauladhar WLS, H.P.- 34.17% (Poor)
Southern	Brahmagiri WLS, Karnataka- 90.00% (Very Good)	Ghataprabha Bird WLS, Karnataka- 40.83% (Fair)
	Dr. Salim Ali Bird (Chorao) WLS, Goa- 85.83% (Very Good)	Adichunchunagiri Peacock WLS , Karnataka- 35.00% (Poor)
Eastern	Badrama WLS, Odisha- 70.73% (Good)	Lawalong WLS, Jharkhand- 46.67% (Fair)
	Balukhand Konark WLS, Odisha- 70.00% (Good)	Nagi Dam, Bihar- 42.50% (Fair)
Western	Van Vihar NP, Madhya Pradesh- 90.67% (Very Good)	Bhamragarh WLS, Maharashtra- 39.00% (Poor)
	Hingolgadh WLS, Gujarat- 81.90% (Very Good)	Malvan Marine WLS, Maharashtra- 28.70% (Poor)
North-eastern	Bherjan-Borajan-Padumoni WLS, Assam- 62.50% (Good)	Khawnglung WLS, Mizoram- 43.33% (Fair)
	Chakrasila WLS, Assam- 59.17% (Fair)	Khongjaingamba Ching WLS, Manipur- 27.08% (Poor)

2.4 STATE-WISE PERFORMANCE OF NATIONAL PARKS AND WILDLIFE SANCTUARIES

The 125 National Parks and Wildlife Sanctuaries belong to 28 States and Union Territories (UTs) of India. Since MEE of 6 PAs belong to 5 States were not undertaken, of which 2 States have only one PA viz., Haryana (for Abubshahar Wildlife Sanctuary) and Nagaland State (for Rangapahar Wildlife Sanctuary), thus excluded from the State list and therefore a comparative performance of 26 States and UTs are given here. The State of Himachal Pradesh has the maximum number of PAs (13 PAs) followed by Tamil Nadu (11 PAs) evaluated in 2017-18 (Table 2.12). However, the mean MEE score percentage recorded maximum for Goa (86%) and minimum for Manipur State (27%) (Figure 2.2).

Table 2.12: State-wise list of PAs evaluated in 2017-18 and mean MEE Score in percentage

S. No.	State & UT	No. of PAs evaluated in 2017-18	Mean MEE Score in Percentage
1.	Andhra Pradesh	4	65
2.	Arunachal Pradesh	2	54
3.	Assam	4	56
4.	Bihar	3	59
5.	Chandigarh	1	55
6.	Goa	1	86
7.	Gujarat	7	64
8.	Himachal Pradesh	13	52
9.	Jammu & Kashmir	7	57
10.	Jharkhand	2	52
11.	Karnataka	10	59
12.	Kerala	6	68
13.	Madhya Pradesh	7	66
14.	Maharashtra	10	60
15.	Manipur	1	27
16.	Meghalaya	1	53
17.	Mizoram	1	43
18.	Odisha	3	67
19.	Punjab	5	64
20.	Rajasthan	7	61
21.	Sikkim	1	52
22.	Tamil Nadu	11	62
23.	Telangana	4	57
24.	Uttar Pradesh	7	47
25.	Uttarakhand	2	64
26.	West Bengal	3	59

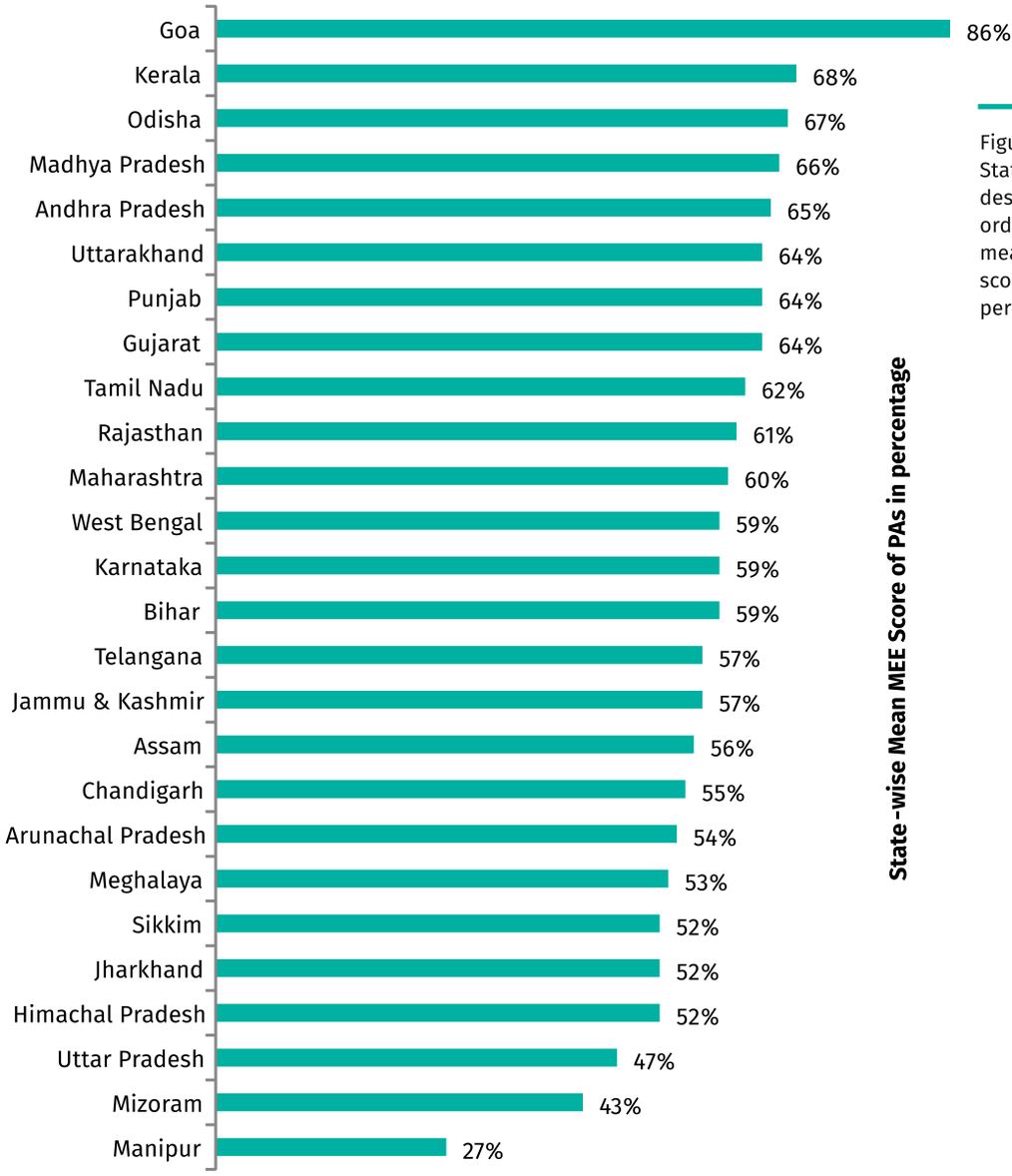


Figure 2.2: State-wise descending order of mean MEE score in percentage

2.5 ELEMENT-WISE MEE PERFORMANCE OF NATIONAL PARKS AND WILDLIFE SANCTUARIES

The evaluation of National Parks and Wildlife Sanctuaries in India based on the global MEE framework, which includes 6 Elements, viz., Context, Planning, Input, Process, Output and Outcomes. There are 30 'Headline Indicators' have been customised and developed in Indian context based on these 6 Elements. The elements wise and indicator wise performance have been analysed. By analysing the score on 30 indicators of all 119 PAs, the element 'Context' scored the highest rating of 64.22% whereas the 'Input' has the lowest MEE score of 54.62% (Figure 2.3). The score of 30 indicators pooled for 119 PAs and a comparative performance in descending order given in Figure 2.4. The indicator 'Safeguarding biodiversity values' has the best performance followed by 'assessment of threats' whereas 'NGO Support' followed by 'population trends of endangered species' are the worst performing indicators. Further for the better visibility of best and worst performing indicators, the top 10, medium 10 and bottom 10 performing indicators are given in Figure 2.5, Figure 2.6 and Figure 2.7.

Figure 2.3: Element-wise performance of 119 PAs in MEE 2017-18

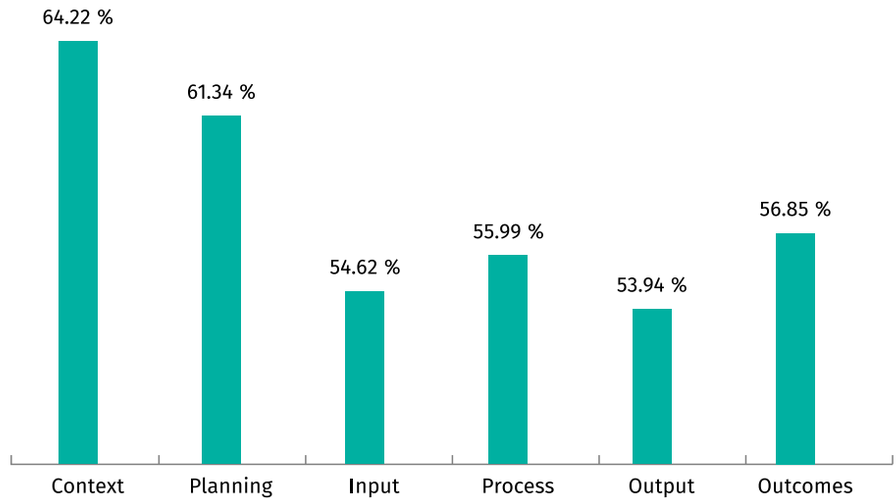


Figure 2.4: Descending order of MEE score in 'Headline Indicators'

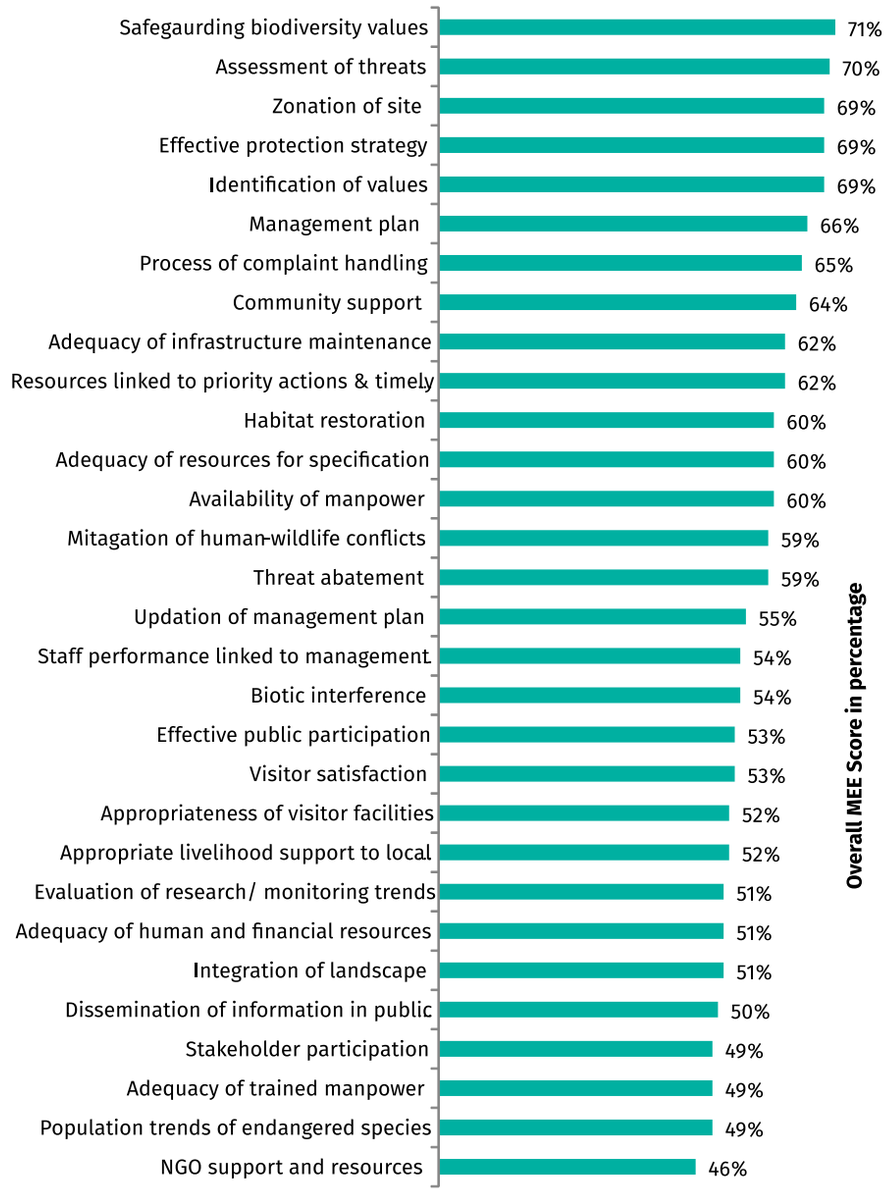


Figure 2.5: Performance of 10 best performing Headline Indicators

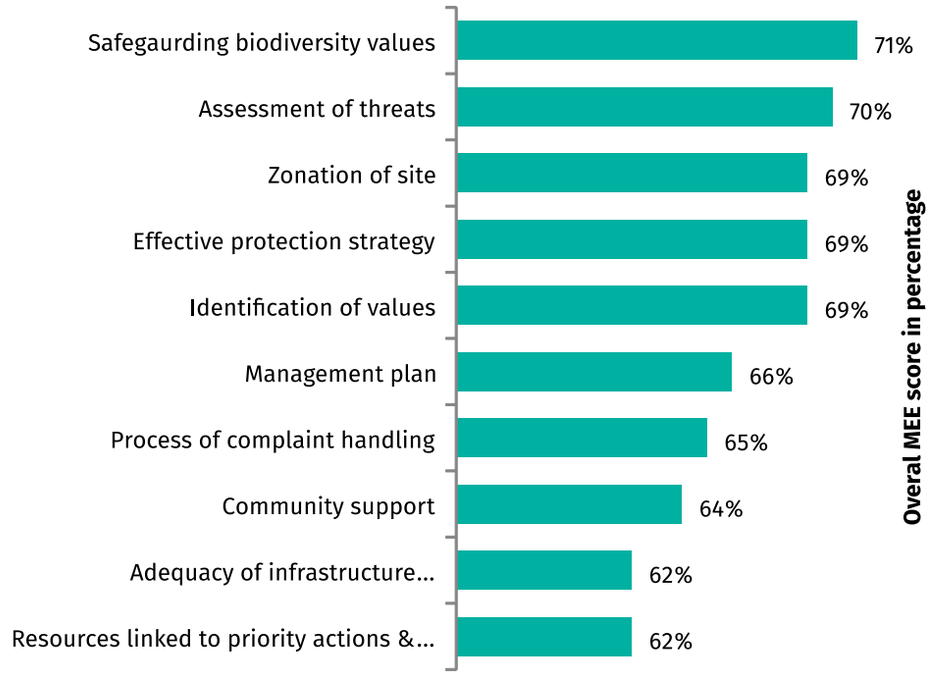
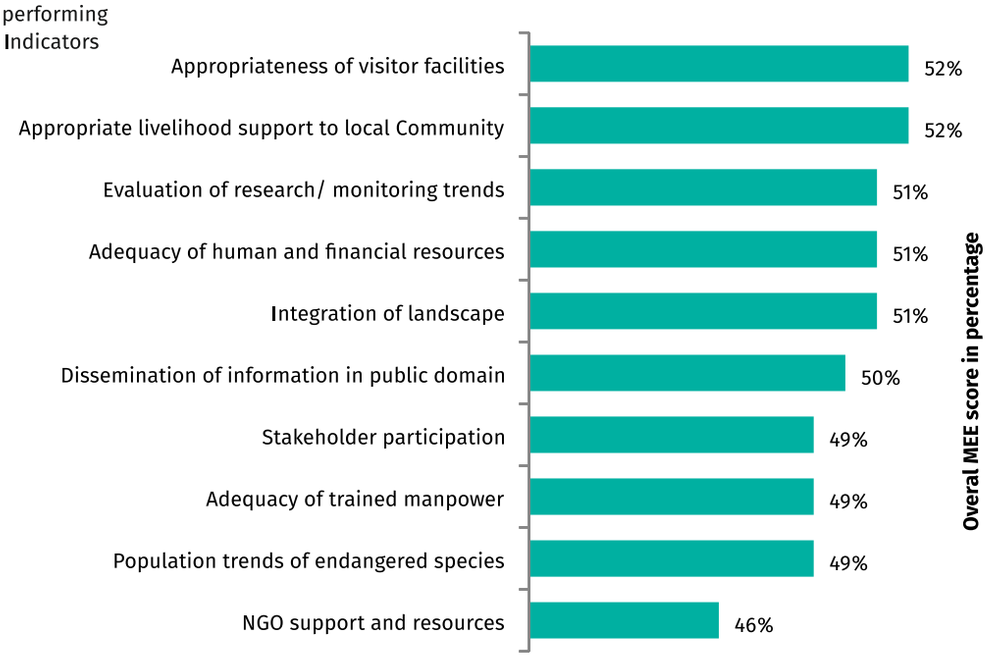


Figure 2.6: Performance of 10 average performing Headline Indicators



Figure 2.7: Performance of 10 low performing Headline Indicators



2.6 COMPARISON OF CURRENT MEE RESULTS WITH PREVIOUS MEE EXERCISES

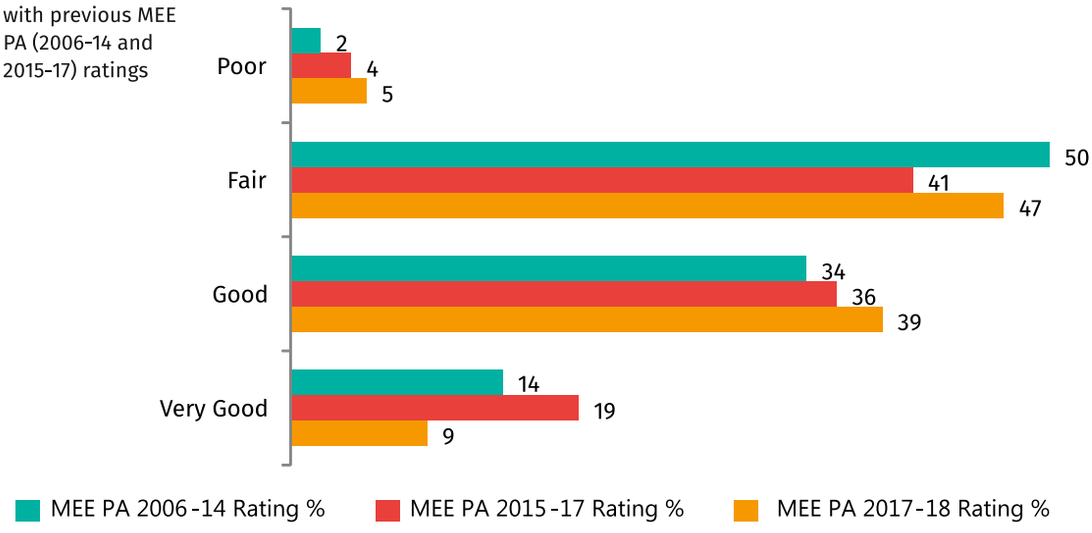
A comparison of current MEE exercise has been done with previous MEE exercises of PAs. There is a decrease of 4% in overall MEE score from previous MEE exercise of National Parks and Wildlife Sanctuaries 2015-17 and 2% decrease from MEE Score of 2006-14. Region-wise, Fairly all the regions show a declining trend from previous exercise (Table 2.13).

By comparing the ratings of current MEE exercise with previous MEE ratings of National Parks and Wildlife Sanctuaries 2015-17, there is decrease of 10% in 'Very Good' category, 3% decrease in 'Good' category, 6% increase in 'Fair' category and 1% increase in 'Poor' category has been observed (Figure 2.8).

Table 2.13 Comparison of current mean MEE PA Score with previous MEE PA results

Regions	Mean MEE Score % in MEE PA 2006-14	Mean MEE Score % in MEE PA 2015-17	Mean MEE Score % in current MEE PA 2017-18	Status
Northern	55.30	57.92	54.91	▼
Southern	65.10	73.89	62.25	▲
Eastern	60.80	59.58	59.77	▼
Western	58.90	66.17	62.60	▼
North-eastern	63.90	52.25	50.63	▼
Total	**60.80**	**62.00**	**58.03**	

Figure 2.8
Comparison of current MEE PA (2017-18) ratings with previous MEE PA (2006-14 and 2015-17) ratings

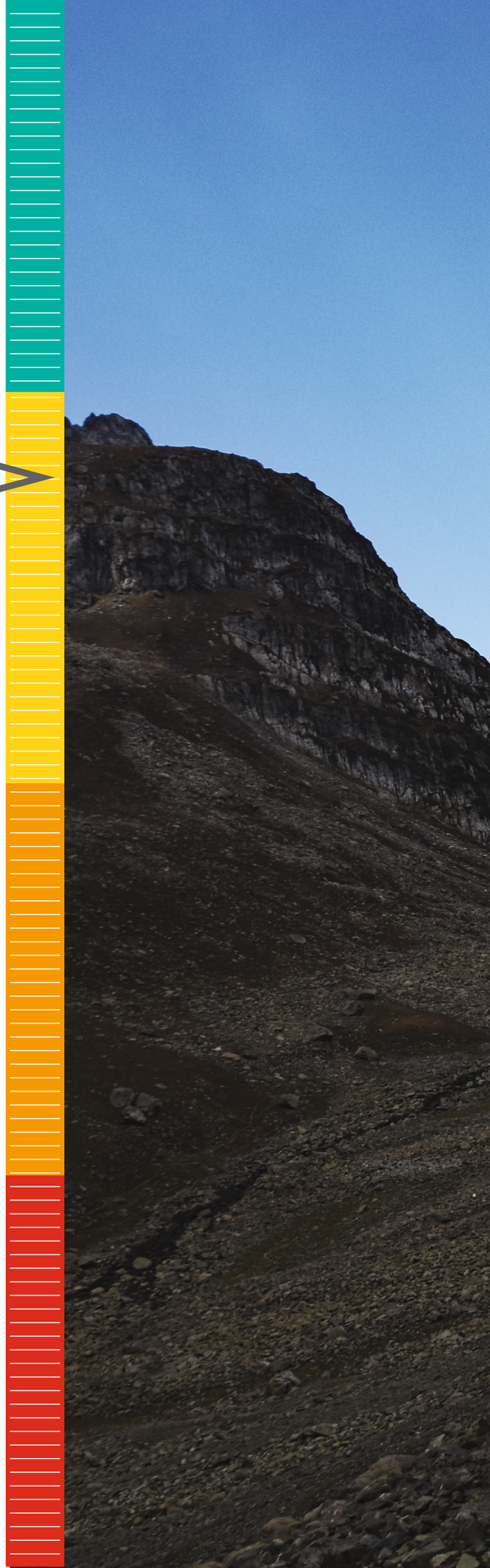


Seema Bhatt



03

REGION-WISE MANAGEMENT STRENGTHS, MANAGEMENT WEAKNESSES AND IMMEDIATE ACTIONABLE POINTS



Khurshid Alam Khan



NORTHERN REGION 3.1

S. No.	Protected Area	State
1.	City Bird WLS	Chandigarh
2.	Abubshahar WLS	Haryana
3.	Bandli WLS	Himachal Pradesh
4.	Chail WLS	Himachal Pradesh
5.	Chandratal WLS	Himachal Pradesh
6.	Churdhar WLS	Himachal Pradesh
7.	Daranghati WLS	Himachal Pradesh
8.	Dhauladhar WLS	Himachal Pradesh
9.	Gamgul Siyabehi WLS	Himachal Pradesh
10.	Inderkila NP	Himachal Pradesh
11.	Kais WLS	Himachal Pradesh
12.	Kalatop-Khajjiar WLS	Himachal Pradesh
13.	Kanawar WLS	Himachal Pradesh
14.	Khirganga NP	Himachal Pradesh
15.	Khokhan WLS	Himachal Pradesh
16.	Baltal-Thajwas WLS	Jammu & Kashmir
17.	City Forest (Salim Ali) NP	Jammu & Kashmir
18.	Hirapora WLS	Jammu & Kashmir
19.	Hokersar WLS	Jammu & Kashmir
20.	Jasrota WLS	Jammu & Kashmir
21.	Lachipora WLS	Jammu & Kashmir
22.	Limber WLS	Jammu & Kashmir
23.	Bir Aishvan WLS	Punjab

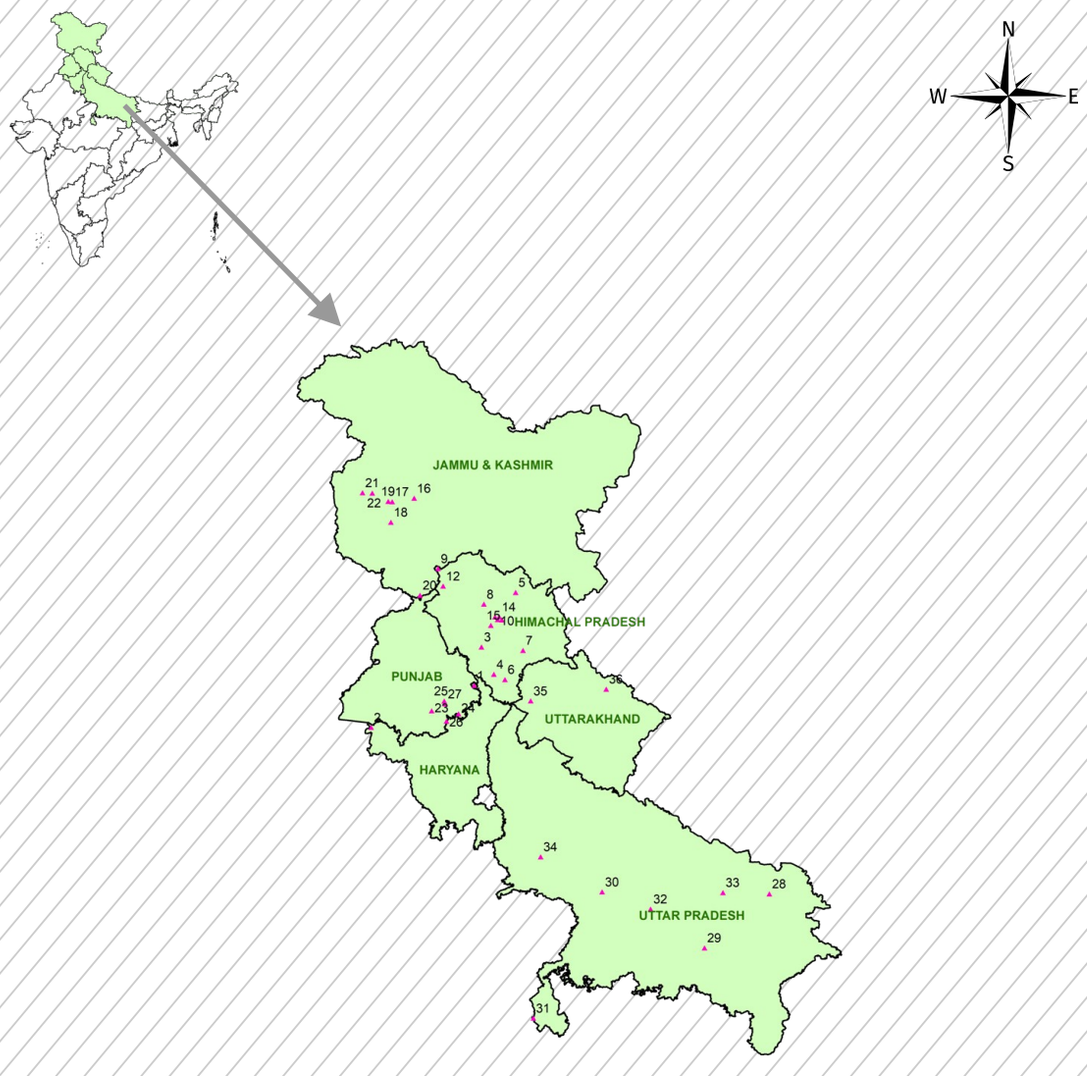
Khurshid Alam Khan



S. No.	Protected Area	State
24.	Bir Bunerheri WLS	Punjab
25.	Bir Dosanjh WLS	Punjab
26.	Bir Gurdialpura WLS	Punjab
27.	Bir Mehaswala WLS	Punjab
28.	Bakhira WLS	Uttar Pradesh
29.	Dr. Bhimrao Ambedkar Bird WLS	Uttar Pradesh
30.	Lakh Bahosi Bird WLS	Uttar Pradesh
31.	Mahavir Swami WLS	Uttar Pradesh
32.	Nawabganj Bird WLS	Uttar Pradesh
33.	Parvati Aranga WLS	Uttar Pradesh
34.	Patna WLS	Uttar Pradesh
35.	Mussoorie WLS	Uttarakhand
36.	Valley of Flowers NP	Uttarakhand

Sougata Sadhukhan





S. No.	Protected Area	State
1.	City Bird WLS	Chandigarh
2.	Abubshahar WLS	Haryana
3.	Bandli WLS	Himachal Pradesh
4.	Chail WLS	Himachal Pradesh
5.	Chandratal WLS	Himachal Pradesh
6.	Churdhar WLS	Himachal Pradesh
7.	Daranghati WLS	Himachal Pradesh
8.	Dhauladhar WLS	Himachal Pradesh
9.	Gamgul Siyabehi WLS	Himachal Pradesh
10.	Inderkila NP	Himachal Pradesh
11.	Kais WLS	Himachal Pradesh
12.	Kalatop-Khajjiar WLS	Himachal Pradesh
13.	Kanawar WLS	Himachal Pradesh
14.	Khirganga NP	Himachal Pradesh
15.	Khokhan WLS	Himachal Pradesh
16.	Baltal-Thajwas WLS	Jammu & Kashmir
17.	City Forest (Salim Ali) NP	Jammu & Kashmir
18.	Hirapora WLS	Jammu & Kashmir

S. No.	Protected Area	State
19.	Hokersar WLS	Jammu & Kashmir
20.	Jasrota WLS	Jammu & Kashmir
21.	Lachipora WLS	Jammu & Kashmir
22.	Limber WLS	Jammu & Kashmir
23.	Bir Aishvan WLS	Punjab
24.	Bir Bunerheri WLS	Punjab
25.	Bir Dosanjh WLS	Punjab
26.	Bir Gurdialpura WLS	Punjab
27.	Bir Mehaswala WLS	Punjab
28.	Bakhira WLS	Uttar Pradesh
29.	Dr. Bhimrao Ambedkar Bird WLS	Uttar Pradesh
30.	Lakh Bahosi Bird WLS	Uttar Pradesh
31.	Mahavir Swami WLS	Uttar Pradesh
32.	Nawabganj Bird WLS	Uttar Pradesh
33.	Parvati Aranga WLS	Uttar Pradesh
34.	Patna WLS	Uttar Pradesh
35.	Mussoorie WLS	Uttarakhand
36.	Valley of Flowers NP	Uttarakhand

1. City Bird Wildlife Sanctuary, Chandigarh

Management Strengths

1. City Bird Wildlife Sanctuary is a compact protected area (PA) within the urban limits of the union territory. There are no settlements/encroachments inside the PA.
2. The people living around the PA are aware of the wildlife sanctuary and are law abiding. There is no dependence on the sanctuary of the people living around the PA.
3. The PA has no resource constraints.

Management Weaknesses

1. There is no Management Plan.
2. There is no signage at the entry gate, and no information is available for the visitors.
3. There are no check lists, and there is no monitoring of the wildlife in the PA.

Immediate Actionable Points

1. Prepare a Management Plan according to the WII guidelines and implement it at the earliest.
2. Systematic baseline data on the flora and fauna of the PA should be generated as quickly as possible. The status of key wildlife species must be monitored regularly.
3. Habitat enrichment (including provision of nest boxes and water) for birds must be carried out in consultation with relevant research institutions/organizations.
4. The park staff must be trained in wildlife management.
5. A committee comprising local residents living around the PA, conservation NGOs and the forest department should be constituted for the long-term conservation planning of this small PA in an urban setting.
6. A website must be developed for the PA and hosted in the portal of the Chandigarh Forest Department.
7. Upgrading/revamping/correction/establishment of signage in all aspects (warning, education, information, etc.) is needed.

Shri B.S. Bonal, Former ADG (PT) & MS, NTCA
Dr. S.P.S. Kushwaha, Former Scientist, IIRS, Dehradun
Dr. Justus Joshua, Independent Scientist
Dr. S. Sathyakumar, Scientist, WII, Dehradun

Khurshid Alam Khan



2. Abubshahar Wildlife Sanctuary, Haryana

1. Abubshahar Wildlife Sanctuary, Haryana has not been evaluated by MEE Team due to certain reasons. The Government of Haryana has already decided for de-notification of this sanctuary because it mainly falls in private lands and or some other reasons.
2. The Chief Wildlife Warden, Haryana has informed Wildlife Institute of India vide letter No. 2922 Dated: 26.08.2016 that the de-notification proposal of Abubshehar Wildlife Sanctuary has been approved by the Standing Committee of the National Board for Wildlife in its 31st meeting held on 12th-13th August 2014 with the condition that it will be notified as a Community Reserve. The department has also filed an IA of 202 in Writ Petition (Civil) No. 337 of 1995 in the Hon'ble Supreme Court of India and now the orders have also been received. The process to notify the area as a Community Reserve is also underway.
3. Since the issue of the de-notification of the sanctuary has already been approved by the Competent Authorities and the due process of law has been followed, the MEE exercise for Abubsheshar Wildlife Sanctuary had not been undertaken.

Evaluators
Dr. V.K. Melkani, Former CWLW, Tamil Nadu
Dr. Vibhu Prakash, Scientist, BNHS, Vulture Breeding Centre, Chandigarh
Dr. Jeet Ram, Professor, Kumaun University, Nainital
Dr. K. Sivakumar, Scientist, WII, Dehradun

3. Bandli Wildlife Sanctuary, Himachal Pradesh

Management Strengths

1. Mobile allowances are provided to all the officers and the frontline staff members for using personal mobiles for protection and management purposes.
2. During the last 3 years, the protected area (PA) has received adequate funds from CAMPA and CSS.
3. During the last 3 years, the PA has had no records of human-wildlife conflict cases.

Management Weaknesses

1. The Management Plan is not comprehensive and has not been drafted as per the WII guidelines.
2. There is no zonation (core/buffer/tourist), and the proposed eco-sensitive zone (ESZ) should be included.
3. There are no corridors or network/security/landscape plans.
4. No contributions are received in cash or kind from NGOs for the management of the PA.
5. There is no appreciation/incentives for good work done by the field staff.

Immediate Actionable Points

1. Systematic monitoring of threats such as fire and livestock grazing should be carried out regularly.
2. The Wildlife Management Plan should be modified in accordance with the WII guidelines, and the ESZ proposal should be included in it.

3. Systematic baseline data on the flora and fauna, specifically the rare, endemic and threatened (RET) species and the IUCN Red List and IWPA Schedule species, should be generated as quickly as possible.
4. A committee should be constituted to involve the local communities in the conservation plans and programmes of the PA.
5. Communication equipment such as wireless sets should be procured quickly and used for effective patrolling, and the coordination with the enforcement/line agencies must be enhanced.
6. Better coordination with the line departments is needed to tap state/district funds
7. An integrated landscape management plan must be developed.
8. A risk plan and protection plans must be developed.
9. Vacant posts should be filled up, and it should be ensured that there is better deployment of personnel at various levels for effective protection.
10. The officers and frontline staff members should be trained in wildlife management.
11. The manager of the PA must ensure that there is effective public participation in the management of the PA.
12. The situations before and after the reduction of anthropogenic pressures on the PA with regard to schemes such as distribution of induction heaters/LPG connections should be monitored to assess the impacts of the schemes.
13. The development of the website of the PA must be expedited, and the site must be linked with the website of the state forest department.
14. Detailed plans should be drawn up to adopt climate change-resilient management in coordination with the HP SCC.

Nasim Ahmad Ansari



4. Chail Wildlife Sanctuary, Himachal Pradesh

Management Strengths

1. There are no settlements/ encroachment inside the protected area (PA), after rationalization of the boundary.
2. During the last 3 years, the PA has received adequate funds from the Kol Dam outlay, CAMPA and CSS.
3. Mobile allowances are provided to all the officers and frontline staff members for using personal mobiles for protection and management purposes.
4. During the last 3 years, the PA has had no record of human-wildlife conflicts and wildlife offences.

Management Weaknesses

1. There is no zonation (core/buffer/tourist), and there has been no final notification of the eco-sensitive zone (ESZ) so far.
2. There are no corridors or network/security/landscape plans.
3. There is no significant inflow of tourists. Only few tourists visit this PA.
4. There is no support from the local communities, and there are no contributions from NGOs (funds/in kind) for the management of the PA.

Immediate Actionable Points

1. The work on the zonation of the PA and approval of the ESZ proposal must be expedited. The park boundary must be secured through proper demarcation and fencing, if required.
2. Systematic baseline data on the flora and fauna of the PA should be generated as quickly as possible, specifically on the rare, endemic and threatened (RET) species and the IUCN Red List and IWPA Schedule species. The status of key wildlife species must be monitored regularly.
3. EDCs should be constituted to involve the local communities in the conservation plans and programmes of the PA.
4. The possibility of declaring potential wildlife habitats outside the PA as conservation reserves needs to be explored.
5. Corridors must be identified to ensure that there is connectivity with Shimla Water Catchment Wildlife Sanctuary and to develop plans to manage the entire landscape.
6. Detailed plans have to be drawn up to adopt management for climate change through coordination with the HP SCC.
7. The manager of the PA must conduct self-evaluation (MEE) exercises, and the records should be maintained for reference in the future.
8. Upgrading/revamping/correction/establishment of signages is needed in various aspects (warning, education, information, etc.).

Evaluators
Shri B.S. Bonal, Former ADG (PT) & MS, NTCA
Dr. S.P.S. Kushwaha, Former Scientist, IIRS, Dehradun
Dr. Justus Joshua, Green Peace Foundation, Gujarat
Dr. S. Sathyakumar, Scientist, WII, Dehradun

5. Chandratal Wildlife Sanctuary, Himachal Pradesh

Management Strengths

1. Chandratal Wildlife Sanctuary is a high-altitude wetland that attracts many tourists in summer every year. There is potential for wetland and alpine rangeland conservation.
2. A new Management Plan has been prepared. In this Plan a core and eco-sensitive zone have been identified. The plan has been submitted to the state government for approval.
3. With the support of the district administration and line agencies, the forest department is able to protect and manage the wetland.
4. During the last 3 years, the protected area (PA) has received adequate funds from DST, CSS and Kol Dam funds.
5. During the last 3 years, the PA has had no record of human-wildlife conflicts and wildlife offences.
6. Mobile allowances are provided to all the officers and the members of the frontline staff for using personal mobiles for protection and management purposes.
7. NGOs (funds/in kind) and local stakeholders support the management of the PA.

Management Weaknesses

1. There are no corridors or network/security/landscape plans.
2. There is no administrative infrastructure, and the staff strength is inadequate.
3. No appreciation/incentives are given for good work done by the field staff.

Immediate Actionable Points

1. The Wildlife Management Plan that has been submitted to the state government for approval. It should be expedited. It must be ensured that the WII guidelines are followed in the wildlife management planning and implementation process.
2. Systematic baseline data on the flora and fauna of the PA should be generated as early as possible, specifically for the rare, endemic and threatened (RET) species and the IUCN Red List and IWPA Schedule species.
3. Systematic monitoring of key faunal species has to be carried out regularly in the PA to understand changes in status.
4. Eco-development committees (EDCs) should be constituted to strengthen the participation of the local communities in the conservation plans and programmes of the PA.
5. Infrastructure development should be taken up on a priority basis. Vehicles and communication equipment such as wireless sets must be procured and used for effective patrolling and coordination with enforcement/line agencies.
6. An integrated landscape management plan has to be developed.
7. The tourism in the PA and its negative impacts need to be managed. Rules and regulations for entry and monitoring of tourists/trekkers are needed to framed and notified.
8. Detailed plans have to be drawn up to adopt management for climate change through coordination with the HP SCC.
9. The PA manager must conduct self-evaluation (MEE) exercises, and the records must be maintained for reference in the future.
10. Upgrading/revamping/correction/establishment of signage should be taken on various aspects (like warning, education, information, etc.).

Evaluators
Shri B.S. Bonal, Former ADG (PT) & MS, NTCA
Dr. S.P.S. Kushwaha, Former Scientist, IIRS, Dehradun
Dr. Justus Joshua, Green Peace Foundation, Gujarat
Dr. S. Sathyakumar, Scientist, WII, Dehradun

6. Churdhar Wildlife Sanctuary, Himachal Pradesh

Management Strengths

1. Churdhar Wildlife Sanctuary is unique in the sense that it has high-altitude habitats that are isolated. Therefore the sanctuary has the potential for carrying out long-term monitoring (as a control site), particularly with reference to climate change.
2. During the last 3 years, the PA has received adequate funds from the Kol Dam outlay, CAMPA and CSS.
3. Camping kits, GPS and cameras are provided to all staff members for use in group patrolling in coordination with the enforcement/line agencies. Mobile allowances are provided to all officers and frontline staff members for using personal mobiles for protection and management purposes.
4. During the last 3 years, the PA has had no record of human-wildlife conflicts and wildlife offences.
5. There is no village or permanent settlement inside the PA.

Management Weaknesses

1. There is no zonation (core/buffer/tourist) of the PA.
2. There is heavy pilgrim pressure inside the PA.
3. No wildlife monitoring or research is being carried out in the PA.
4. There are no corridors or network/security/landscape plans.
5. No support is received from local communities or temple committees, and no contributions are received from NGOs (funds/in kind) for the management of the PA.

Immediate Actionable Points

1. Preparation of the zonation Plan of the PA must be expedited, and approval of the eco-sensitive zone (ESZ) proposal must be sought.
2. Systematic baseline data on the flora and fauna of the PA should be generated as quickly as possible, and monitoring must be carried out regularly, specifically on the rare, endemic and threatened (RET) species and on the IUCN Red List and IWPA Schedule species.
3. EDCs should be constituted to involve local communities and the temple committee in the conservation plans and programmes of the PA.
4. Detailed plans have to be drawn up for climate change-resilient PA management in collaboration with the HP SCC.
5. The manager of the PA must conduct self-evaluation (MEE), and the records must be maintained for reference in the future.
6. Upgrading/revamping/correction/establishment of signage is needed in various aspects (warning, education, information, etc.).

Evaluators
Shri B.S. Bonal, Former ADG (PT) & MS, NTCA
Dr. S.P.S. Kushwaha, Former Scientist, IIRS, Dehradun
Dr. Justus Joshua, Green Peace Foundation, Gujarat
Dr. S. Sathyakumar, Scientist, WII, Dehradun

7. Dharangati Wildlife Sanctuary, Himachal Pradesh

Management Strengths

1. Dharangati Wildlife Sanctuary has potential for long-term conservation of key Himalayan species. There are no settlements/encroachment inside the protected area (PA) after the rationalization of boundaries.
2. During the last 3 years, the PA has received adequate funds from the Kol Dam outlay, CAMPA and CSS.
3. Camping kits, GPS and cameras are provided to all staff members for use in group patrolling in coordination with the enforcement/line agencies. Mobile allowances are provided to all the officers and frontline staff members for using personal mobiles for protection and management purposes.
4. For last 3 years, the PA does not have any record of human-wildlife conflicts and wildlife offences.
5. The PA staff members participate in temple committee and Gram Sabha meetings.

Management Weaknesses

1. A new Management Plan (2018-2028) is being prepared. The old plan expired in 2001.
2. There is no zonation (core/buffer/tourist), and there is no eco-sensitive zone (ESZ).
3. There are no corridors or network/security/landscape plans.
4. There is no support from local communities, and there are no contributions from NGOs (funds/in kind) for the management of the PA.

Immediate Actionable Points

1. The Wildlife Management Plan should be prepared expeditiously in accordance with the WII guidelines and should include an ESZ proposal.
2. Systematic baseline data on the flora and fauna should be generated for the entire PA as quickly as possible, specifically on the rare, endemic and threatened (RET) species and the IUCN Red List and IWPA Schedule species.
3. EDCs should be constituted to involve local communities in the conservation plans and programmes of the PA.
4. The situations before and after the reduction of anthropogenic pressures on the PA with regard to schemes such as distribution of LPG connections and solar lights must be monitored.
5. Permissions given to tourists by the manager of the PA would enhance the number of visits. The manager of the PA should be authorized by the PCCF and CWLW to give permissions for tourist entry.
6. Detailed plans have to be drawn up to adopt climate change-resilient PA management in collaboration with the HP SCC.
7. The manager of the PA must conduct self-evaluation (MEE), and the records must be maintained for reference in the future.
8. Upgrading/revamping/correction/establishment of signage is needed in various aspects (warning, education, information, etc.).

Evaluators
Shri B.S. Bonal, Former ADG (PT) & MS, NTCA
Dr. S.P.S. Kushwaha, Former Scientist, IIRS, Dehradun
Dr. Justus Joshua, Green Peace Foundation, Gujarat
Dr. S. Sathyakumar, Scientist, WII, Dehradun

8. Dhauladhar Wildlife Sanctuary, Himachal Pradesh

Management Strengths

1. Dhauladhar Wildlife Sanctuary is the second largest protected area (PA) of Himachal Pradesh. It is contiguous with the PAs of Kugti, Tundah, Manali and Nargu, which form a unique, large geomorphological conservation unit. There is potential for long-term conservation of species such as the snow leopard, brown bear, musk deer, birds and medicinal plants in this PA.
2. During the last 3 years, the PA has received adequate funds from CAMPA and CSS.
3. Mobile allowances are provided to all the officers and frontline staff for using personal mobiles for protection and management purposes.
4. During the last 3 years, the PA has had no record of human-wildlife conflicts and wildlife offences.

Management Weaknesses

1. A new Management Plan is being prepared. The old plan expired in 2014.
2. There is no zonation (core/buffer/tourist) plan. The proposed eco-sensitive zone (ESZ) should be included in the zonation.
3. There are no corridors and also no network/security/landscape plans.
4. There is no administrative infrastructure, and the staff strength is poor.
5. No contributions are received from NGOs (funds/in kind) for the management of the PA.
6. No appreciation/incentives are given for good work done by the field staff.

Immediate Actionable Points

1. Preparation of the Wildlife Management Plan following the WII guidelines should be expedited, and the plan should include the ESZ proposal.
2. Systematic baseline data on the flora and fauna should be generated for the entire PA as quickly as possible, specifically on rare, endemic and threatened (RET) and on IUCN Red List and IWPA Schedule species.
3. Systematic monitoring of the glaciers, rivers, flora and fauna is to be established.
4. A committee should be constituted to involve local communities in the conservation plans and programmes of the PA.
5. Infrastructure development is to be taken up on a priority basis. Communication equipment such as wireless sets must be procured and used for effective patrolling and coordination with enforcement/line agencies.
6. An integrated landscape management plan should be developed.
7. Vacant posts must be filled up, and personnel at various levels must be deployed better for effective protection.
8. The post of ACF must be created, with the headquarters, along with the administrative and logistic setup, near the PA.
9. The officers and frontline staff should be trained in wildlife management.
10. The manager of the PA must ensure that there is effective public participation in the management of the PA.
11. The situations before and after the reduction of anthropogenic pressures on the PA with regard to schemes such as distribution of LPG connections must be monitored.

12. There is potential for ecotourism. Signages to assist tourists and rules and regulations for entry and monitoring of tourists/trekkers are needed.
13. The MEE committee has suggested that an EDC be formed at Barabangal for engagement in conservation.
14. Detailed plans have to be drawn up to adapt the management to climate change through coordination with the HPCCC (Himachal Pradesh State Centre on Climate Change.
15. The state government should provide support in the form of helicopter services for the manager of the PA and for the field staff for patrolling/monitoring during periods of inaccessibility.
16. The manager of the PA must conduct self-evaluation (MEE), and the records of the evaluation must be maintained for reference in the future.
17. Upgrading/revamping/correction/establishment of signage is needed for various aspects (warning, education, information, etc.).

Evaluators
Shri B.S. Bonal, Former ADG (PT) & MS, NTCA
Dr. S.P.S. Kushwaha, Former Scientist, IIRS, Dehradun
Dr. Justus Joshua, Green Peace Foundation, Gujarat
Dr. S. Sathyakumar, Scientist, WII, Dehradun

9.

Gamgul-Siyabehi Wildlife Sanctuary, Himachal Pradesh

Management Strengths

1. The Sanctuary is located in Dhauladhar Range Mountains with snow clad peaks, with extensive alpine forest rich in biodiversity; the inaccessible hilly terrain is well protected. It also served as the hunting preserve of the former Maharaja.
2. The remoteness of its location, its inaccessibility along with low tourism pressure has kept it relatively free from biotic pressures.
3. The protection posts of the police along the sanctuary borders with the state of Jammu and Kashmir strengthens the protection efforts.
4. The undisturbed habitat of the sanctuary supports a small population of the endangered hangul which is otherwise under threat in the wilderness.

Management Weaknesses

1. The staff are ill-equipped for patrolling the mountainous terrain of the sanctuary as they lack field gear and equipment for high-altitude climbing and trekking.
2. Most of the staff live at the headquarters of the sanctuary as the facilities for camping in different parts of the sanctuary is not very good. Protection staff need to be posted at guard huts/posts in vulnerable areas, especially during winter. Such huts/posts may, therefore, be established in different parts of the sanctuary.
3. There is no four-wheel drive vehicle exclusively for protection in the sanctuary. This impedes the movement of the staff. The DFO is stationed in Chamba and also manages Kalatop-Khajjiyar Wildlife Sanctuary and has logistic issues to manage the sanctuary.

Immediate Actionable Points

1. The Management Plan for the sanctuary for the period from 2013-2014 to 2023-2024 should be submitted to the Chief Wildlife Warden for early approval.
2. The department may consider providing a vehicle for the ACF, considering his job requirement, and one for Gamgul-Siyabehi Wildlife sanctuary for better management.
3. The sanctuary require additional forest guards for enhancing protection, taking into account the large area, remoteness and difficult terrain of the sanctuary. This may be suitably considered by the State Government.
4. A conservation breeding centre for the hangul may be established as it was well distributed in the area in the past. The project could be taken up in collaboration with the Central Zoo Authority, Jammu and Kashmir Forest Department, Wildlife Institute of India and Bombay Natural History Society.
5. The Capacity building of the staff in wildlife management should be accorded priority, short training courses on wildlife management should be organised in-house and in the Forest training School.

Evaluators
Dr. V.K. Melkani, Former CWLW, Tamil Nadu
Dr. Vibhu Prakash, Scientist, BNHS, Vulture Breeding Centre, Chandigarh
Dr. Jeet Ram, Professor, Kumaun University, Nainital
Dr. K. Sivakumar, Scientist, WII, Dehradun

10.

Inderkhila National Park, Himachal Pradesh

1. The evaluation of Inderkhilla National Park, Himachal Pradesh could not be made by MEE Regional Expert Committee due to certain reasons. The team stated that the intent for notification of Inderkhila National Park has been made vide notification no. FFE-B-F(6) 11/2005 dated 28.07.2010 in 104sqkm area, but there has been no progress in securing the notified area within the protected area (PA) network to date and this area is still under Kullu Territorial Forest Division.
2. The MEE committee recommends that the Himachal Pradesh State Forest Department expedite the process of transferring the notified area to the PA network/ Wildlife wing of Himachal Pradesh and complete all the necessary formalities, such as settlement of rights, collection of baseline data and preparation of management plan. This new PA needs to be strengthened in all aspects at the earliest.

Evaluators
Shri B.S. Bonal, Former ADG (PT) & MS, NTCA
Dr. S.P.S. Kushwaha, Former Scientist, IIRS, Dehradun
Dr. Justus Joshua, Green Peace Foundation, Gujarat
Dr. S. Sathyakumar, Scientist, WII, Dehradun

11. Kais Wildlife Sanctuary, Himachal Pradesh

Management Strengths

1. Kais Wildlife Sanctuary is now free from any permanent settlements/villages, after the rationalization of the boundary of the protected area (PA) in June 2013.
2. Mobile allowances are provided to all the officers and frontline staff for using personal mobiles for protection and management purposes.
3. During the last 3 years, the PA has received adequate funds from CAMPA and CSS.
4. During the last 3 years, no human-wildlife conflict cases have been recorded in the PA.

Management Weaknesses

1. There is no approved Management Plan.
2. The draft Wildlife Management Plan does not have zonation (core/buffer/tourist). The proposed eco-sensitive zone (ESZ) should be included in the plan.
3. There are no corridors or network/security/landscape plans.
4. No contributions have been received from NGOs in cash or kind for management of the PA.
5. No appreciation/incentives are given for good work done by the field staff.

Immediate Actionable Points

1. Systematic monitoring of threats such as fire, illicit felling, lopping, felling and encroachment should be carried out regularly.
2. A Wildlife Management Plan should be drawn up following the WII guidelines, and the plan should include a proposal for an eco-sensitive zone (ESZ). Early approval of the Plan should be pursued.
3. Systematic baseline data on the flora and fauna should be generated as early as possible, specifically on rare, endemic and threatened (RET) species and IUCN Red List and IWPA Schedule species.
4. A committee should be constituted to involve local communities in the conservation plans and programmes of the PA.
5. Weed eradication plans must be developed to make the PA invasive species-free.
6. Communication equipment such as wireless sets should be procured quickly and used for effective patrolling. The coordination with the enforcement/line agencies must be enhanced.
7. Better coordination with line departments is needed to tap state/district funds.
8. An integrated landscape management plan should be developed.
9. A risk plan and protection plans should be developed.
10. Vacant posts must be filled up, and better deployment of personnel at various levels should be ensured for effective protection.
11. The officers and frontline staff should be trained in wildlife management.
12. Efforts should be made to secure the release of CSS funds in a timely manner from the state.
13. The manager of the PA should ensure that there is effective public participation in the management of the PA.
14. The situations before and after reduction of anthropogenic pressures on the PA with regard to schemes such as distribution of induction heaters must be monitored to assess the impacts of these schemes.
15. The development of the website of the PA must be expedited, and the website must be linked with the website of the state forest department.
16. A visitors' feedback register must be maintained.

17. Detailed plans have to be drawn up for climate change-resilient PA management. At least one permanent long-term monitoring plot must be identified in the PA through WII's ongoing NMSHE project in the Beas Basin (Great Himalayan National Park landscape).

Evaluators
Shri B.S. Bonal, Former ADG (PT) & MS, NTCA
Dr. S.P.S. Kushwaha, Former Scientist, IIRS, Dehradun
Dr. Justus Joshua, Green Peace Foundation, Gujarat
Dr. S. Sathyakumar, Scientist, WII, Dehradun

Nasim Ahmad Ansari



12. Kalatop-Khajjiar Wildlife Sanctuary, Himachal Pradesh

Management Strengths

1. The Sanctuary is located in the high altitude Dhauladhar range and has very low biotic pressure.
2. The protection is adequate with regular patrolling carried out by the staff.
3. There is no staff vacancy.
4. The forest department maintains good relationship with the local communities, and there is strong support for conservation amongst the communities.
5. There is only one village within the sanctuary, cattle grazing or poaching are not a major problem.
6. The sanctuary receives adequate funds in a timely manner, and the funds are utilised fully.

Management Weaknesses

1. There is very high pressure of tourism at Khajjiar, and the grassland does not appear to support any wildlife. Though the area is small, mechanisms to bring about some control and regulation will be helpful for the long-term sustainability of the area.
2. Human resources of the sanctuary are primarily utilized for management of ecotourism in Khajjhar and other management works are secondary.
3. There are 261 villages which have been excluded from the sanctuary after rationalization of its boundary. These peripheral villages are vulnerable to human wildlife conflicts especially during winters. There are incidences of depredation of crops, lifting of cattle and human injury by wild animals. The timely resolution and mitigation of such conflicts by the territorial division should be accorded priority.
4. Research studies needs to be done on the foraging and ranging pattern of the wild animals especially during the winter.
5. Annual population estimation of wildlife has to be done based on robust scientific methodologies for management of the population.

Immediate Actionable Points

1. The Management Plan for the sanctuary for the period 2013-2014 to 2023-2024 should be submitted to the Chief Wildlife Warden for early approval.
2. The sanctuary has an area of only 17.17 km2 whereas the earlier extent was 69 km2. There are 261 villages which have been excluded during the reorganisation of the sanctuary. The villages are now on the fringes of the sanctuary. The management should initiate eco-development works in consonance with principles for integrated management where wildlife and people can coexist without much conflict.
3. The department may consider providing a vehicle for the ACF, for better management.
4. The Capacity building of the staff in wildlife management should be accorded priority, short training courses on wildlife management should be organised in-house and in the Forest training School.

Evaluators
Shri B.S. Bonal, Former ADG (PT) & MS, NTCA
Dr. S.P.S. Kushwaha, Former Scientist, IIRS, Dehradun
Dr. Justus Joshua, Green Peace Foundation, Gujarat
Dr. S. Sathyakumar, Scientist, WII, Dehradun

13. Kanawar Wildlife Sanctuary, Himachal Pradesh

Management Strengths

1. Kanawar Wildlife Sanctuary is now free of permanent settlements/villages, after the rationalization of the boundary of the protected area (PA) in June 2013.
2. Kanawar Wildlife Sanctuary and the proposed Khir Ganga National Park together with Great Himalayan National Park form a contiguous landscape, and hence a landscape management plan could be developed and implemented.
3. Mobile allowances are provided to all the officers and frontline staff for using personal mobiles for protection and management purposes though the connectivity is poor.
4. For the last 3 years, the PA has received adequate funds from CAMPA and CSS.
5. For last 3 years, the PA has had no record of human-wildlife conflict cases.

Management Weaknesses

1. The old Management Plan expired 3 years ago.
2. There is no zonation (core/buffer/tourist). The proposed eco-sensitive zone (ESZ) should be included.
3. No contributions (funds/in kind) are received from NGOs for the management of the PA.
4. Appreciation/incentives for good work done by the field staff are lacking.

Immediate Actionable Points

1. Systematic monitoring of threats such as fire, illicit felling, lopping, felling and encroachment should be carried out regularly.
2. The work on the new Wildlife Management Plan should be initiated forthwith as per the WII guidelines and should include an ESZ proposal. Finalization of the ESZ should be pursued.
3. The new six beats added to Kanawar that are presently under the administrative control of the territorial division should be transferred to the Wildlife Wing at the earliest.
4. Systematic baseline data on the flora and fauna should be generated as early as possible, specifically on the rare, endemic and threatened (RET), IUCN Red List and IWPA Schedule species.
5. A committee should be constituted to involve local communities in the conservation plans and programmes of the PA.
6. Communication equipment such as wireless sets must be procured, and these must be used for effective patrolling and coordination with enforcement/line agencies.
7. There must be better coordination with line departments to tap state/district funds.
8. Six new beats are still under the control of the Territorial Division. Eight more personnel (two BOs and six FGs) must be sanctioned for these new beats.
9. An integrated landscape management plan must be developed.
10. A risk plan and protection plans must be developed.
11. Vacant posts must be filled up, and personnel must be deployed better at various levels to ensure that the protection is effective.
12. The officers and frontline staff should be trained in wildlife management.
13. Efforts must be made to secure the release of CSS funds from the state in a timely manner.
14. The PA manager should ensure that there is effective public participation in the management of the PA.
15. The situations before and after reduction of anthropogenic pressures on the PA must be monitored with regard to schemes such as distribution of induction heaters/LPG connections to assess the schemes' impacts.

16. The development of the website of the PA must be expedited, and the website must be linked with the website of the state forest department.
17. There is good potential for developing ecotourism through due publicity to attract visitors. A visitors' feedback register must be maintained.
18. Detailed plans have to be drawn up to adopt climate change-resilient management.
19. The weed Eupatorium adenophorum should be removed.

Long-term monitoring plots may be identified in the PA through WII's NMSHE project.

Evaluators
Shri B.S. Bonal, Former ADG (PT) & MS, NTCA
Dr. S.P.S. Kushwaha, Former Scientist, IIRS, Dehradun
Dr. Justus Joshua, Green Peace Foundation, Gujarat
Dr. S. Sathyakumar, Scientist, WII, Dehradun

14. Khir Ganga National Park, Himachal Pradesh

The evaluation of Khir Ganga National Park, Himachal Pradesh could not be made by MEE Regional Expert Committee due to certain reasons. The team stated that the intent for notification of Khir Ganga National Park has been made vide notification no. FFE-B-F(6) 11/2005 dated 28.07.2010 in 710 sqkm area, but there has been no progress in securing the notified area within the protected area (PA) network to date and this area is still under Parbati Territorial Forest Division.

The MEE committee recommends that the Himachal Pradesh State Forest Department expedite the process of transferring the notified area to the PA network/ Wildlife wing of Himachal Pradesh and complete all the necessary formalities, such as settlement of rights, collection of baseline data and preparation of management plan. This new PA needs to be strengthened in all aspects at the earliest.

Evaluators
Shri B.S. Bonal, Former ADG (PT) & MS, NTCA
Dr. S.P.S. Kushwaha, Former Scientist, IIRS, Dehradun
Dr. Justus Joshua, Green Peace Foundation, Gujarat
Dr. S. Sathyakumar, Scientist, WII, Dehradun

15. Khokhan Wildlife Sanctuary, Himachal Pradesh

Management Strengths

1. Mobile allowances provided to all officers and frontline staff members for using personal mobiles for protection and management purposes
2. For last 3 years, the protected area (PA) has received adequate funds from CAMPA and CSS.
3. For the last 3 years, the PA has no record of human-wildlife conflict cases.

Management Weaknesses

1. The old plan expired 3 years ago. There is no plan (new plan under preparation)

2. No zonation (core/buffer/tourist) carried out. The proposed ESZ should be included.
3. No corridors or network/security/landscape plans
4. No contribution received from NGOs in cash or kind for management of the PA
5. No appreciation/incentives received for good work done by members of the field staff.

Immediate Actionable Points

1. Systematic monitoring of threats such as fire, illicit felling, lopping and encroachment should be carried out regularly.
2. The Wildlife Management Plan should be made as specified in the WII guidelines and should include a proposal for an eco-sensitive zone (ESZ). Early finalization of theESZ should be pursued.
3. Systematic baseline data on the flora and fauna should be generated as early as possible, specifically on the rare, endemic and threatened (RET) species and the IUCN Red List and IWPA Schedule species.
4. A committee should be constituted to involve local communities in the conservation plans and programmes of the PA.
5. Communication equipment such as wireless sets should be procured quickly and used for effective patrolling. The coordination with the enforcement/line agencies is to be enhanced.
6. Better coordination with line departments is needed to tap state/district funds.
7. An integrated landscape management plan should be developed.
8. Risk and protection plans need to be developed.
9. Vacant posts should be filled up, and there should be better deployment of personnel at various levels for effective protection.
10. The officers and frontline staff should be trained in wildlife management.
11. Efforts should be made to secure timely release of CSS funds from the state.
12. The PA manager must ensure that there is effective public participation in the management of the PA.
13. The situation should be monitored before and after reduction of anthropogenic pressures on the PA with regard to schemes such as distribution of induction heaters/LPG cylinders to assess the impact of the schemes.
14. The development of the website of the PA must be expedited, and the website must be linked with the website of the state forest department.
15. There is potential for developing ecotourism by renovating the century-old FRHs at Nagini and Dorah Nullahs with due publicity to attract visitors. A visitors' feedback register must be maintained.
16. The MEE Committee held informal discussions with the local community and the Uppradhan during the visit to the site and found that they were willing to participate in the conservation activities of the PA.
17. Detailed plans should be drawn up to adopt climate change-resilient management in coordination with the HPCCC (Himachal Pradesh State Centre on Climate Change).

Evaluators
Shri B.S. Bonal, Former ADG (PT) & MS, NTCA
Dr. S.P.S. Kushwaha, Former Scientist, IIRS, Dehradun
Dr. Justus Joshua, Green Peace Foundation, Gujarat
Dr. S. Sathyakumar, Scientist, WII, Dehradun

16.

Baltal-Thajwas Wildlife Sanctuary, Jammu and Kashmir

Management Strengths

1. The Sanctuary is situated in the Zanskar mountain range of the North-west Himalayan Bio-geographical zone and constitutes a large ecological landscape having connectivity with rich wildlife areas of Aru, Upper Dachigam and the Sind forest known for the conservation of many endangered wildlife species such as the asiatic black bear, himalayan brown bear, snow leopard, common leopard, kashmir musk deer, asiatic ibex, tibetan wolf, himalayan monal, koklass pheasant, himalayan snowcock and golden eagle.
2. The famous tourist destination of Sonamarg is located on the fringe of the wildlife sanctuary, which adds to its importance.
3. The Sanctuary is flanked by the large snow-laden peaks of Sonamarg, the Sindh river which originates from the Thajwas glacier abounds with trout and mahseer populations and is a major hub of tourism in summer.
4. The area is reasonably well protected because of its remoteness, rugged and inaccessible terrain and its being snow clad for 5-6 months in the year.
5. Local people are generally supportive of conservation.

Management Weaknesses

1. The Management Plan of the sanctuary is still under preparation with inputs from the Wildlife Trust of India.
2. Considering the terrain and remoteness of the sanctuary, where protection has to be carried out through foot patrolling, the strength of the available field staff is inadequate and there are no Forest Guard. Field equipment is lacking and general facilities for the staff are poor.
3. The area remains snow-clad for 4-5 months and generally inaccessible. Therefore, the release of funds for management works has to be timely, as once the snow sets in, undertaking habitat management works become difficult to execute.
4. The local people's dependence on resources such as fuel-wood and grass and on grazing is quite high.

Immediate Actionable Points

1. The Management Plan of the sanctuary should be finalised and approval obtained from the Chief Wildlife Warden.
2. The Government may consider enhancing the field staff strength of Foresters and Forest Guards, considering the remoteness and rugged terrain of the sanctuary.
3. The Government may also consider providing field gear for high-altitude patrolling, vehicles and communication systems.
4. Providing more funding support for ecodevelopment works may be considered so that activities such as providing livelihood alternatives to local people and reducing their dependence on the resources of the sanctuary may be taken up.

Evaluators
Dr. V.K. Melkani, Former CWLW, Tamil Nadu
Dr. Vibhu Prakash, Scientist, BNHS, Vulture Breeding Centre, Chandigarh
Dr. Jeet Ram, Professor, Kumaun University, Nainital
Dr. K. Sivakumar, Scientist, WII, Dehradun

17. City Forest (Salim Ali) National Park, Jammu & Kashmir

- The MEE Team could not evaluate the City Forest (Salim Ali) National Park, Srinagar, Jammu & Kashmir due to some issues. The 8.84 sqkm area of Park had been notified vide notification no. SRO No: 472; dated 22 July, 1986 under the provisions of Section 35 of the Jammu & Kashmir Wildlife Protection, Act, 1978. The Park never physically handed over to the Department of Wildlife Protection for future management. Also, in the lower area flaking the Dal Lake, the Department of Wildlife Protection has raised some infrastructures for the management of the National Park. Since in the National Park occupies by many Govt. buildings, it was decided that a portion of the National Park need to be de-notified. In pursuance of the provisions of J&K Wildlife Protection Act and interim order of Hon'ble Supreme Court in writ petition No: 337/95 (IA No.2) titled Centre for Environmental Law V/s Union of India, the matter was taken up with the Ministry of Environment & Forests and also the National Board for Wildlife. The National Board for Wildlife in their meeting held on 17-02-2003 constituted a team of experts for site inspection and report. The expert team, after taking into view the ground facts and circumstances, recommended certain measures to be implemented by the State Government before recommendations for de-notification was given by the National Board for Wildlife.
- The Ministry of Environment & Forests, Government of India, New Delhi vide their letter F.No. 6-3/2003/WL-I(pt) dated 25-10-2005 had informed that the following decision regarding de-notification of City Forest (Salim Ali) National Park, Srinagar was taken in the 5th meeting of the Standing Committee of the National Board for Wildlife held on 4th October, 2005.
- The Committee discussed the compliance report submitted by the Government. As per the compliance report, the State Government has agreed only to four recommendations deferred three and did not approve one i.e. handing over Shankracharya Reserve to the Wildlife Department, Chief Wildlife Warden, J&K explained the stand of the Government. He informed that out of 8.85 Km2 only 1.62 Km2 area of City Forest (Salim Ali) National Park has been de-notified. The State Government was also willing to declare the area as eco-sensitive zone. However, the Committee decided to incorporate their objections for non-compliance of the recommendations of the inspecting committee by the State Government in their views to be submitted before the Hon'ble Supreme Court.

The following are the recommendations of the Expert Committee:

I. Handing over of Shankaracharya Reserve to State Wildlife Department.
II. All such buildings and private holding that existed prior to the final notification of the National Park may be excluded in the contagious blocks.
III. All such constructions, like DG Police Bungalow, proposed residence of the Chief Minister, Guest House of J&K Bank etc that have come up after final notification of the park will be handed over to the Wildlife Department of the J&K State.
IV. The area of the International Golf Course may be excluded from the boundary of the National Park but the buildings which still exist on Boulevard be handed over to the Wildlife Department.
V. The whole area of City Forest (Salim Ali) National Park will be notified as Eco-sensitive zone under the Environment Protect Act, 1986.
VI. Upper portion of the Brain, Nishat and Khonmoh Wildlife Reserves, where there is no permanent human habitation and some other areas to be added to the Salim Ali National Park to connect it with the Dachigam National Park.

VII. Forest area of the Sindh valley and Lidder valley and some adjoining areas to Dachigam National Park be also added to the Salim Ali National Park to provide narrow corridor for Hangul in summer.

VIII. To shift the Sheep Breeding Farm located in Dachigam National Park to an alternate site

Based on the above mentioned information and discussions with officials and staff of Wildlife Protection Department, site visit and going through the information available, The MEE Team was of unanimous opinion that because following points, the evaluation of City Forest (Salim Ali) National Park, Srinagar, Jammu & Kashmir need not be carried out.

1. Management action of the Park is not active and the area has not been handed over to the Wildlife Protection Department.
2. Based on the recommendations of the Expert Committee and the proposal of the state for de-notifying part of the National Park to the National Board for Wildlife (NBWL) and the consequent recommendations of the NBWL to the state, the action on compliance to the recommendations of the Expert Committee is still on-going and not completed. One such meeting at the highest level of the government took place in November, 2009 and follow up action is on-going.
3. The final orders from the Honourable Supreme Court on the writ petition No: 337/95 (IA No.2) titled Centre for Environmental Law V/s Union of India have been issued or not is not known to the team.
4. The status of the area remains as a National Park and proposed de-notification of the part of the National Park as per the laid down procedures is still pending.

Evaluators
Dr. V.K. Melkani, Former CWLW, Tamil Nadu
Dr. Vibhu Prakash, Scientist, BNHS, Vulture Breeding Centre, Chandigarh
Dr. Jeet Ram, Professor, Kumaun University, Nainital
Dr. K. Sivakumar, Scientist, WII, Dehradun

18. Hirpora Wildlife Sanctuary, Jammu and Kashmir

Management Strengths

1. The Sanctuary in the Pir Panjal range of the Western Himalayas is dominated by high mountains, rugged cliffs and upland pastures and holds an array of diverse habitats and wilderness areas with rich biodiversity in terms of bio-geographical, ecological, historical and economic imperatives.
2. The Sanctuary holds a significant population of the Markhor. In addition, the area provides a home to many endangered and threatened mammals and birds. The area is valuable and contains substantial faunal attributes of local and global significance.
3. Organisations such as Wildlife Trust of India (WTI) and Nature Conservation Foundation (NCF) have provided a lot of scientific inputs to the sanctuary management, and they continue to support the conservation efforts.
4. There is no village inside the sanctuary, and the local people generally support conservation.

Management Weaknesses

1. Considering the terrain and remoteness of the sanctuary, where protection works have to be carried out through foot patrolling, the strength of field staff posted is inadequate and even

basic facilities and equipment are lacking, including gear for high-altitude patrolling.

2. The grazing of sheep, goats, buffaloes and horses in large numbers in the alpine areas during summer by Gujjars and Bakarwals from the villages adjoining the sanctuary and even villages further away is very intense. It affects the conservation of critical habitats for the flagship species of the sanctuary, the markhor, which is being pushed to sub-optimal regions of the sanctuary.
3. The old road (Mughal road), realigned at many places and widened to connect with Poonch, cuts across the sanctuary. The road is used by all vehicles including heavy vehicles. The uninterrupted traffic on the road makes the area vulnerable to large-scale landslides and soil erosion and is a source of disturbance for wildlife. Migrant graziers also use this road, and thousands of sheep and goats enter the alpine areas of the sanctuary.
4. There are few villages in the periphery of the sanctuary, there is high dependence of the local communities on resources such as fuelwood, grass and for grazing.

Immediate Actionable Points

1. The government may consider enhancing the strength of the field staff (Forest Range Officer, Forester and Forest Guard) which is inadequate, considering the remoteness and tough terrain of the sanctuary.
2. The government may also consider providing field gear for high-altitude patrolling, vehicles and communication systems.
3. More funding support for ecodevelopment works may be considered in order to take up community development activities, provide alternatives for the local people and reducing excessive dependence on the resources of the sanctuary.
4. Tourism may be regulated. The revenues so generated could flow to the sanctuary management and be used for improving the livelihoods of the local people.
5. The vehicle movements on the Mughal road traversing across the sanctuary require regulation for entry of vehicle, their frequency and use of this road during different seasons.

Evaluators
Dr. V.K. Melkani, Former CWLW, Tamil Nadu
Dr. Vibhu Prakash, Scientist, BNHS, Vulture Breeding Centre, Chandigarh
Dr. Jeet Ram, Professor, Kumaun University, Nainital
Dr. K. Sivakumar, Scientist, WII, Dehradun

Nasim Ahmad Ansari



19. Hokersar Wildlife Sanctuary, Jammu and Kashmir

Management Strengths

1. Hokersar Wetland and Wildlife Sanctuary is a renowned waterfowl wetland reserve and a designated Ramsar site (2005), in the floodplain of the Jhelum River, known for its bio-geographical, ecological, hydrological and cultural significance.
2. The wetland complex comprising Hokersar, Shallabugh, Mirgund, Hygam and Chatalum is internationally recognised for being one of the sites with the remaining reed beds of Kashmir that provide a pathway for 68 species of migratory and resident bird such as the little grebe, cormorant, large egret, night heron, greylag goose, ruddy shelduck, pintail, common teal, mallard and gadwall and the endangered white-eyed pochard, coming from Siberia, China, Central Asia and northern Europe.
3. The rich conservation history of the area dates back to 1945 when it was declared a sanctuary (rakh) by the Maharaja of Kashmir.
4. Being in the floodplain of the River Jhelum, the sanctuary and its associated wetlands serve to regulate and control floods; recharge groundwater, and regulate river flows, and so they protect the people of the area and their property and have high economic values.

Management Weaknesses

1. The sanctuary does not have a Management Plan laying down clear objectives and strategies to manage the wetland and prioritise various management actions.
2. The heavy flood damage of September 2014 has devastated the wetland and its character. The huge inflow of silt, pollutants and water has greatly affected its depth and quality of water and destroyed infrastructure. There is no strategy in place to mitigate the damage and carry out ecological restoration.
3. The current staff strength and facilities are not sufficient considering the challenges involved in managing this Ramsar site.
4. There are many habitations/settlements around the sanctuary. The high dependence of the local people on the resources of the sanctuary is a great threat. Very limited work is being carried out to secure the people's support for conservation.

Immediate Actionable Points

1. The Management Plan may be drafted quickly according to the new framework developed by the department for wetland management planning to guide field action.
2. The Government may consider enhancing the field staff strength (Forest Range Officer, Forester and Forest Guard) and provide basic facilities, which are largely inadequate.
3. The proposal for funding support from the Government of India (GoI) for conservation of Hokersar and the associated wetlands (2017-2018) prepared under the National Plan for Conservation of Aquatic Eco-systems (NPCA) may be implemented and funds allocated for long-term conservation of the important wetland complex in the floodplain of the River Jhelum.
4. More funding support for ecodevelopment works may be considered so that activities such as providing alternatives to local people and reducing excessive dependence on the resources of the sanctuary may be taken up.

Evaluators
Dr. V.K. Melkani, Former CWLW, Tamil Nadu
Dr. Vibhu Prakash, Scientist, BNHS, Vulture Breeding Centre, Chandigarh
Dr. Jeet Ram, Professor, Kumaun University, Nainital
Dr. K. Sivakumar, Scientist, WII, Dehradun

20. Jasrota Wildlife Sanctuary, Jammu and Kashmir

Management Strengths

1. The sanctuary is located close to the urban centre is easily approachable, and known for its religious and cultural significance.
2. The anthropogenic pressure on the sanctuary is quite low largely because of very few villages adjoining to its periphery. Further, the good economic status of the villages makes them less dependent on the sanctuary's resources.
3. Adequate funds are timely allocated for undertaking improvement works in the sanctuary.
4. The sanctioned posts of staff are adequate and are all filled up.
5. The sanctuary has established a Visitor information centre and Wildlife training centre at Jasrota. The centre is functional and regular trainings are conducted for the Capacity building of sanctuary staff as well as other Forest staff and stakeholders from other division of the state.
6. There is support from the Government and local political leadership for conservation.

Management Weaknesses

1. There are temples and remains of forts in the sanctuary which are proposed to be developed for religious and cultural tourism. The tourism should be regulated as any increase may have adverse impact on wildlife conservation.
2. Large area of the sanctuary is covered with Lantana growth which needs to be eradicated and any further invasion of lantana is to be prevented.
3. The number of guard huts in the remote parts of the sanctuary is inadequate for effective surveillance and patrolling and more number are required to enhance protection efforts.

Immediate Actionable Points

1. The Management Plan for the sanctuary for the period 2016-2017 to 2021-2022 drafted according to the template and guidelines of Wildlife Institute of India should be submitted to the Chief Wildlife Warden, Jammu and Kashmir for early approval.
2. Estimation of wildlife population may be carried out annually using robust and scientific methods.
3. Managing the sanctuary area as a 'core' and the surrounding forest areas as the 'buffer' according to the principles of landscape management may be considered for long-term sustainable biodiversity conservation.

Evaluators
Dr. V.K. Melkani, Former CWLW, Tamil Nadu
Dr. Vibhu Prakash, Scientist, BNHS, Vulture Breeding Centre, Chandigarh
Dr. Jeet Ram, Professor, Kumaun University, Nainital
Dr. K. Sivakumar, Scientist, WII, Dehradun

21. Lachipora Wildlife Sanctuary, Jammu and Kashmir

Management Strengths

1. The Sanctuary occupies a strategic location in terms of bio-geographical, historical and economic imperatives. Situated at the northern tip of the Indian Territory, it shares international boundaries with Pakistan and China and has played a pivotal role as the point of confluence of different bio-geographical realms and a pathway of invasion and cultural mixing of the Indian subcontinent. From ecological perspectives, the importance of this region is tremendous as it holds an array of diverse habitats and wilderness areas that are home to many primitive as well as newly evolved taxa.
2. The sanctuary along with Limber, Gulmarg wildlife sanctuaries, Naganari conservation reserve, Kajinag National Park and Kishan Ganga (proposed Wildlife Sanctuary) form a large contiguous landscape (522 km2) that lies in the North-west Himalayan Bio-geographic Zone (2A) conducive for connectivity between varied habitats from temperate to sub-tropical forests and facilitating gene flow across the landscape.
3. The area is well protected because of its remoteness, rugged and inaccessible terrain. The presence of the Indian Army and paramilitary forces provides added protection to the area.
4. The area has a rich conservation history, prior to notification as a Wildlife Sanctuary, the area served as a hunting preserve of the Maharaja, and the rules of the game were very strict. The laws governed the game reserves, where hunting was controlled and permitted only seasonally.
5. The Kajinag range of mountains holds the bulk of the population of the markhor. In addition, the area provides a home to many endangered and threatened mammals and birds. The area is valuable and has substantial faunal attributes of local and global significance.
6. Organisations such as Wildlife Trust of India and Nature Conservation Foundation have provided a lot of scientific inputs to the management of the sanctuary, and continue to support conservation efforts.
7. The local people are generally supportive of conservation.

Nasim Ahmad Ansari



Management Weaknesses

1. Considering the terrain and remoteness of the sanctuary, where protection have to be carried out through foot patrolling, the limited availability of field staff and lack of basic camping gear and facilities for the staff are the key weaknesses.
2. The area remains snow-clad for 4-5 months, and therefore the release of funds for habitat management works has to be timely. Once the snow sets in, undertaking habitat management works is difficult. Meagre funds are allotted, and the release of the funds is delayed.
3. There are many habitations/settlements in and around the sanctuary. The dependence levels of the local people on fuel wood, grass and grazing is high.

Immediate Actionable Points

1. The Government may consider enhancing the strength of the field staff (Forest Range Officer, Forester and Forest Guard), which is not adequate considering the remoteness and tough terrain of the sanctuary. Currently, one Range Officer is looking after both Lachipora and Limber wildlife sanctuaries.
2. The Government may also consider providing field gear for high-altitude patrolling, vehicles and communication systems.
3. More funding support for eco-development may be considered in order to take up community development activities and providing livelihood alternatives to local people.

Evaluators
Dr. V.K. Melkani, Former CWLW, Tamil Nadu
Dr. Vibhu Prakash, Scientist, BNHS, Vulture Breeding Centre, Chandigarh
Dr. Jeet Ram, Professor, Kumaun University, Nainital
Dr. K. Sivakumar, Scientist, WII, Dehradun

22. Limber Wildlife Sanctuary, Jammu and Kashmir

Management Strengths

1. The sanctuary occupies a strategic location in terms of bio-geographical, historical and economic imperatives. Situated at the northern tip of the Indian Territory, this State shares international boundaries with Pakistan and China and has played a pivotal role as the point of confluence of different bio-geographical realms and as a pathway of invasion and cultural mixing of the Indian subcontinent. From ecological perspectives, the importance of this region is tremendous as it holds an array of diverse habitats and wilderness areas that are home to many primitive as well as newly evolved taxa.
2. The sanctuary along with Lachipora, Gulmarg wildlife sanctuaries, Naganari Conservation Reserve, Kajinag National Park and Kishan Ganga (proposed Wildlife Sanctuary) form a large contiguous landscape (522 km2) that lies in the North-west Himalayan Bio-geographic Zone (2A) conducive for connectivity between varied habitats from temperate to sub tropical and facilitating gene flow across the landscape.
3. The area is well protected because of its remoteness and rugged and inaccessible terrain. The presence of the Indian Army and paramilitary forces provides added protection to the area.
4. The area has a rich conservation history, prior to its notification as a wildlife sanctuary, the area used to be a hunting preserve of the Maharaja, and the rules of the game were very

strict. Laws governed the game reserves, where hunting was controlled and permitted only seasonally.

5. Kajinag Range, of the mountains, holds the bulk of the population of markhor. In addition, the area provides a home to many endangered and threatened mammals and birds. The area is valuable and has substantial faunal attributes of local and global significance.
6. Organisations such as Wildlife Trust of India and Nature Conservation Foundation have provided a lot of scientific inputs to the management of the sanctuary, and the contributions are ongoing.
7. The local people are generally supportive of conservation.

Management Weaknesses

1. Considering the terrain and the remoteness of the sanctuary, where protection works have to be carried on through foot patrolling, the limited availability of field staff and lack of basic camping gear and facilities for the staff are the key weakness.
2. The area remains snow-clad for 4-5 months. Therefore the release of funds for management works has to be timely as once the snow sets in, undertaking habitat management works is difficult. Meagre funds are allotted, and the release of the funds is heavily delayed.
3. There are many habitations/settlements in and around the sanctuary. There is high dependency of the local people on fuelwood, grass and for grazing cattle.

Immediate Action Points

1. The Government may consider enhancing the strength of the field staff strength (Forest Range Officer, Forester and Forest Guard), which is not at all adequate considering the remoteness and tough terrain of the sanctuary. Currently, one Range Officer is looking after both Limber and Lachipora Wildlife Sanctuaries.
2. The Government may also consider providing field gear for high-altitude patrolling, vehicles and communication systems.
3. More funding support for eco-development works may be considered in order to take up activities that provide livelihood alternatives to the local people.

Evaluators
Dr. V.K. Melkani, Former CWLW, Tamil Nadu
Dr. Vibhu Prakash, Scientist, BNHS, Vulture Breeding Centre, Chandigarh
Dr. Jeet Ram, Professor, Kumaun University, Nainital
Dr. K. Sivakumar, Scientist, WII, Dehradun

Seema Bhatt



23. Bir Aishvan Wildlife Sanctuary, Punjab

Management Strengths

1. The sanctuary is insular comprising of a small patch of natural forest within the large agricultural landscape with its entire boundary fenced and well protected from biotic pressure. The fencing is effective in controlling human-wildlife conflicts in the surrounding villages, and restricts the entry of cattle and reduces other anthropogenic pressures in the sanctuary.
2. The sanctuary has a potential to serve as a centre for conservation education and for creating awareness among the public.
3. It is the last repository of natural resources (like a sacred grove) in the wild form, surrounded by large agricultural fields and villages, and it has a long conservation history. It provides shelter to many native birds, reptiles and invertebrates.
4. Appreciable efforts have been taken by the department to restore the degraded areas through removal of prosopis and planting of native tree species over a small area in the sanctuary and the results are encouraging.
5. The local people are generally supportive of conservation.

Management Weaknesses

1. Though the periphery of the sanctuary has been fenced with a chain link fence, a large number of stray and abandoned cattle and dogs have been trapped within the sanctuary limits.
2. There is a serious threat of spreading zoonotic disease as these cattle breed and freely roam around the whole sanctuary.
3. The plan of eco-restoration by removing Prosopis and planting native vegetation is not implemented due to a ban on tree felling by NGT.
4. Some local and outside people are supplying fodder to the abandoned cattle. The sanctuary is functioning as a shelter for the stray cattle.
5. The Government is aware of the problem and has asked the animal husbandry department to take action to shift these cattle to some welfare and care centre. This needs to be pursued vigorously by the forest department in coordination with the animal husbandry department and district administration.
6. The spread of Prosopis and monoculture of Eucalyptus is a threat to habitat diversity.

Immediate Actionable Points

1. The presence of a very large number of stray and abandoned cattle trapped within the sanctuary after the entire boundary of the sanctuary was fenced is a serious problem and threat to wildlife population. This issue needs to be addressed by the department and efforts should be made to remove the cattle to an animal shelter with the cooperation and support of the animal husbandry department and district administration. The Government has directed the departments to take immediate action on priority basis.
2. An inventory of the stray and abandoned cattle/dogs and their population dynamics including fecundity rates should be determined to develop a relocation and rehabilitation plan following standard Zoonotic procedure. Some representative cattle may be screened for diseases and the population treated accordingly. Dung analysis may be done to understand the parasite loads The plan should be implemented without further delay as the stray population is a threat to wildlife. Also till the time the plan is implemented it is necessary to isolate the cattle and dogs in one corner of the sanctuary and provide required veterinary and other care.

3. The implementation of the restoration plan prepared for the sanctuary may be continued as and when the ban imposed by the NGT on felling trees is lifted.
4. The implementation of the restoration plan prepared for the sanctuary may be continued as and when the ban imposed by NGT to fell trees is lifted by following required procedures and putting in place robust monitoring mechanisms.

Evaluators
Dr. V.K. Melkani, Former CWLW, Tamil Nadu
Dr. Vibhu Prakash, Scientist, BNHS, Vulture Breeding Centre, Chandigarh
Dr. Jeet Ram, Professor, Kumaun University, Nainital
Dr. K. Sivakumar, Scientist, WII, Dehradun

24. Bir Bhunerheri Wildlife Sanctuary, Punjab

Management Strengths

1. The Sanctuary is located close to an urban centre and is endowed with representative biodiversity of the Punjab plains, has potential for development into a centre for conservation and education, generate nature awareness and empathy amongst the minds of public towards the native fauna and flora and a desire to protect them. The small sanctuary amidst agricultural field and villages is a repository of wild natural resources (like a sacred grove) with a long conservation history.
2. The local people are generally supportive of conservation.

Management Weaknesses

1. The Sanctuary has a periphery of 22 km out of which 6.5 km is fenced and requires maintenance. The unfenced area is susceptible to anthropogenic pressures such as grazing and firewood removal and is vulnerable to human-wildlife conflicts.
2. There are few stray abandoned cattle and dogs present in the sanctuary, and occasionally they move out through unfenced portions and cause damage of crops in adjoining villages. Apart from this the Nilgai also cause depredation of crops in the surrounding villages.
3. Invasive species such as Prosopis cover large degraded tracts, monocultures of Eucalyptus are also a matter of concern affecting the habitat biodiversity.
4. The road traversing through the sanctuary divides it into two parts. The periphery is porous with large unfenced area, making it easy for communities to collect firewood and graze cattle inside the sanctuary.

Immediate Actionable Points

1. The presence of a number of stray and abandoned cattle within the sanctuary which competes with the herbivores for forage and likely to spread disease is a threat to wildlife. There is an urgent need to draw an inventory of the stray and abandoned cattle/dogs and study the population dynamics including fecundity rates and draft a relocation and rehabilitation plan to inform the decision makers about the severity of the issue and address the problem immediately. The stray cattle is to be translocated to an animal shelter with cooperation and support from the animal husbandry department and the district administration. The Government has issued direction to address this issue on priority basis.

2. In case the exercise of translocating the stray cattle requires much time, the department may consider isolating the cattle and dogs in a corner of the sanctuary and provide required veterinary and other care to them till they are removed from the sanctuary.
3. The Sanctuary management should prepare and implement an ecological restoration plan for the area and eradicate the invasive species and plant native trees as done in Bir Aishvan Wildlife Sanctuary.
4. The preparation and implementation of the restoration plan for the area by removal of invasive species and followed by native trees planting drive as has been done in parts of Bir Aishvan Wildlife Sanctuary may be considered by the department for this sanctuary by following the required procedures and putting in place robust monitoring protocols for the work.

Evaluators
Dr. V.K. Melkani, Former CWLW, Tamil Nadu
Dr. Vibhu Prakash, Scientist, BNHS, Vulture Breeding Centre, Chandigarh
Dr. Jeet Ram, Professor, Kumaun University, Nainital
Dr. K. Sivakumar, Scientist, WII, Dehradun

25. Bir Dosanjh Wildlife Sanctuary, Punjab

Management Strengths

1. A small insular sanctuary surrounded by agricultural fields dominates the landscape and controls the climatic factors of the area.
2. Water impounded in small pools in the sanctuary attracts various birds.
3. The fencing of the sanctuary has reduced the conflicts with the wildlife.

Management Weaknesses

1. The sanctuary is very small, isolated and surrounded by agriculture fields.
2. There is no landscape connectivity with other Protected Areas/forests.
3. The natural balance of prey predator is nonexistent as there is no major predator.
4. The sanctuary is managed mostly as a refuge for cattle, monkeys and nilgai.
5. The number of the staff and the amenities available to them are insufficient.
6. Prosopis dominates the sanctuary.

Immediate Actionable Points

1. Bir Dosanjh Sanctuary is densely covered with Prosopis juliflora, which was planted earlier but now naturalized the Sanctuary landscape. This is the dominant species in the sanctuary. The natural forage availability in sanctuary for wild animals is inadequate. The preparation and implementation of the restoration plan for the area by removal of invasive species and followed by native trees planting drive as has been done in parts of Bir Mehas Wildlife Sanctuary may be considered by the department for this sanctuary by following the required procedures and putting in place robust monitoring protocols for the work.
2. All the feral cattle are competing for forage with the wildlife and needs to be removed from the sanctuary and translocated elsewhere. The Government should address this issue under a project mode as a number of departments will be involved in resolving this problem.
3. Since there is a dearth of predators in the sanctuary, population management of herbivores is necessary through their isolation during rutting season.

4. As a canal passes through the sanctuary, the government should ensure that water is released for the sanctuary on a regular basis. The release should not be linked with seasonal agricultural field requirements.
5. The number of frontline staff for sanctuary management is inadequate (20 posts of Forest Guards sanctioned for six sanctuaries and one zoo within the division) The sanctioned posts of Forest Guards and Foresters for sanctuary management are to be notified and enhanced. Specific posts of Forest Guards for protection, habitat management, education and awareness, ecotourism, etc. are to be created. The posts of Foresters are to be increased proportionately.
6. One veterinary doctor is to be posted in Patiala Wildlife Division under the administrative control of the DFO (Wildlife) for the six sanctuaries and one zoo within the division.
7. The staff must monitor the distribution of various animals, their seasonal movements and their behaviour.
8. The staff need to stay within the sanctuary instead of visiting it from outside.
9. Adequate funds need to be provided to the sanctuary for improvement of the habitat, protection, creation and maintenance of infrastructure, capacity building of the staff, conducting training and awareness programmes for villagers and school children, providing veterinary care for wild animals, etc. The funds available presently are not adequate.
10. Watch towers need to be constructed at convenient locations near water bodies for protection, controlling forest fires, studying animal behaviour and ecotourism.
11. Camera traps are to be installed at various places to monitor the presence of wild animals in the sanctuary.
12. The local people must be prevented from providing food to wild animals and the feral cattle.

Evaluators
Shri S.S. Srivastva, Former PCCF & HoFF, Odisha
Dr. D.S. Shrivastava, Former Professor, Patna University, Patna
Dr. Afifullah Khan, Professor, Aligarh Muslim University, Aligarh
Dr. V.P. Uniyal, Scientist, WII, Dehradun

26. Bir Gurdialpura Wildlife Sanctuary, Punjab

Management Strengths

1. The sanctuary is contiguous to the territorial forest in the west forming a linkage with forest for connectivity and gene flow.
2. The fencing of the sanctuary has mitigated human wildlife conflict.

Management Weaknesses

1. The sanctuary is comparatively small, and it is surrounded by agricultural fields and vulnerable to anthropogenic pressures.
2. There is no major predator.
3. The sanctuary is managed mostly as a refuge for Rhesus macaque, Nilgai and abandoned cattle.
4. The Ghaggar River traversing the sanctuary is highly polluted, and is a threat to the wild animals.
5. The vegetation is dominated by Eucalyptus and Prosopis Spp. which are unsuitable for Sanctuary

Immediate Actionable Points

1. Bir Gurdialpura Sanctuary is dominated by Eucalyptus and Prosopis species that need to be removed in a phased manner. The preparation and implementation of the restoration plan for the area by removal of these invasive species and followed by native trees planting drive as has been done in parts of Bir Mehas Wildlife Sanctuary may be considered by the department for this sanctuary by following the required procedures and putting in place robust monitoring protocols for the work.
2. All the feral cattle are competing for forage with the wildlife and needs to be removed from the sanctuary and translocated elsewhere. The Government should address this issue under a project mode as a number of departments will be involved in resolving this problem.
3. The government is to take steps to check the pollution of the Ghaggar River, especially the upstream stretch, where polluting industries are located.
4. The Gurdialpura Reserve Forest, under the administrative control of the territorial division, needs to be declared a sanctuary and transferred to the wildlife division for effective management of wildlife.
5. The number of frontline staff for sanctuary management is inadequate (20 posts of Forest Guards sanctioned for six sanctuaries and one zoo within the division) The sanctioned posts of Forest Guards and Foresters for sanctuary management are to be notified and enhanced. Specific posts of Forest Guards for protection, habitat management, education and awareness, ecotourism, etc. are to be created. The posts of Foresters are to be increased proportionately.
6. One veterinary doctor is to be posted in Patiala Wildlife Division under the administrative control of the DFO (Wildlife) for the six sanctuaries and one zoo within the division.
7. The staff must monitor the distribution of various animals, their seasonal movements and their behaviour..
8. The staff need to stay within the sanctuary instead of visiting it from outside.
9. Adequate funds need to be provided to the sanctuary for improvement of the habitat, protection, creation and maintenance of infrastructure, capacity building of the staff, conducting training and awareness programmes for villagers and school children, providing veterinary care for wild animals, etc. The availability of funds is inadequate to cater to the needs of such a sanctuary.
10. Watch towers are to be created at convenient locations near the waterbody for protection, controlling forest fires, studying animal behaviour and ecotourism.
11. Camera traps are to be installed at various places to monitor the presence of wild animals in the sanctuary.
12. Monitoring of status and distributions of wild animals are to be taken up regularly.
13. The local people must be prevented from providing food to wild animals and the feral cattle.

Evaluators
Shri S.S. Srivastva, Former PCCF & HoFF, Odisha
Dr. D.S. Shrivastava, Former Professor, Patna University, Patna
Dr. Afifullah Khan, Professor, Aligarh Muslim University, Aligarh
Dr. V.P. Uniyal, Scientist, WII, Dehradun

27. Bir Mehas Wildlife Sanctuary, Punjab

Management Strengths

1. A very small sanctuary surrounded by agricultural fields dominates the landscape and contributes to controlling the climatic factors.
2. The impounding of water in the sanctuary attracts various birds.
3. The fencing of the sanctuary has reduced the number of conflicts with wildlife.
4. The management has systematically replaced exotics with indigenous food and fodder species on rotation after observing all the procedures required for felling of trees and for raising plantation.

Management Weaknesses

1. The sanctuary is very small, isolated and surrounded by agricultural fields.
2. There is no landscape connectivity with other Protected Areas/forests.
3. The natural balance of prey predator is non existent as there is no major predator.
4. It is managed mostly as a refuge for abandoned cattle, monkeys and nilgai.
5. The strength of the staff and the amenities provided to the staff are inadequate.

Immediate Actionable Points

1. All the feral cattle are competing for forage with the wildlife and needs to be removed from the sanctuary and translocated elsewhere. The Government must address this issue under a project mode as a number of departments will be involved in resolving this problem.
2. Since there is a dearth of predators in the sanctuary, population management of herbivores is necessary through their isolation during rutting season.
3. As a canal passes through the sanctuary, the Government should ensure that water is released for the sanctuary on a regular basis. This release should not be linked with seasonal agricultural field requirements.
4. The number of frontline staff members for sanctuary management is inadequate (20 posts of Forest Guards sanctioned for six sanctuaries and one zoo within the division) The sanctioned posts of Forest Guards and Foresters for sanctuary management are to be notified and enhanced. Specific posts of Forest Guards for protection, habitat management, education The number of posts of Foresters is to be increased proportionately.
5. One veterinary doctor to be posted in Patiala Wildlife Division under the administrative control of the DFO (Wildlife) for six sanctuaries and one zoo within the division.
6. The staff must monitor the distribution of various animals, their seasonal movements and their behaviour.
7. The staff needs to stay within the sanctuary instead of visiting it from outside.
8. Adequate funds need to be provided to the sanctuary for improvement of the habitat, protection, creation and maintenance of infrastructure, capacity building of the staff, conducting training and awareness programmes for villagers and school children, providing veterinary care for wild animals, etc The present availability of funds is quite meagre compared with the needs of the sanctuary.
9. The programme of replacing exotic species with indigenous food and fodder species prescribed by the Management Plan has been stopped due to the directions of the National Green Tribunal. The ban needs to be lifted and the programme to be continued.

10. Watch towers need to be constructed at convenient locations near the waterbodies for protection, controlling forest fires, studying animal behaviour and ecotourism.
11. Camera traps are to be installed at various places to monitor the presence of wild animals in the sanctuary.
12. The local people must be prevented from providing food to wild animals and the feral cattle.

Evaluators
Shri S.S. Srivastva, Former PCCF & HoFF, Odisha
Dr. D.S. Shrivastava, Former Professor, Patna University, Patna
Dr. Afifullah Khan, Professor, Aligarh Muslim University, Aligarh
Dr. V.P. Uniyal, Scientist, WII, Dehradun

28.

Bakhira Wildlife Sanctuary, Uttar Pradesh

Management Strengths

1. The sanctuary is the largest freshwater body in Uttar Pradesh and attracts 25 species of migratory birds. The wetland regulates the ecology and hydrology of the area.
2. The sanctuary is an Important Bird Areas with open shallow water aquatic vegetation and animal life attracting large number of local and migratory birds.
3. The communities consider the wetland as an important source of livelihood through ecotourism.

Management Weaknesses

1. Although the final notification of the sanctuary has been issued, the Government and private land have not been transferred for management to the DFO by the revenue department.
2. The wetland is used by 103 peripheral villages for grazing, fishing and occasional poaching of birds.
3. The poor staff strength and infrastructure, minimal interaction with the villagers and inadequate tourism facilities are matters of concern.
4. The funds are inadequate and are not released in a timely manner, this impedes the protection and management of the sanctuary.
5. There is no ecodevelopment initiative in the Protected Area.
6. None of the staff members is trained in wildlife management.

Immediate Actionable Points

1. The Management Plan has been prepared for the period 2010-2011 to 2019-2020, requires revision through participatory process to address the current management issues. The assistance of any reputed institution having expertise in Wildlife management may be required for the revision of the Plan.
2. The government must ensure the immediate transfer of government and private lands within the sanctuary boundary to the DFO for effective management of the sanctuary, the final notification of which has been completed.
3. The DFO of the sanctuary is about 75 km from the sanctuary in a different district, Mahrajganj District. The sanctuary is located in Sant Kabir Nagar District, 40 km from the district headquarters, and so the DFO in charge of the sanctuary is not getting any cooperation and support from the local district administration. The Government of Uttar

Pradesh must consider appointing an independent DFO for the sanctuary, which is the largest freshwater lake in Uttar Pradesh, with headquarters at Sant Kabir Nagar. Alternately this sanctuary may be transferred to the DFO Sant Kabir Nagar for its administration and management.

4. The Government must provide land for eight watch towers that need to be erected on the periphery of the water body.
5. The zoning of the sanctuary for meeting management objectives is necessary.An extent of about 5 km2 of the water body, preferably in the central part of the sanctuary, needs to be identified as a Core Zone, without any disturbance. This zone is to be maintained as a source of aquatic plants and animals for attracting more birds, which can roost, nest and breed.
6. Adequate funds need to be released in a timely manner to ensure habitat improvement works like removal of weeds, deepening and other habitat ameliorative works.
7. The revenue realized from ecotourism need to be ploughed back for sanctuary management through the DFO, who should be duly authorized by the Government for this purpose.
8. Eco-tourism needs to be promoted for creating employment opportunities for the local people. A minimum of five tourist cottages needs to be developed and trained local bird guides should be deployed for accompanying visitors to sanctuary.
9. The management should promote eco-development initiative especially for enhancing livelihood of women through ecotourism.
10. There should be regular awareness generation programmes among the local people, especially the youth, about bird conservation.
11. Research studies should be carried out in collaboration with institution such as the Wildlife Institute of India and the Wildlife Division of Aligarh Muslim University.
12. The approach road to the sanctuary from the National Highway needs to be constructed.
13. The term 'Pachhi Vihar' dilutes the status of a sanctuary. The Protected Area needs to be notified as 'Bakhira Wildlife Sanctuary' instead of 'Bakhira Pachhi Vihar'.

Evaluators
Shri S.S. Srivastva, Former PCCF & HoFF, Odisha
Dr. D.S. Shrivastava, Former Professor, Patna University, Patna
Dr. Afifullah Khan, Professor, Aligarh Muslim University, Aligarh
Dr. V.P. Uniyal, Scientist, WII, Dehradun

29.

Dr. Bhimrao Ambedkar (Bird) Sanctuary, Uttar Pradesh

Management Strengths

1. Dr. Bhimrao Ambedkar (Bird) Sanctuary is a water body, spread over an area of 427.07ha, notified on 30.01.2003, under Wildlife (Protection) Act 1972. It is a large wetland which regulates the hydrology of the area and provides a conducive habitat for nesting and breeding of avifauna and meets the water requirement of adjoining areas.

Management Weaknesses

1. The access to the sanctuary for the sanctuary staff and visitors is restricted because of the possession of the wetland area by the local influential land owners.
2. The management is able to execute wildlife and habitat management works in a limited manner as it is occupied by the local influential land owners.

3. The MEE Team could not visit the area as they were restrained and the wildlife management & protection aspects could not be verified in the field.

Immediate Actionable Points

1. There should be a separate ACF under the DFO Social Forestry to manage this Sanctuary.
2. The DFO should be provided with adequate Staff and infrastructure to manage the Sanctuary.
3. The DFO should be provided with Armed Police/ Forest force for deployment in the sanctuary for control and protection.
4. The District Magistrate has requested the Principal Secretary Revenue for de-notification of the sanctuary; the wetland is important bird area and should be retained as such for the conservation of avifauna of the area.

Evaluators
Shri S.S. Srivastva, Former PCCF & HoFF, Odisha
Dr. D.S. Shrivastava, Former Professor, Patna University, Patna
Dr. Afifullah Khan, Professor, Aligarh Muslim University, Aligarh
Dr. V.P. Uniyal, Scientist, WII, Dehradun

30. Lakh Bahosi Wildlife Sanctuary, Uttar Pradesh

Management Strengths

1. The sanctuary area and the water bodies are comparatively large and viable ecological unit for wetland ecosystem function. There is relatively good potential for taking up conservation initiatives.
2. The widespread, open, shallow water with aquatic and terrestrial vegetation and avifauna attracts local and migratory birds.
3. The sanctuary is a recognized Important Bird Areas.
4. The Sanctuary is located close to a canal, and hence water is available during summer.
5. The Sanctuary is located in Kannauj city which is famous for perfumes, with large tourist inflow and good potential for developing eco-tourism.
6. The support of local communities for conservation is encouraging.

Management Weaknesses

1. The final notification of the sanctuary is pending.
2. The five villages around the sanctuary use it for resource extraction such as grazing, fishing and sometimes poison the birds.
3. Limited staff, poor infrastructures, very limited interactions with locals, inadequate tourism facilities are matters of concern.
4. The funds are inadequate and are not released in a timely manner. This impedes the protection and management of the sanctuary.
5. There is no eco-development initiative in the Sanctuary due to lack of funds.
6. There is no staff member trained in wildlife management.
7. The waterbodies get dry after winter, which affects the avifauna.

Immediate Actionable Points

1. The Management Plan has been prepared for the period 2010-2011 to 2020-2021, requires revision through participatory process to address the current management issues. The assistance of any reputed institution having expertise in Wildlife management may be required for the revision of the Plan.
2. Creation of new earthen mounds within the waterbodies is to be avoided, and the existing mounds are to be made free of Prosopis juliflora. These mounds as well as the immediate surroundings of the waterbodies need to be planted with fruit-bearing trees to facilitate nesting, breeding and roosting of birds.
3. As the sanctuary is surrounded by villages, its boundary should be fenced with chain link to prevent entry of cattle.
4. Additional two posts of Foresters, four of Forest Guards, two boatmen, 30 daily wagers (preferably from the Home Guards) should be provided to protect the sanctuary
5. Adequate funds should be released in a timely manner to remove weeds and deepen the waterbodies for proper management of the sanctuary.
6. The revenue realized received from ecotourism need to be ploughed back for sanctuary management through the DFO, who should be duly authorized by the Government for this purpose.
7. The sanctuary should be provided with one four-wheeler, two boats, six motorcycles, two cameras and two pairs of night-vision binoculars for proper protection and management of the sanctuary.
8. Eco-tourism needs to be promoted for creating employment opportunities for the local people. Tourist cottages needs to be developed and trained local bird guides should be deployed for accompanying visitors to sanctuary.
9. The sanctuary should initiate an eco-development initiative especially for women and link them to ecotourism.
10. Awareness generation about bird conservation among local youths should be carried out more intensely and regularly.
11. The electric cables are to be secured to avoid electrocution of birds.
12. The word 'Pachhi Vihar' dilutes the status of the Sanctuary. It needs to be notified as 'Lakh Bahosi Sanctuary' instead of 'Lakh Bahosi Pachhi Vihar'.

Evaluators
Shri S.S. Srivastva, Former PCCF & HoFF, Odisha
Dr. D.S. Shrivastava, Former Professor, Patna University, Patna
Dr. Afifullah Khan, Professor, Aligarh Muslim University, Aligarh
Dr. V.P. Uniyal, Scientist, WII, Dehradun

Nasim Ahmad Ansari



31. Mahavir Swami Wildlife Sanctuary, Uttar Pradesh

Management Strengths

1. The sanctuary has low biotic pressure and is well protected.
2. It provides a unique habitat for the vultures and gharials, which are largely threatened elsewhere in India.
3. The sanctuary along with forests of Lalitpur Division can serve as a corridor for dispersing tigers from the adjoining forests of Madhya Pradesh, including Panna Tiger Reserve.
4. The sanctuary has a good potential for cultural and religious tourism and creation of nature education and awareness centre for the visitors.

Management Weaknesses

1. The Sanctuary has biological and cultural values and should be accorded priority by the State Government for its development.
2. The development of the sanctuary is affected due to lack of funds. The DFO office is located 700 km away from the sanctuary and the Range Officer is in dual charge resulting in poor management.
3. There are inadequate protection staffs.
4. The poor infrastructure, minimal interaction with villages and inadequate tourism facilities are issues of concern.
5. The funds are meagre and are not released in a timely manner, which impedes the protection and management of the sanctuary.
6. There is no ecodevelopment initiative in the Sanctuary.
7. There are no staff members trained in wildlife management.

Immediate Actionable Points

1. The Management Plan has been prepared for the period 2010-2011 to 2019-2020, requires revision through participatory process to address the current management issues. The assistance of any reputed institution having expertise in Wildlife management may be required for the revision of the Plan.
2. The area of the Sanctuary needs to be increased by transferring the adjoining forest areas of Lalitpur Division (1400 ha of forest area from Jakhloam Beat and about 2200 ha from Dhaura Beat) to form a viable biological unit with a natural balance of Predators and prey and maintaining contiguity of habitat.
3. The sanctuary management is affected as the DFO office is located far away in Sonbhadra District. The Government may consider creation of a wildlife division after reorganization of the Division by including areas of adjoining Lalitpur Division.
4. Adequate and timely release of funds needs to be ensured by the government for proper management of the sanctuary.
5. Additional staff strength is required for sanctuary management. There should be two Range Officers, four Foresters and eight Forest Guards after the reorganization of the division.
6. The protection infrastructure and equipment is inadequate. One patrolling vehicle for the Range Officer, four motorcycles and two non-mechanized boats are required immediately.
7. Constructions of four watchtowers are required for protection.
8. Quarters need to be constructed immediately for the Range Officer, Foresters and Forest Guards to ensure that these staff members are present at the headquarters to strengthen the sanctuary management.

9. As this sanctuary has a good population of endangered vultures, the Government should conduct a survey and study the population dynamics and ranging pattern of vultures utilizing the services of a Research Institution having expertise on ecology and biology of the species.
10. Vulture Restaurants need to be established around the sanctuary to ensure that the species get safe food.
11. The tourism infrastructure (cottages, paths, signage and solar power system) needs to be strengthened. The Forest rest house near the sanctuary, under the administrative control of the territorial division, must be transferred to the sanctuary division for ecotourism and for protection activities.
12. The revenue generated from ecotourism need to be ploughed back for sanctuary management through the DFO, who should be duly authorized by the government for this purpose.
13. The Sanctuary should initiate ecodevelopment activities especially for augmenting the livelihood of women through their participation in ecotourism venture.
14. The state government must follow the provisions of the Forest Conservation Act 1980, the instructions of the Honorable Supreme Court and the guidelines of the NBWL when taking up any development work within the sanctuary. The district administration needs to be sensitized on Forest legislation.

Evaluators
Shri S.S. Srivastva, Former PCCF & HoFF, Odisha
Dr. D.S. Shrivastava, Former Professor, Patna University, Patna
Dr. Afifullah Khan, Professor, Aligarh Muslim University, Aligarh
Dr. V.P. Uniyal, Scientist, WII, Dehradun

Abhijit Das



32. Nawabganj Wildlife Sanctuary, Uttar Pradesh

Management Strengths

1. The sanctuary is an important IBA site which is essentially a small water body with shallow water and attracts a large number of migratory and resident birds as it has a good habitat for nesting, breeding and roosting. The wetland helps to regulate the ecology of the area.
2. The Sanctuary is located along NH 25, it is easily accessible by tourists, and there is considerable potential for creating nature education and awareness amongst the people.
3. The Sanctuary is close to the Sharda Canal, hence water can be brought to the waterbody even during the dry season according to the requirements.

Management Weaknesses

1. The Sanctuary is quite ill-managed, with the creation of two pedestrian pathways, which have divided the waterbody into three parts and disrupted the continuity of the waterbody. These pathway used by tourists are the source of disturbance to the avifauna. The pathways are also a source of siltation of the waterbody.
2. The 2.3 km long cycle track along the periphery of the waterbody is also a source of disturbance for the birds. The design and material of the cycle track are not environment friendly.
3. There is pressure for grazing and removal of grass for feeding the cattle of adjoining villages.
4. The tourism pressure is also very high.
5. The meagre funds and delay in its release, impact the protection and management of the sanctuary.
6. The infrastructure and equipment available for the staff is quite inadequate.
7. There is no ecodevelopment initiative in the Sanctuary.
8. There are no staff members trained in wildlife management.

Immediate Actionable Points

1. The Management Plan has been prepared for the period 2010-2011 to 2019-2020, requires revision through participatory process to address the current management issues. The assistance of any reputed institution having expertise in Wildlife management may be required for the revision of the Plan.
2. The creation of earthen mounds for the improvement of habitat needs review as they are now covered with Prosopis. The prosopis needs to be replaced by roosting trees which will facilitate the avifauna to nest and breed. These mounds, as well as the surroundings of the waterbody, need to be planted with fruit-bearing plants so that the birds can nest, breed and roost.
3. The two pedestrian pathways dividing the waterbody into three compartments are to be removed to make the water body continuous, large and free from human disturbances.
4. During winters, when the bird congregate in large numbers, cycling on the cycle track must be stopped to make the bird habitat free of human disturbances.
5. Watchtowers are to be established at appropriate places along the periphery of the water body for watching birds. These watchtowers must be fitted with high-resolution telescopes.
6. Three non-mechanized boats must be deployed for patrolling of the sanctuary by the staff. The boats should not be used for tourism.
7. The unfenced length of about 4.4 km of the total length of 5 km must be fenced immediately to check the unauthorized entry of people and cattle in the lake.

8. The Zoo, the Forest rest house and the adjoining areas of the sanctuary must be transferred to the Wildlife Division from the Social Forestry Division for better management of the ecotourism and for creating awareness among the people about protection and conservation of forests and wildlife.
9. All the infrastructure development within the sanctuary must be carried out by the Forest Department instead of the Engineering Department to maintain the environment and ecology of the area properly.
10. The Government must ensure regular supply of water from the Sharda Canal free of cost according to the needs of the waterbody in the sanctuary.
11. The DFO must initiate the creation of eco-development Committees.
12. The government must authorize and allow the DFO to plough back revenue from tourism for sanctuary management.
13. Additional staff, one Forester, two Forest Guards, two boatmen and 20 daily wagers (preferably from the Home Guards) should be deployed to protect the Sanctuary.
14. The Government must ensure that adequate funds are released in a timely manner for removal of weeds and deepening of the waterbody and for other habitat management activities.
15. The Sanctuary should be provided with one vehicle, four motorcycles, two cameras, five pairs of night-vision binoculars and two more boats for better protection and management.
16. The term 'Pachhi Vihar' dilutes the status of a sanctuary. It needs to be notified as 'Nawabganj Sanctuary' instead of 'Nawabganj Pachhi Vihar'.

Evaluators
Shri S.S. Srivastva, Former PCCF & HoFF, Odisha
Dr. D.S. Shrivastava, Former Professor, Patna University, Patna
Dr. Afifullah Khan, Professor, Aligarh Muslim University, Aligarh
Dr. V.P. Uniyal, Scientist, WII, Dehradun

33. Parvati-Arga Wildlife Sanctuary, Uttar Pradesh

Management Strengths

1. The two small wetland separated by agricultural fields are largely life line of the communities living in the periphery and the wetland maintains the ecology, drainage and hydrology of the area.
2. The sanctuary is an Important Bird Areas with open shallow water aquatic vegetation and animal life attracting large number of local and migratory birds.
3. The sanctuary has religious significance and considered sacred by the villagers.

Management Weaknesses

1. The final notification of the sanctuary is pending.
2. The eight villages around the sanctuary use it for grazing and fishing. Sometimes they poison birds in the sanctuary.
3. The inadequate staff strength, poor infrastructure, minimal interaction with the villages and inadequate tourism facilities are matters of concern.
4. The funds are insufficient and are not released in a timely manner. This impedes the protection and sanctuary management.
5. There is no ecodevelopment initiative in the Protected Area.
6. No staff member is trained in wildlife management.

Immediate Actionable Points

1. The Management Plan has been prepared for the period 2011-2012 to 2021-2022, requires revision through participatory process to address the current management issues. The assistance of any reputed institution having expertise in Wildlife management may be required for the revision of the Plan.
2. Construction of new earthen mounds within the waterbodies is to be avoided. Existing mounds must be made free of Prosopis juliflora. These mounds as well as the surroundings of the waterbodies need to be planted with fruit bearing plants to facilitate the nesting, breeding and roosting of the birds.
3. As the sanctuary is surrounded by villages, it should be chain link fenced over a length of about 10 km of its boundary for better protection.
4. Additional two more Forest Guards and 20 daily wagers (preferably from the Home Guards) should be provided.
5. Adequate funds should be released in a timely manner for removal of weed and deepening for proper management of the sanctuary.
6. The revenue realized from eco-tourism need to be ploughed back for sanctuary management through the DFO, who should be duly authorized by the government for this purpose.
7. The sanctuary should be provided with one four-wheeler, four motorcycles, two cameras, two pairs of night-vision binoculars and one more boat.
8. Eco-tourism needs to be promoted for creating employment opportunities for the local people. A tourist cottage and trained local bird guides should be deployed for accompanying visitors to sanctuary. This will generate employment for local youths.
9. The management should promote eco-development initiative especially for enhancing livelihood of women through ecotourism.
10. Conservation awareness about avifauna amongst communities especially the local youths should be done by conducting regular training programmes.

Evaluators
Shri S.S. Srivastva, Former PCCF & HoFF, Odisha
Dr. D.S. Shrivastava, Former Professor, Patna University, Patna
Dr. Afifullah Khan, Professor, Aligarh Muslim University, Aligarh
Dr. V.P. Uniyal, Scientist, WII, Dehradun

Nasim Ahmad Ansari



34. Patna Wildlife Sanctuary, Uttar Pradesh

Management Strengths

1. The Sanctuary harbours a large numbers of migratory birds, in the impounded water draining from the adjoining agricultural landscape, large number of roosting trees provide a conducive wetland habitat for nesting and breeding of avifauna.
2. The waterbody is also charging the water table. This is beneficial for agricultural crops as well as for the vegetation of the sanctuary.
3. The support and cooperation from the local villagers is overwhelming, some of whom have parted with their land for formation of water body. The villagers help in protection efforts as the sanctuary has religious importance with a temple located in the sanctuary which is revered by them.
4. The sanctuary can be reached easily as it is located on the Aligarh-Etah-Agra highway and can serve as a centre for conservation education and awareness for the large number of visitors.

Management Weaknesses

1. The Government should accord priority for the development of the sanctuary by providing additional staff, protection infrastructure and facilities.
2. The earthen mounds within the water body are reducing the area of the water spread, affecting the arrival of birds.
3. The preponderance of Prosopis juliflora on the mounds as well as on the land is also affecting the nesting, breeding and roosting of birds.
4. The inadequate and untimely release of funds is affecting the management of the sanctuary.
5. Insufficient rainfall is affecting the water level of the lake, which in turn is affecting the arrival and stay of migratory birds.
6. The staff strength and the infrastructure provided to the staff are quite meagre. As a result, the protection and management are weak.
7. The water body also encompasses the private lands of local villagers. Hence there are conflicts relating to grazing and other land use when the water recedes.

Immediate Actionable Points

1. The Management Plan should be revised to incorporate the current management issues, especially those related to habitat management. The Prosopis should be removed and plantation of fruit-bearing plants taken up on the mounds within the water body and on the land in the sanctuary.
2. Regular, timely and adequate funding must be ensured by the State Government for the management of the sanctuary and enhancing protection.
3. Staff quarters must be provided within or at the periphery of the sanctuary to ensure that staff members are available to meet any exigency.
4. Funds should be provided for fencing remaining 300 m of the boundary of the water body of the sanctuary to check the grazing of cattle.
5. An eco-development initiative is required for better liaison with the local villagers owning land within the sanctuary.

6. The staff strength must be increased, additional post of one Forester and three Forest Guards is necessary.
7. Since there is a severe shortage of funds, the Government may authorize the DFO to plough back the revenue earned from ecotourism for the protection and management of the sanctuary.

Evaluators
Shri S.S. Srivastva, Former PCCF & HoFF, Odisha
Dr. D.S. Shrivastava, Former Professor, Patna University, Patna
Dr. Afifullah Khan, Professor, Aligarh Muslim University, Aligarh
Dr. V.P. Uniyal, Scientist, WII, Dehradun

35. Mussoorie Wildlife Sanctuary, Uttarakhand

Management Strengths

1. The creation of the sanctuary in Mussoorie a major tourism place is a testimony of the commitment of the state Government to protect forests and wildlife and ensure that environmental benefits accrue to local communities.
2. The rich endemic flora and fauna are recovering due to habitat improvement and protection.
3. The anthropogenic pressure of grazing, lopping and timber extraction in the sanctuary has reduced.
4. The oak forest and its associates are well protected and provide a good habitat.
5. Since the sanctuary is located in a popular tourist place, there is excellent potential for creating awareness among people about the need for protection and conservation of forests and wildlife.

Management Weaknesses

1. The forest blocks constituting the sanctuary are disconnected, and hence the habitat of wild animals is not optimal.
2. The management plan of the sanctuary may be revised to incorporate current management issues and strategies for implementation.
3. A sudden increase in tourist activities close to the boundary of the sanctuary in the forms of traffic and construction of roads, resorts and hotels is a threat to the sanctuary.
4. The funding support available for infrastructure, protection and habitat management is meagre.
5. The sanctuary is quite porous and the strength of the protection staff is inadequate. Unauthorized entry of people is common.

Immediate Actionable Points

1. Adequate funds may be allocated for setting two more chowkies and repairs of the existing four chowkies. Fifty camera traps, GPS and camping equipment need to be provided. The tracking routes need to be maintained.
2. Anti-poaching camps need to be established within the sanctuary immediately.
3. Large-scale soil and moisture conservation work needs to be taken up.
4. The number of Forest Guards and Foresters at the chowkies, nakas and anti-poaching camps needs to be increased for better protection, management and monitoring. Wireless operators need to be posted at strategic locations for uninterrupted round-the-clock communication services. Members of the support staff should be posted at beats.

5. Field kits and other amenities should be provided to the field staff.
6. Eco-tourism in the sanctuary should be promoted
7. The resorts and hotels in the area need to be sensitized about wildlife conservation as they depend entirely on the sanctuary for their survival. Awareness generation programmes for stakeholders must be regularly conducted.
8. The unrestricted growth of hotels and resorts within the eco-sensitive zone need to be regulated.
9. The staff, especially the Forest Guards and Foresters, must stay at their headquarters within the sanctuary instead of visiting the area from outside the sanctuary.

Evaluators
Shri S.S. Srivastva, Former PCCF & HoFF, Odisha
Dr. D.S. Shrivastava, Former Professor, Patna University, Patna
Dr. Afifullah Khan, Professor, Aligarh Muslim University, Aligarh
Dr. V.P. Uniyal, Scientist, WII, Dehradun

36. Valley of Flowers National Park, Uttarakhand

Management Strengths

1. The National Park is situated in a unique ecological zone at the confluence of the Western and Central Himalaya and has abundant diversity spread across the three clear alpine zones.
2. There are 600+ species of plants of which a large number are rare and endemic. There is a possibility of more exploration, research, documentation and monitoring.
3. The Park merges with the greater landscape of the Nanda Devi Biosphere Reserve.
4. The remoteness, difficult terrain and wilderness make it more secure.
5. The local communities, such as the Van Panchayats and EDCs, are supportive of conservation.

Management Weaknesses

1. The Government should strengthen the management of the Park by deploying additional protection staff and improving infrastructure facilities on priority basis. The Government effort are at present more focussed towards the management of the pilgrims of Hemkund Sahib and Chardham.
2. The staff amenities at Ghangaria are inadequate and not commensurate with those required for a high-altitude park.
3. There is need for creating a separate Range Office and staff for the park, which at present is part of the Govindghat Range.
4. The enhancements of the tourism infrastructure facility at Hemkund and the resultant increase in the number of pilgrims are impacting the fragile ecology of the park.
5. The inadequate winter patrolling in the park has increased the threat of poaching of endangered wildlife.
6. The River Puspawati is getting polluted by the garbage of the Hemkund pilgrims. The damming of the river and the creation of a power-generation unit with the associated infrastructure are impacting the ecology of the park.

Immediate Actionable Points

1. The current Management Plan should be revised to address the present and future

challenges, especially those relating to the habitat, protection, tourism/pilgrims and climate/ecology change management.

2. The biodiversity of the park is very rich and it has a strategic location, but the staff and infrastructure provided are not adequate to manage it effectively. A Range Officer needs to be posted at Ghangaria exclusively for the Valley of Flowers, with at least 20 Forest Guards and a proportionate number of Foresters. They must be equipped with modern high-altitude patrolling gear, uniforms and other facilities for such difficult terrain as provided to military personnel.
3. At present, there are no staff members within the park during winter. As a result, there is no monitoring of this unique biodiversity and surveillance and patrolling for protection of the habitat during winter. Thus arrangements should be made to conduct patrolling in winter to control poaching from Hanuman Chatti, from Hemkund Sahib and from across the international boundary. Retired military personnel may be engaged for the purpose.
4. No anti-poaching camp has been established within the National Park. The Forest Guards and other officials operate from Ghangaria. Their movements are quite restricted and it is difficult to cover the tough terrains during harsh winter. Thus there is a need to establish a few camps at suitable locations with all facilities where staff members can stay throughout the year for surveillance and patrolling.
5. The concerns of subordinate frontline staff members posted in remote areas need to be addressed by the DFO. Issues of accommodation, drinking water, sanitation, patrolling gear, illness, etc. need to be attended on priority basis and not left at the disposal of the Range Officer, who hardly gets time to visit the inaccessible Valley of Flowers.
6. The frequency of visits to the park by officers needs to be increased for better management and developing confidence among the subordinate staff members posted at Ghangaria.
7. Additional equipments are required for enhancing protection capabilities. There is a need for 50 camera traps, 20 night-viewing cameras, 20 pairs of binoculars, two sets of drones, 50 GPS, 20 camp gear units, three revolvers/pistols and wireless sets. An interpretation centre and staff quarters for housing staff in this remote area should be provided on priority.
8. Research and documentation need to be promoted more. The Wildlife Institute of India may be requested to provide a 5-year research and monitoring protocol plan.
9. Tourism should be regulated as per the management plan and local trained guides should be deployed for tourism in the designated area. The other area should be accessible for research work only.
10. Since the staff move within the sanctuary and outside only on foot, they need be provided with the concessional fare in the helicopter service, which will save them from the hardships of moving 14 km on foot from Ghangaria to Govindghat and back. This facility is available to the President of the Ecodevelopment Committee.
11. The Ecodevelopment Committee needs to be guided and motivated to give more time for the protection and conservation of the Valley of Flowers instead of concentrating on managing the tourism for Hemkund Sahib.
12. At present the forest rest houses are controlled by District Magistrate to accommodate pilgrims round the year, the forest officials while on duty have to secure permission and as per exigency of situation are unable to camp and perform their duty. The Government of Uttrakhand should maintain the rest houses and reserve them for forest officials to efficiently discharge their duty in the remote and inaccessible areas.

Evaluators
Shri S.S. Srivastva, Former PCCF & HoFF, Odisha
Dr. D.S. Shrivastava, Former Professor, Patna University, Patna
Dr. Afifullah Khan, Professor, Aligarh Muslim University, Aligarh
Dr. V.P. Uniyal, Scientist, WII, Dehradun

SOUTHERN REGION 3.2

S. No.	Protected Area	State
1.	Kambalakonda WLS	Andhra Pradesh
2.	Koundinya WLS	Andhra Pradesh
3.	Pulicat Lake WLS	Andhra Pradesh
4.	Rajiv Gandhi (Rameswaram) NP	Andhra Pradesh
5.	Dr. Salim Ali Bird (Chorao) WLS	Goa
6.	Adichunchunagiri Peacock WLS	Karnataka
7.	Arabithittu WLS	Karnataka
8.	Attiveri Bird WLS	Karnataka
9.	Brahmagiri WLS	Karnataka
10.	Chincholi WLS	Karnataka
11.	Daroji Bear WLS	Karnataka
12.	Ghataprabha Bird WLS	Karnataka
13.	Gudekote Sloth Bear WLS	Karnataka
14.	Malai Mahadeshwara WLS	Karnataka
15.	Melkote Temple WLS	Karnataka
16.	Anamudi Shola NP	Kerala
17.	Aralam WLS	Kerala
18.	Chimmony WLS	Kerala
19.	Chinnar WLS	Kerala
20.	Chulannur Peafowl WLS	Kerala
21.	Pambadum Shola NP	Kerala
22.	Cauvery North WLS	Tamil Nadu

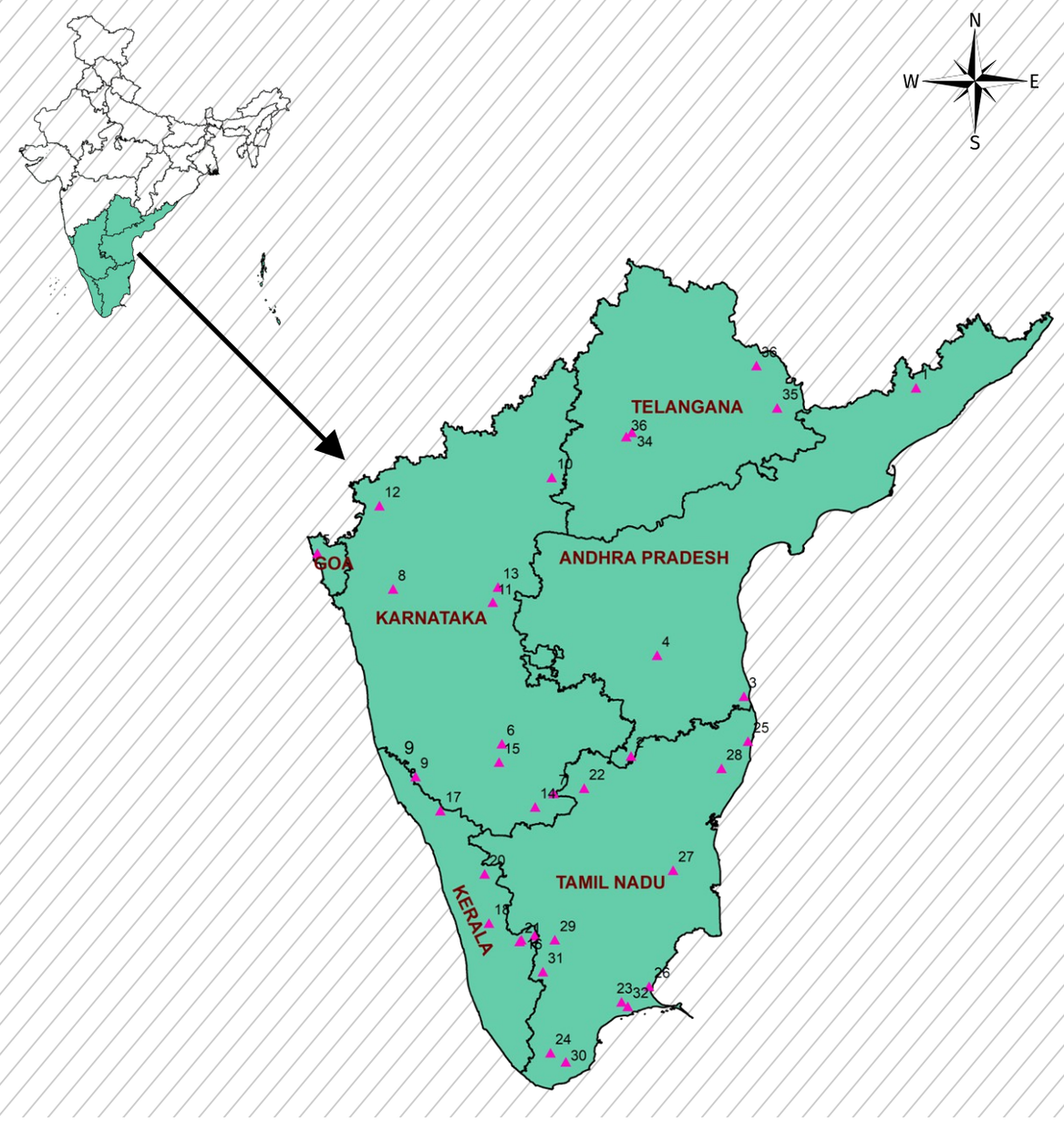
Seema Bhatt



S. No.	Protected Area	State
23.	Chitrangudi Bird WLS	Tamil Nadu
24.	Gangaikondam Spotted Deer WLS	Tamil Nadu
25.	Guindy NP	Tamil Nadu
26.	Kanjirankulam Bird WLS	Tamil Nadu
27.	Karaivetti Bird WLS	Tamil Nadu
28.	Karikilli Birds WLS	Tamil Nadu
29.	Kodaikanal WLS	Tamil Nadu
30.	Koonthankulam-Kadankulam WLS	Tamil Nadu
31.	Megamalai WLS	Tamil Nadu
32.	Melaselvanoor-Keelaselvanoor WLS	Tamil Nadu
33.	Eturnagaram WLS	Telangana
34.	Kasu Brahmananda Reddy NP	Telangana
35.	Kinnersani WLS	Telangana
36.	Mrugavani NP	Telangana

Udayan Borthakur





S. No.	Protected Area	State
1.	Kambalakonda WLS	Andhra Pradesh
2.	Koundinya WLS	Andhra Pradesh
3.	Pulicat Lake WLS	Andhra Pradesh
4.	Rajiv Gandhi (Rameswaram) NP	Andhra Pradesh
5.	Dr. Salim Ali Bird (Chorao) WLS	Goa
6.	Adichunchunagiri Peacock WLS	Karnataka
7.	Arabithittu WLS	Karnataka
8.	Attiveri Bird WLS	Karnataka
9.	Brahmagiri WLS	Karnataka
10.	Chincholi WLS	Karnataka
11.	Daroji Bear WLS	Karnataka
12.	Ghataprabha Bird WLS	Karnataka
13.	Gudekote Sloth Bear WLS	Karnataka
14.	Malai Mahadeshwara WLS	Karnataka
15.	Melkote Temple WLS	Karnataka
16.	Anamudi Shola NP	Kerala
17.	Aralam WLS	Kerala
18.	Chimmony WLS	Kerala

S. No.	Protected Area	State
19.	Chinnar WLS	Kerala
20.	Chulannur Peafowl WLS	Kerala
21.	Pambadum Shola NP	Kerala
22.	Cauvery North WLS	Tamil Nadu
23.	Chitrangudi Bird WLS	Tamil Nadu
24.	Gangaikondam Spotted Deer WLS	Tamil Nadu
25.	Guindy NP	Tamil Nadu
26.	Kanjirankulam Bird WLS	Tamil Nadu
27.	Karaivetti Bird WLS	Tamil Nadu
28.	Karikilli Birds WLS	Tamil Nadu
29.	Kodaikanal WLS	Tamil Nadu
30.	Koonthankulam-Kadankulam WLS	Tamil Nadu
31.	Megamalai WLS	Tamil Nadu
32.	Melaselvanoor-Keelaselvanoor WLS	Tamil Nadu
33.	Eturnagaram WLS	Telangana
34.	Kasu Brahmananda Reddy NP	Telangana
35.	Kinnersani WLS	Telangana
36.	Mrugavani NP	Telangana

1. Kambalakonda Wildlife Sanctuary, Andhra Pradesh

Management Strengths

1. A small protected area (71 km2), amidst the urban environment of fast-growing Visakhapatanam. Kambalakonda Wildlife Sanctuary (KWLS) has a well-laid strategy for protection and infrastructure development. KWLS has an approved Management Plan in place.
2. This sanctuary is relatively free of human disturbances except an enclaved village. The sizeable population of the village is engaged by the protected area as trackers/watchers. KWLS takes livelihood dependence seriously, and the traditional dependence on resources is being reduced gradually.
3. KWLS serves as an important habitat in the larger landscape. The area has been consolidated and protected well.
4. The ecosensitive zone (ESZ) notification was issued by the MoEFCC in January 2016.
5. Recently, NGOs such as Wildlife Conservation Society (WCS) have been associated with the management for providing technical support.

Management Weaknesses

1. Owing to its urban location, the protected area is under the constant threat of encroachment despite the sanctuary having a boundary wall all around.
2. Eco-development planning and other necessary interventions are yet to be initiated to reduce the traditional resource dependence of the enclaved village as well as the villagers in the ESZ.
3. Habitat improvement works, viz. removal of weeds and exotics and construction of water conservation structures, require priority attention.
4. The scope of stakeholder participation in the management of the protected area needs to be expanded.
1. The efforts made to create awareness and publicity are minimal. The protected area needs adequate signages and publications. A website, an interpretation centre and nature trails need to be created.
2. The state government is yet to constitute the advisory committee of the protected area as stated in Section 33 B of the Wildlife (Protection) Act, 1972.

Immediate Actionable Points

1. Science-based backstopping is needed urgently to improve the management of the protected area by way of creation of baseline information and GIS-based spatial layers of land use and land cover within and around the protected area, vegetation changes, distribution and abundance of animal species, etc. Socio-economic studies on the traditional dependence of resources and on the conflict issue are also required on a priority basis.
2. The enclaved village, having a population of about 200 families, needs active consideration and support for relocation and rehabilitation to an alternate site or at least to the periphery of the protected area so as to remove the current disturbance in the central part of the sanctuary. Once the village has been relocated, the Government of Andhra Pradesh may consider upgrading the legal status from Sanctuary to a National Park.
3. Considering the large number of visitors to the protected area, a tourism management strategy needs to be developed on a priority basis.
4. Local universities and scientific organisations need to be encouraged and supported to undertake priority research and monitoring studies (on the population dynamics of major animal and plant species and creating baseline information).

5. Initiation of appropriate soil and moisture conservation works will greatly enhance the water regime within and outside the protected area.
6. Some pockets of this protected area are extremely vulnerable. Therefore, protection measures need to be strengthened by way of establishment of patrolling camps and fire watch towers, maintenance of fire-lines and trekking routes, etc. on a priority basis.

Evaluators
Shri Hari Kumar, Former CWLW, Kerala
Dr. Rajah Jayapal, Scientist, SACON, Coimbatore
Dr. P.K. Mathur, Former Dean-FWS, WII, Dehradun
Dr. Bitapi Sinha, Scientist, WII, Dehradun

2. Kaundinya Wildlife Sanctuary, Andhra Pradesh

Management Strengths

1. The conservation values of Kaundinya Wildlife Sanctuary (KWS) have been systematically identified, assessed and monitored.
2. The management of the protected area has succeeded to a large extent in achieving its primary objectives of maintaining the elephant population that migrated to this area after a long gap and of reducing the human-elephant conflict and biotic pressure on the resources of KWS.
3. The protected area has received considerable resource inputs in terms of protection measures, area consolidation, soil and moisture conservation, installation of water-harvesting devices and carrying out eco-development activities.
4. KWS has an approved Management Plan and adequate human resources to deal with aspects of protecting the area. The frontline staff are young, energetic and passionate. The vehicles and field equipment are adequate for undertaking various protected area management activities.
5. The population of wild elephants in the sanctuary is being monitored effectively by involving the scientific community.

Management Weaknesses

1. The elongated shape of the protected area, its large interface with people and the eight enclaved villages within KWS are enormous protection issues for the management of the protected area.
2. Owing to the high biotic pressure that existed in the past, a large part of the protected area has been degraded and is infested with weeds.
3. The community participation in protected area management activities is limited.
4. Visitor and tourism management activities in the protected area were ignored for long. The basic amenities provided for visitors are insufficient.
5. The state government is yet to constitute an advisory committee for the protected area as specified in Section 33 B of the Wildlife (Protection) Act, 1972.

Immediate Actionable Points

1. KWS is the only "elephant reserve" in Andhra Pradesh as this protected area has succeeded in confining and maintaining the wild elephants that migrated here long ago. Planning for managing the elephant population from a long-term perspective, habitat maintenance and resolution of the human-elephant conflict are vital for the future success of the protected area itself, for the isolated elephant population and for the conservation goals of KWS. This requires initiation of appropriate scientific studies and constitution of a high-level expert group to plan appropriate strategies.
2. Creation of baseline information and a GIS database and regular monitoring of the populations of plant and animal species in the protected area are urgently required.
3. Enhancing awareness about the sanctuary by way of formulating an appropriate strategy and, inter alia, developing a modern education and interpretation centre, running nature camps, creating a website, installing signages, producing brochures, etc. is needed.
4. The management of the protected area needs an appropriate mechanism for monitoring various resources regularly.

Evaluators
Shri Hari Kumar, Former CWLW, Kerala
Dr. Rajah Jayapal, Scientist, SACON, Coimbatore
Dr. P.K. Mathur, Former Dean-FWS, WII, Dehradun
Dr. Bitapi Sinha, Scientist, WII, Dehradun

3. Pulicat Bird Sanctuary, Andhra Pradesh

Management Strengths

1. Pulicat Wildlife Sanctuary (PWLS) is the second largest lagoon in India, and it was rightly declared a Wetland of National Importance by MoEFCC in 1981. It is also an Important Bird Area (IBA) and has been placed under Category I of CRZ.
2. The present approved Management Plan appropriately identifies conservation values, describes most of the threats to the protected area and incorporates appropriate strategies to overcome various challenges and threats.
3. The available evidence indicated that there is adequate support from the local communities for protection of migratory and resident bird species. No poaching incidences were reported.
4. The active collaboration and participation of NGOs/NGIs has strengthened the hands of the management in conserving PWLS.
5. The protected area conducts conservation awareness programmes regularly. The Environment Education Centre (EEC) at Attakanithippa is well organised. As a new initiative, the protected area has started organising the "Flamingo Festival".
6. The management of the protected area has adequate modern field equipment for monitoring bird populations, and the frontline staff have been trained to monitor bird populations on a regular basis. Thus, the protected area has created data through bird counts in the past 7 years, which is a commendable effort.

Management Weaknesses

1. The protected area has considerable issues related to the survey and demarcation of boundaries, and there is overall ambiguity about the area owing to different areas of the sanctuary being controlled by various agencies, including islands with revenue villages.

2. The protected area suffers from intense biotic pressures.
3. The settlement process was ineffective, which has resulted in loss of control over most of the protected area. Under the current circumstances, the management of the protected area has direct control over only 17 ha of the 600 km2 area notified as reserved forests. Many line agencies such as the revenue, irrigation and fisheries departments have conflicting interests and controls.
4. Exotics and invasive weeds are proliferating in the vast expanse of PWLS.
5. Eco-development planning and appropriate measures are absent.
6. The state government is yet to constitute an advisory committee for this protected area as prescribed in Section 33 B of the Wildlife (Protection) Act, 1972.

Immediate Actionable Points

1. Gradually, the protected area has lost its ecological integrity owing to poor surveying and demarcation of the area and handing over of considerable chunks of prime habitats to other agencies including SHAR. The conservation-priority lagoon (PWLS) needs to be scientifically considered from the landscape/seascape perspective (e.g. linkages with upstream rivers, Nellapattu Wildlife Sanctuary and the marine area) and the long-term conservation planning perspective.
2. Considering the ambiguity in the extent of PWLS in various records, a prioritised survey and demarcation of PWLS is of prime importance and needs to be undertaken as a priority activity.
3. The process of zoning the sanctuary as core, no-go area, multiple-use or buffer and tourism zones is another important aspect of protected area management that needs to be carried out on a priority basis with the involvement of various stakeholders.
4. Considering the complexity and dynamic nature of PWLS, the park management may be allowed to engage the services of a qualified ecologist, a sociologist and other professionals related to hydrology, fisheries, GIS, etc.
5. The protected area suffers on account of periodic closing of three sea mouths that are vital for the ecological integrity and dynamic nature of the lagoon. It is proposed that a high-level expert committee be constituted by the CWLW that includes professional experts so as to look into various aspects of the maintenance of the sea mouth and the likely implications of dredging in such areas as indicated in the Management Plan.
6. Considering the complexity and dynamic nature of the lagoon and adjacent habitats and the absence of vital baseline information relating to various physical, biological, management and socio-economic aspects of the protected area, prioritised research programmes need to be initiated, encouraged and supported by involving state and national level scientific organisations.
7. PWLS has a dedicated Deputy Conservator of Forests and two Range Forest Officers. More frontline staff must be posted, taking the services of eco-development committees for protection, considering the vastness of the area and the plethora of protection issues.

Evaluators
Shri Hari Kumar, Former CWLW, Kerala
Dr. Rajah Jayapal, Scientist, SACON, Coimbatore
Dr. P.K. Mathur, Former Dean-FWS, WII, Dehradun
Dr. Bitapi Sinha, Scientist, WII, Dehradun

4. Rajiv Gandhi National Park, Andhra Pradesh

Management Strengths

1. Rajiv Gandhi National Park (RGNP) was notified and established in October 2005 by carving out a portion of Rameswaram Reserve Forest. RGNP is the green lung of the ever-expanding Proddutur town. The management has been successful in protecting the area from encroachment and in stabilising the sand dunes within the park.
2. The Management Plan has been approved. It is well written and has explicitly spelt out the threats faced by RGNP. It also provides strategies to address these threats.
3. The core zone of the national park (2 km2) has been afforded full protection and maintained as a no-go area. This has allowed natural succession to take place, and the peripheral area adjoining the national highway (0.39 km2) is being maintained as a community-based ecotourism area.
4. The ecosensitive zone (ESZ) notification in May 2017 has incorporated 500 m around RGNP, including four peripheral villages of Kadapa District. This notification strengthens the hands of the management of the protected area to manage this green lung of the city effectively.
5. RGNP is being managed with the active support of Nanganuripalli Van Samrakshana Samiti (VSS).
6. RGNP has adequately developed basic facilities for visitors. The visiting area has a well laid out nature trail, watch towers, pagodas and an amphitheatre.

Management Weaknesses

1. RGNP is a small wilderness island amidst a human-dominated urban landscape without connectivity to the wider ecological network. The Kamlapuram Reserve Forest is the only adjacent forest patch. It is at a crow fly distance of 5 km.
2. RGNP does not have any exclusive staff members for management despite receiving nearly 90,000 visitors per annum. Only four daily wagers, including one woman, from the Nanganuripalli VSS, are being engaged on a regular basis.
3. Human resourced and funds are major constraints in implementing the prescriptions of the approved Management Plan.
4. The current approved Management Plan provides a detailed list of priority research and monitoring activities. The research agenda needs to be initiated on a priority basis.

Immediate Actionable Points

1. Strengthening the boundary wall of the protected area is required on a priority basis.
2. The area has been well protected since its establishment as a protected area, and the biotic pressure has been reduced to a great extent. The need of the hour is to initiate scientific management of the protected area as prescribed by the approved Management Plan. The progress accomplished needs to be monitored regularly.
3. The native floral communities of RGNP need to be restored ecologically by way of phased removal of the predominant exotic, Prosopis juliflora.
4. Exclusive human resources (DCF/ACF) and frontline staff are needed for effective implementation of the approved Management Plan of RGNP, and adequate funds are vital.
5. Baseline information, a GIS database, the spatial and temporal changes in land use and land cover in the park, and estimates of populations and their trends are urgently needed. Local universities and scientific organisations need to be encouraged and supported in this regard.

6. There are four VSS in peripheral villages in the ESZ, out of which only one, Nanganuripalli VSS, is active and contributes to the protection and management of RGNP; the other three are yet to be involved. The need of the hour is to strengthen the eco-development initiatives and implement the Management Plan effectively.

Evaluators
Shri Hari Kumar, Former CWLW, Kerala
Dr. Rajah Jayapal, Scientist, SACON, Coimbatore
Dr. P.K. Mathur, Former Dean-FWS, WII, Dehradun
Dr. Bitapi Sinha, Scientist, WII, Dehradun

Khurshid Alam Khan



5. Salim Ali Bird Sanctuary, Goa

Management Strengths

1. This is a small protected area with mangroves and associated coastal and marine environment. It is an excellent example of an area with rich biodiversity exhibiting complex ecological processes and ecosystem integrity.
2. Despite the short history of the protected area beginning only after the liberation of Goa, the sanctuary has done commendable work in terms of identification and assessment of the values, protection and management of resources, integrated planning, addressing the issues of the protected area-people interface, conducting awareness campaigns and increasing tourism potential among the visitors coming to Goa.
3. The protected area has a well written and approved Management Plan. The management of the protected area makes efforts to safeguard the biodiversity values by way of adoption of participatory approaches, eco-restoration and monitoring.
4. This protected area has been the subject of scientific and social studies, and has been able to create desired baseline information.

Management Weaknesses

1. The small size of the sanctuary (1.78 km2) and its location amidst a human-dominated urban setting and a highly vulnerable environment continuously pose tremendous biotic pressures and disturbances.
2. The protected area is greatly influenced by waste and other pollutants generated from the adjacent urban environment.
3. Maintenance of the infrastructure of the protected area poses an enormous challenge due to the tidal currents and other marine disturbances.
4. Considering the complexity and intricacies of the dynamic environment in and around the protected area, the available manpower and financial resources are inadequate.

Immediate Actionable Points

1. A study carried out by BITS Pilani, Goa Campus in 2014 has provided an insight into the linkages of the protected area with adjacent islands, prominent rivers, private habitations, agricultural lands and the urban environment of Riabandar from a wider riverscape/landscape perspective. Efforts, convergence and support are required to accomplish the riverscape/landscape goals.
2. Enhanced continuous support and involvement of the local communities in the management of the protected area are vital.

Evaluators
Shri Hari Kumar, Former CWLW, Kerala
Dr. Rajah Jayapal, Scientist, SACON, Coimbatore
Dr. P.K. Mathur, Former Dean-FWS, WII, Dehradun
Dr. Bitapi Sinha, Scientist, WII, Dehradun

6. Adichunchunagiri Wildlife Sanctuary, Karnataka

Management Strengths

1. Despite Adichunchunagiri Wildlife Sanctuary having been in existence for nearly four decades, the protected area is grossly neglected. The Evaluation Committee could not find any notable strength.

Management Weaknesses

1. The Adichunchunagiri Peacock Sanctuary was first notified in 1981, and the final notification was issued in 1999. Despite the sanctuary having been in existence for the last 36 years, it has received little attention. The current Management Plan is the second in the sequence. The values of the sanctuary are not adequately identified, described, assessed and monitored.
2. During the field visit of the Evaluation Committee and its interactions with the staff of protected area, the members observed that there is considerable encroachment within the sanctuary. Further, the sanctuary is under tremendous biotic pressure, including livestock grazing, collection of small timber and fuelwood.
3. The staff strength in the sanctuary is not adequate. There are only two daily-wage watchers to manage the sanctuary. The permanent staff-Forest Guard, Deputy Ranger and Range Forest Officer-responsible for the management of the sanctuary are stationed approximately 55 km away, at Melokotte, and they have the management of the sanctuary as an additional charge.
4. There is no comprehensive protection strategy in place.
5. The management of the protected area has neither developed linkages with the adjacent mutt authorities of the local temple nor involved local communities, particularly pilgrims.
6. The management of the protected area has not made any systematic efforts to generate baseline information, particularly population estimation of the prominent faunal species is still unavailable. .

Immediate Actionable Points

1. Appropriate urgent action is required to protect the sanctuary effectively and evict encroachments within it.
2. There are an inspection bungalow and an interpretation centre building in the vicinity. These buildings can be utilised as offices for a Range Forest Officer and the frontline staff. Additionally, they can be used to increase awareness about conservation by way of exhibits and other facilities for visitors, especially the pilgrims.
3. The sanctuary has only 80 ha under its control. About 400 ha. of forests contiguous to Sanctuary can be added to it so as to ensure the ecological integrity of the protected area and enhance its conservation values.
4. There is no systemic evaluation and routine reporting of trends. The authorities should explore the possibility of collaborating with local institutions, universities and reputed NGOs for conducting research.
5. When the Committee met villagers around the sanctuary, they learnt about the great expectations of the villagers from f the protected area. They expect water for irrigation, employment opportunities and LPG facilities. Adequate manpower and budgetary support are needed to meet these expectations.

Evaluators
Shri Hari Kumar, Former CWLW, Kerala
Dr. Rajah Jayapal, Scientist, SACON, Coimbatore
Dr. P.K. Mathur, Former Dean-FWS, WII, Dehradun
Dr. Bitapi Sinha, Scientist, WII, Dehradun

7. Arabithittu Wildlife Sanctuary, Karnataka

Management Strengths

1. Arabithittu Wildlife Sanctuary (AWLS) has a long history of management. It was first established as a "State Forest Reserve" in 1904 by the then Mysore State. The protected area has had the status of a sanctuary since 1985. The conservation values of the site have been adequately identified and documented in the Management Plan. The protected area has a high conservation significance as it is one of the large forest patches within a radius of 40 km from the rapidly growing city of Mysore. The forest patch of AWLS has great potential to play a vital role in the "source-sink-dynamics" in the larger landscape.
2. Threats to the management of the protected area have been appropriately described in the current Management Plan.
3. A significant central portion of the protected area was provided to DRDO, resulting in a reduction of the area available for wildlife conservation. However, the presence of DRDO and the peripheral fence created by it have contributed positively to the ecological succession in the sanctuary by eliminating livestock grazing and reducing other biotic pressures.
4. The area is effectively protected and there are two patrolling camps. The management of AWLS has carried out systematic soil and moisture activities by way of construction of small check dams, gully plugging and trenching in the recent past.

Management Weaknesses

1. AWLS is an isolated island of wilderness amidst a human and agro-dominated landscape surrounded by multiple villages.
2. Two fences-one around the central core area and the other around the periphery of the protected area-have created a discontinuity between the sanctuary and other natural areas (forest patches of territorial forest divisions/protected areas) and caused a decline in the ecological integrity from the perspective of the wider landscape. The management of the protected area needs to re-examine the objectives of the sanctuary, presented in Chapter V of the current Management Plan, in view of the altered situation in the sanctuary subsequent to the arrival of DRDO.
3. There have been incidences of breaching of the peripheral fence, and there have been occasional reports of poaching using snares in the protected area.
4. The current Management Plan lacks adequate baseline information in view of a lack of encouragement and support for local scientific institutions to carry out research and monitoring activities.
5. The resources, manpower and finances available currently are very inadequate. There is negligible participation of NGOs and NGIs.

Immediate Actionable Points

1. The current flow of essential funds from the state and from CAMPA are just sufficient for the activities of the patrolling camps and for maintenance of the fence around the periphery. An enhanced budget allocation is urgently required for scientific and effective management of the wildlife sanctuary and to undertake activities related to habitat improvement, restoration, population estimation, research and monitoring, eco-development measures and awareness programmes for local communities. Augmentation of financial resources for procuring field equipment essential for protection, research and monitoring is recommended.
2. The Evaluation Committee noted during its interactions with the stakeholders and local communities that the villagers have very high expectations from the protected area and

little to contribute for its improvement. In general, cordial relations were evident between the protected area and the people. However, the villagers expressed concerns about issues related to crop depredation and non-availability of grazing and fodder resources and even adequate water. Micro planning is needed urgently to develop mutually agreeable eco-development initiatives.

3. Positioning the RFO in the vicinity of the sanctuary and entrusting him with the additional task of eco-development are recommended on a priority basis.
4. A re-visit of the Management Plan to incorporate stakeholder perceptions and aspirations, baseline information, changes in the habitat and faunal distribution and abundance is desirable.

Evaluators
Shri Hari Kumar, Former CWLW, Kerala
Dr. Rajah Jayapal, Scientist, SACON, Coimbatore
Dr. P.K. Mathur, Former Dean-FWS, WII, Dehradun
Dr. Bitapi Sinha, Scientist, WII, Dehradun

8. Attiveri Bird Sanctuary, Karnataka

Management Strengths

1. The management of this protected area has appropriately focussed on well-recognised conservation values, namely those of the water body and associated avifauna. The management efforts are aimed at enhancing these values and at ecotourism and nature education.
2. The protected area has been able to develop adequate physical infrastructure to meet the current management objectives.
3. The sanctuary has garnered the support of NGOs and NGIs in collecting vital information on the avifauna, which it uses in its awareness campaigns.

Management Weaknesses

1. This protected area is very small. It is essentially a water tank created by the irrigation department for supplying drinking water to the villages in the vicinity. Over the years, the area has become an attraction point for resident and migratory birds. The management of the protected area is yet to recognise the catchment values of the sanctuary along with the adjoining forest division and the linkages with other wetlands and protected areas from the landscape perspective. There is ample scope to enhance the extent of the protected area by adding the entire Mundgod Range of Yellapur Forest Division.
2. Middle- and higher-level frontline staff members who are exclusively dedicated to this protected area are yet to be provided.
3. A scientific thrust and participatory management approaches are needed for effective management of the protected area.

Immediate Actionable Points

1. The Government of Karnataka and the management of the protected area need to consider seriously the scope of enlarging the extent of the protected area by adding forests (woodland) from the adjoining forest division.

2. The Management Plan needs to be updated urgently so that it incorporates appropriate baseline information and trends of the distribution and abundance of the avifauna, socioeconomic aspects of the peripheral villages, eco-development measures, effective long-term monitoring protocols and nature education.
3. The vacant positions of the frontline staff need to be filled urgently. Additional staff including an exclusive RFO, Deputy Ranger, Research Assistant and Education Officer, are needed.
4. Enhanced funding is needed if the protected area is expected to carry out its multifarious goals and functions meaningfully and optimally in the context of the emerging needs of enhanced ecosystem services, sustainable development and climate change resilience.

Evaluators
Shri Hari Kumar, Former CWLW, Kerala
Dr. Rajah Jayapal, Scientist, SACON, Coimbatore
Dr. P.K. Mathur, Former Dean-FWS, WII, Dehradun
Dr. Bitapi Sinha, Scientist, WII, Dehradun

9. Brahmagiri Wildlife Sanctuary, Karnataka

Management Strengths

1. Brahmagiri Wildlife Sanctuary (BWLS) is a part of a serial World Heritage Site in the Western Ghats biodiversity hotspot. It is a vital connecting link in a larger landscape, maintaining ecological integrity, allowing evolutionary processes and harbouring numerous rare, endangered and threatened (RET) flora and fauna. This protected area has an approved Management Plan describing the conservation significance of the site.
2. The protected area is free of human habitations, and there is no traditional dependence on resources. However, it has a large sanctuary-people interface. In view of this and the significance of the sanctuary as a corridor for the movements and dispersal of wild elephants and other animals, the protected area has adopted an effective and comprehensive protection strategy; which is efficiently protecting an important part of the catchments of three tributaries of the Cauvery River and appropriately addressing issues related to the long inter-state border with Kerala and the human-elephant conflict in adjoining coffee estates and other private lands. "Forests for Water" is the prime motto of the protected area.
3. BWLS has been provided with adequate resources (infrastructure and finances) including buildings (range offices, patrolling camps, barriers, etc.), field equipment (computers, camera traps, GPS, vehicles, etc.) and a wireless communication network for effective protection and sound and scientific management. The adequacy of the funds from the state government reflects the importance accorded to the sanctuary in view of its significance from the landscape perspective.
4. Owing to its peculiar location, close to the junction of three southern states and the popularity of natural and cultural tourism in the area, the sanctuary is gradually growing as a major tourist destination. The protected area has developed a well-planned and regulated ecotourism strategy for promoting adventure tourism in the area. The earnings from tourism activities are being ploughed back for improving and strengthening the management of the protected area.
5. The protected area management had appropriately avails cooperation and collaborated with local scientific institutions, NGOs/NGIs and even the corporates of coffee estates in the management of the sanctuary, particularly in mitigating human-wildlife conflicts and visitor management activities.

Management Weaknesses

1. The management faces challenges on account of the considerable length of the interstate border with Kerala on the southern side, the 20 km long stretch of state highway running along the sanctuary boundary, the arduous hilly terrain, its vulnerability to fire, poaching and the large protected area-people interface.
2. The human resources of the protected area need to be augmented for effective management of the protected area. The nearly 30% vacancies among the frontline staff need to be filled.
3. The attention to eco-development measures is inadequate. This often leads to conflicts and livelihood issues in the surrounding areas.
4. The protected area gathered considerable amounts of field data on vital physical, biological and management aspects of the sanctuary during the plan preparation exercise. However, the management of the protected area is yet to analyse the old data to get an insight into the trends and so that it may be incorporated appropriately in the Management Plan.

Immediate Actionable Points

1. Since the protected area experiences considerable biotic pressure and faces challenges from the adjacent state, the MoEFCC may direct the state of Kerala to take action to notify an eco-sensitive zone along the inter-state boundary of the protected area.
2. The Evaluation Committee observed that the EDCs need to be revived and strengthened. The Evaluation Committee recommends that an appropriate proportion of funds from the adjoining Tiger Conservation Foundation be earmarked for stakeholder participation, participatory planning, specialised training programmes and priority research and monitoring activities.
3. Local scientific institutions need to be encouraged to undertake priority research and monitoring activities and supported in these so that the vital information available on the resources of protected area and its management is augmented.
4. The frontline staff have to be exposed to short-term, customized, theme-based training programmes. The services of local institutions and experts have to be availed of for these programmes. Further, the staff must participate in regular training courses (Diploma/Certificate in Wildlife Management).
5. Considering the complexity and intricacies of this site, it is vital that all stakeholders, including local communities, be engaged in the planning process of the protected area and revision of the Management Plan.
6. The Evaluation Committee recommends that the management of the protected area organise periodic meetings/seminars with the scientific community for optimal use of first-hand information generated by this community and for scientific exchange.
7. The management of the protected area is improving and regulating newly initiated ecotourism activities. The Evaluation Committee recommends that the management initiate a registration and feedback system for visitors and provide insurance cover to all the tourists visiting the sanctuary.

Evaluators
Shri Hari Kumar, Former CWLW, Kerala
Dr. Rajah Jayapal, Scientist, SACON, Coimbatore
Dr. P.K. Mathur, Former Dean-FWS, WII, Dehradun
Dr. Bitapi Sinha, Scientist, WII, Dehradun

10. Chincholi Wildlife Sanctuary, Karnataka

Management Strengths

1. This protected area is predominantly a forest ecosystem representative of the Deccan Biogeographic Zone, Central Plateau, with dry deciduous forests in a highly drought-prone and rain-fed area. Despite its small size (134.8 km2), this young protected area (established in 2011), facing considerable resource dependence and biotic pressure, is able to maintain most of its values.
2. The management of the protected area has made efforts to protect the area and to reduce and regulate the biotic pressure considerably.
3. The young and dedicated staff of the protected area has adopted an effective protection strategy, with the involvement of the local communities. The habitat management works have improved the resources of the protected area.
4. The protected area has garnered desirable support from the famous corporate in the region, i.e. Chettinad Cement Works (CCW), under the corporate social responsibility activities. CCW has assured the protected area of considerable long-term financial support for activities such as village relocation and rehabilitation.

Management Weaknesses

1. The protected area lacks a well-written and approved Management Plan.
2. Research, monitoring and capacity-building activities have not received the necessary attention.
3. The protected area suffers on account of the traditional dependence of two enclaved villages and 22 peripheral villages on NTFP and livestock grazing. The sanctuary also suffers on account of the large interface with the people, which includes a large stretch of the inter-state border and small, disconnected forest blocks.
4. The final notification of the ecosensitive zone (ESZ) has not yet been issued. Mining in the proposed ESZ is a major threat.

Immediate Actionable Points

1. Baseline information needs to be generated urgently and incorporated into the Management Plan, which is being prepared.
2. Research activities need to be prioritised. The support needed to attract and encourage the research community needs to be provided.
3. Participatory management (including eco-development activities) needs to be strengthened. Efforts need to be made to achieve sectoral convergence.
4. An appropriate mechanism is required to work in coordination with Telengana in monitoring and protecting the resources of the protected area and in curbing illegal activities.

Evaluators
Shri Hari Kumar, Former CWLW, Kerala
Dr. Rajah Jayapal, Scientist, SACON, Coimbatore
Dr. P.K. Mathur, Former Dean-FWS, WII, Dehradun
Dr. Bitapi Sinha, Scientist, WII, Dehradun

11. Daroji Sloth Bear Sanctuary, Karnataka

Management Strengths

1. The protected area has received the necessary attention at all levels and has adequate human, financial and infrastructural support.
2. The protected area has been in existence for the last 25 years and has achieved considerable progress in protection, consolidation of the area and reduction of biotic pressure.
3. The sanctuary harbours a large number of rare, endangered and threatened (RET) species and has diverse special and unique habitats. The protected area has great relevance in the context of the Hampi World Heritage Site. The conservation values have been identified.
4. During the past decade, the sanctuary has undertaken several initiatives under its eco-development activities in peripheral villages.

Management Weaknesses

1. The current plan lacks insight into the proposed integration of the protected area into the larger landscape.
2. Systematic research and monitoring activities are yet to be encouraged and supported by the sanctuary.
3. The area is fragmented in two adjacent blocks. Despite the protected area having been in existence for long, the settlement process is yet to be carried out to issue the final notification.
4. Artificial feeding of sloth bears is practised in the protected area. Such activity should have been discontinued long ago in the national park.

Immediate Actionable Points

1. The artificial feeding of sloth bears in Karadi Hills needs to be stopped immediately.
2. The Management Plan needs to be revised urgently and baseline information on the physical, biological and socioeconomic aspects needs to be incorporated.
3. The significance of the protected area in terms of unique geomorphic, catchment and biodiversity values in the context of larger landscape and Hampi World Heritage site need to be adequately elaborated.
4. A strategy for carrying out comprehensive research and monitoring activities needs to be drawn up. The infrastructure and facilities needed must be provided to attract the scientific community.
5. The notification of the ecosensitive zone (ESZ) is pending. This calls for urgent action.
6. Concerted efforts to carry forward the ongoing eco-development activities are required on a priority basis. It is very desirable to converge various developmental schemes involving different line departments for eco-development activities in fringe areas.
7. Orders need to be issued for ploughing back income from tourism into works related to improvement of the management of the protected area and reducing the biotic pressure.

Evaluators
Shri Hari Kumar, Former CWLW, Kerala
Dr. Rajah Jayapal, Scientist, SACON, Coimbatore
Dr. P.K. Mathur, Former Dean-FWS, WII, Dehradun
Dr. Bitapi Sinha, Scientist, WII, Dehradun

12. Ghataprabha Wildlife Sanctuary, Karnataka

Management Strengths

Ghataprapha Wildlife Sanctuary was first notified in 1974, and final notification was issued in 1999 for an extent of 29.8 km2, incorporating a stretch of the Ghataprabha River with 22 small and large islands. The sanctuary had a good beginning in terms of protection and consolidation of the area, habitat improvement and development of essential physical infrastructure and tourism-related activities. Although the sanctuary is a priority conservation area for the region and the diversity of its flora and fauna, particularly the birds, is very rich, the protected area has been neglected in the past two decades, and most of the values appear to be declining. Thus the Evaluation Committee felt that the protected area does not have any strength.

Management Weaknesses

1. The management of the protected area has not made any efforts towards surveying and demarcation, protection, generation of baseline information and even maintenance of the existing infrastructure.
2. The protected area lacks the frontline staff needed for protection, habitat management and adopting a participatory management approach to conservation.
3. The sanctuary is still under the control of a territorial forest division, namely DFO Gokak, and there are hardly any dedicated staff members.
4. The sanctuary requires a comprehensive and approved Management Plan.

Immediate Actionable Points

1. The foremost priority of the management of the protected area must be to bring the sanctuary under the control of the Wildlife Wing so as to avoid dual control. Secondly, the state government should place essential trained frontline staff at all appropriate levels so that they can perform priority management activities.
2. The support of the scientific community as well as local communities living around the protected area must be elicited urgently to generate baseline information and implement participatory planning approaches to conservation.
3. The protected area needs a well-written and approved Management Plan that focuses on the wider landscape/ riverscape perspective.
4. The Evaluation Committee recommends that the protected area should have considerable and continued funding support to address priority activities to improve the management and to ensure ecological integrity.

Evaluators
Shri Hari Kumar, Former CWLW, Kerala
Dr. Rajah Jayapal, Scientist, SACON, Coimbatore
Dr. P.K. Mathur, Former Dean-FWS, WII, Dehradun
Dr. Bitapi Sinha, Scientist, WII, Dehradun

13. Gudekote Wildlife Sanctuary, Karnataka

Management Strengths

1. Though the wildlife sanctuary is in two separate thorny and dry deciduous patches of forests, it has been relatively compact and free of biotic interference, particularly after its notification as a wildlife sanctuary in 2013.
2. Effective initiatives and leadership at the division and protected area level have resulted in the setting up of essential infrastructure for protection and in a healthy interface with the fringe populations through effective management of the human-wildlife conflict.
3. There have been excellent anti-poaching efforts. Personnel have been engaged and five anti-poaching camps and four watch towers have been established in last two years.
4. Funds received for the wildlife sanctuary are being utilised effectively on priority activities by a responsive management.

Management Weaknesses

1. The documentation and use of park management-related data for planning and assessment is yet to be institutionalised.
2. A road, though it has light vehicular movement now, may be creating a barrier to the free movement of wildlife in the area.
3. Though communication with communities is being attempted, at present there is almost no interface.

Immediate Actionable Points

1. Inventory of the preferred locations of sloth bears for breeding/hibernation need to be carried out so as to provide priority to these areas in protection, habitat consolidation and management planning.
2. Steps should be taken for formulation of a Management Plan based on the inventory data and the data available in the division. A poorly drafted plan was prepared recently and was not been approved.
3. A system should be put in place for recording data related to sightings, kills, road kills and human-wildlife conflicts during the field visits of the staff and collation and analysis of the same for periodic studies of the status of the wildlife and habitat.
4. Steps should be taken for setting up EDCs in the adjacent areas and establishing an institutional system for communication, information and interpretation in relation to the conservation values of the wildlife sanctuary.

Evaluators
Dr. S.K. Khanduri, Former IG (WL), MoEFCC,
Dr. Arun Mani Dixit, Independent Consultant
Dr. Madhusudan, NCF, Mysore
Dr. Parag Nigam, Scientist, WII, Dehradun

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14. Malai Mahadeshwara Wildlife Sanctuary, Karnataka

Management Strengths

1. The location of this wildlife sanctuary in the southern Karnataka tiger landscape gives it specific conservation significance, and high occurrence of wildlife because of intensive management inputs in the adjoining BRT Tiger Reserve and Satyamangalam Tiger Reserve of Tamilnadu.
2. The biodiversity value is high because of the rich diversity of fauna and flora, including Asian elephants, the significant bird diversity and the sandalwood forests.
3. The management interventions, including protection measures, have resulted in fast and good recovery of the habitat, including tree cover.
4. The intensive management in the tiger reserve adjacent to the sanctuary provides good examples and information base that can be useful for management of the protected area. The team felt the information base on landscape around the tiger reserve provides useful information on it, which can be effectively used for PA management.

Management Weaknesses

1. There are almost no institutionalised protocols for monitoring, assessment and data/information documentation and analysis in this relatively new wildlife sanctuary.
2. The habitat is fragmented by 19 enclosures with 26 villages, and the cattle population of 1.7 lakhs poses a grave challenge to the management team of the protected area. From the original PA management, it was meant to be the managing institution and not management as a process.
3. The free movement of a large cattle population from Tamilnadu for grazing exerts additional pressure on the forest fringes.
4. The engagement of the community is so weak that even erstwhile Joint Forest Management Committees (JFMCs) are not active. The management needs to develop its resolution to engage communities through eco-development.

Immediate Actionable Points

1. The formulation of a Management Plan is the action required foremost. As this would be the first one for the sanctuary. Elaborate mapping, inventory and assessments of habitat elements must be undertaken to develop a long-term management strategy before a 10-year management plan is actually conceived. Involvement of the adjacent territorial and tiger reserve management should be ensured to reconcile the approach of the management.

Seema Bhatt



2. Safeguarding the established elephant corridors such as Doddasampige-Edyarahalli and Hoogyam-Miniathulla requires an intensive and focused approach including active engagement with the communities. Efforts on these aspects should be planned keeping this aspect in view.
3. The existing JFMCs and their plans/activities need to be redesigned in light of the objectives of the management having changed from those of the earlier managed forests to those of a wildlife sanctuary. While this is to be done on priority, the people have to be convinced. Therefore, an emphasis on benefits derived nondestructively from forests, such as tourism, education/interpretation and pilgrimage, can be more rewarding.
4. A strategy to deal with the large free-grazing cattle population would be a priority. This strategy can be formulated and implemented by all the protected areas-BRT Tiger Reserve, MM Hills Wildlife Sanctuary and Cauvery Wildlife Sanctuary (Karnataka)-together in consultation with North Cauvery Wildlife Sanctuary and nearby forest divisions of Tamilnadu. This engagement with the forest department of the neighbouring state will be essential for protection work also because of the common boundaries.

Evaluators
Dr. S.K. Khanduri, Former IG (WL), MoEFCC,
Dr. Arun Mani Dixit, Independent Consultant
Dr. Madhusudan, NCF, Mysore
Dr. Parag Nigam, Scientist, WII, Dehradun

15. Melkote Wildlife Sanctuary, Karnataka

Management Strengths

1. Being a representative of a separate physiography, the wildlife sanctuary has the potential to recover as a vibrant wolf habitat.
2. With the location of the sanctuary between Shravanbelugola and the Melukote temple complex and its ecotourism values, the enthusiasm of communities can be used effectively to secure their participation in conservation.
3. The seemingly increasing number of leopards in the area and the forest landscape extending into the neighbouring territorial forests of KR Pette to the west and Nagamangala Territorial Forest to the north can complement the conservation efforts.

Management Weaknesses

1. Though dedicated to the Indian wolf, there have been no sightings of this animal for many years. As such, the loss of the significance of this protected area as a wolf sanctuary is a setback to the objective of conservation.
2. Being separate from the southern Karnataka tiger landscape continuum, as an isolated wildlife sanctuary, Melkote has not been able to attract support commensurate to its conservation value. This is one of the four wildlife sanctuaries managed by the DCF Wildlife Mysore.

Immediate Actionable Points

1. Assess the potential of the area to hold a fresh population of the Indian wolf and plan management interventions accordingly

2. Assess the implications and carefully plan management interventions related to the large-scale eucalyptus and other plantations in the area, keeping in view the objective of the sanctuary to serve as a protected area dedicated to the Indian wolf.
3. Establish a close partnership with the neighbouring communities to ensure a positive response to conservation efforts in light of impending wildlife conflict matters arising out of a seemingly increasing leopard population.
4. Work on effective interpretation and publicity campaigns relating to the conservation value and plan ecotourism management arrangements using the cultural significance of the neighbourhood.

Evaluators
Dr. S.K. Khanduri, Former IG (WL), MoEFCC,
Dr. Arun Mani Dixit, Independent Consultant
Dr. Madhusudan, NCF, Mysore
Dr. Parag Nigam, Scientist, WII, Dehradun

16. Anaimudi Shola National Park, Kerala

Management Strengths

1. Relatively compact area rich in plants and smaller animals
2. Adequate staff and funding
3. Good systems of record-keeping
4. Self-sufficient and supportive EDCs

Management Weaknesses

1. Growing pressure on road from Mannavan Shola to Kanthalur
2. Boundary/extent not yet well demarcated

Immediate Actionable Points

1. Need to take up evaluation of biodiversity of the high-altitude ecosystems and integrate management information already being collected systematically to work towards restoration of the biodiversity values.
2. More systematic efforts to experiment with removal of exotic plantations and assess effectiveness of different methods
3. Nature education and interpretation work could be expanded along the lines of the work being carried out in Pampadum Shola National Park
4. The recent mid-year decision of the state government to limit the budget allocation to its share in the centrally sponsored scheme to be reviewed and to release state share only after receipt of central share and state funds to be sought for management of protected areas.

Evaluators
Dr. S.K. Khanduri, Former IG (WL), MoEFCC,
Dr. Arun Mani Dixit, Independent Consultant
Dr. Madhusudan, NCF, Mysore
Dr. Parag Nigam, Scientist, WII, Dehradun

17. Aralam Wildlife Sanctuary, Kerala

Management Strengths

1. Relatively compact area, extremely well connected to other protected areas within and adjoining Kerala
2. Floristically and faunistically very rich; excellent tradition of long-term monitoring of birds
3. Adequate staff and funding
4. Good systems of record keeping; investment made in biologist to ensure regular inflow of biological monitoring information
5. Excellent nature education and outreach efforts and infrastructure
6. Absence of settlements inside the sanctuary
7. Active system of issuing elephant alerts via text messages, with about 500 registrants

Management Weaknesses

1. The staff of Aralam are additionally tasked with the management of Kottiyoor Wildlife Sanctuary.
2. The presence of 4-6 elephants on the wrong side of the concrete barrier on the western flank (Aralam Farm) has led to many incidents of crop loss and recent incidents of human casualties.
3. The interface with the (non-tribal) villages south of the park is entirely out of the park's domain and has been left to the Kannur Territorial Division.

Immediate Actionable Points

1. The Kerala Forest Department (KFD) must provide additional staff and support for Kottiyoor, rather than add it as an additional responsibility to the staff and management of Aralam; alternatively, the department may proactively merge Kottiyoor with Aralam and strengthen the management.
2. Short-range translocation of elephants on the Aralam Farm side into the park after strengthening the barriers on the western side
3. Expand the long-term monitoring efforts beyond birds to include butterflies, mammals and other groups, in collaboration with NGOs and academic institutions.
4. The decision (taken during FY 2018) of the state government to restrict the budgets of protected areas to the state's share of the centrally sponsored scheme of the Central Government should be reviewed, and an independent budget stream may be started for the protected areas of the state. It would be very helpful if the prevailing confusion and resource crunch are set right at the earliest.

Evaluators
Dr. S.K. Khanduri, Former IG (WL), MoEFCC,
Dr. Arun Mani Dixit, Independent Consultant
Dr. Madhusudan, NCF, Mysore
Dr. Parag Nigam, Scientist, WII, Dehradun

18. Chimmony Wildlife Sanctuary, Kerala

Management Strengths

1. Relatively compact and well-connected area with excellent moist deciduous/semi-evergreen forests with high diversity of region's floristic and faunal elements
2. Absence of permanent settlements inside the park and the relative difficulty of access (owing to Chimmony reservoir and adjacent ridges) provides the area natural protection.

Management Weaknesses

1. Relatively weak management plan that does not lay out the area's values or management priorities in a clear and focused manner

Immediate Actionable Points

1. Improvement in record-keeping, especially in relation to the actions of the management of the protected area, would greatly help by providing insights for planning and management.
2. Some serious thought needs to go into whether and why soil and water conservation pits need to be created as a means of habitat 'restoration' inside excellent semi-evergreen forests. If necessary, these proposals, which are unscientific and ecologically damaging, may be reconsidered although they appear in the park's Management Plan.
3. Poor rights regimes (especially Community Forest Rights) for the local Malayar tribal community, who are part of the park's EDCs, while most of the NTFP harvest, de facto, is being carried out by the Kadar tribals of adjoining Chalakudy Division. In view of the Kadars' accessing Chimmony (while residing in an adjoining division), there needs to be a system of bringing them under the purview of the management of Chimmony Wildlife Sanctuary.
4. A recent mid-year decision (during FY 2018) by the state government to limit the budget allocation for protected areas on the basis of fund releases by the Central Government has led to a significant downscaling of funds. This was a result of the state deciding to restrict the state allocation to the state's share of the 60 (Central):40 (State) sharing pattern for protected areas, rather than continue to contribute more than the central share, as it was doing earlier. This resulted in state funds that had been approved and transferred to protected areas being withdrawn in proportion to the Central allocations and transfers received by the protected area. This has led to considerable hardships in the management of protected areas that have not had recourse to Forest Development Agency or other local-level funding mechanisms. It would be very helpful if the prevailing confusion and resource crunch were to be set right at the soonest.

Evaluators
Dr. S.K. Khanduri, Former IG (WL), MoEFCC,
Dr. Arun Mani Dixit, Independent Consultant
Dr. Madhusudan, NCF, Mysore
Dr. Parag Nigam, Scientist, WII, Dehradun

19. Chinnar Wildlife Sanctuary, Kerala

Management Strengths

1. Relatively compact and well-connected protected area with dry thorn forests interspersed with riverine forests, with their unique complement of the region's floristic and faunal elements, including the grizzled giant squirrel and the star tortoise.
2. Extremely dynamic and creative leadership at the division and protected area levels and an inspired park staff down to the level of temporary watchers.
3. Excellent relationship with the local Muthuvan and Hill Pulaya tribal communities and a wide and imaginative portfolio of collaborative work that gives livelihoods, identities and empowerment to these tribal people.
4. Excellent antipoaching efforts, with camps in remote areas, and a well-oiled system of staff rotation from less-accessible to more-accessible stations.
5. Proactive assessment of risks from growing vehicular traffic on the Udumalpet-Munnar interstate highway and institution of speed-reduction measures.
6. Excellent record-keeping and systematic collection of information relevant to management. The presence of a biologist at the division level.

Management Weaknesses

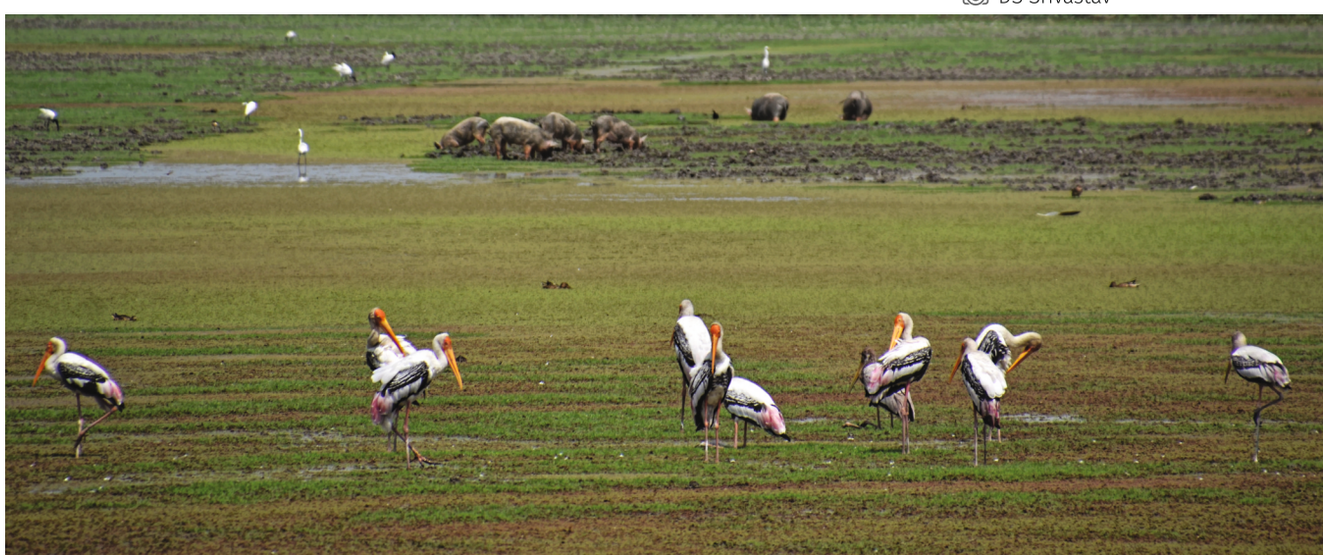
1. Poor organisation and use of park management data such that they do not provide management insights or help internal assessments.
2. Interstate highway passing through the sanctuary, along Chinnar Valley, posing a barrier to free movement of wildlife in the area.

Immediate Actionable Points

1. Better record-keeping, especially relating to the actions of the management of the protected area, would greatly help by providing insights for planning and management.
2. A review of the decision of the state government to limit the budgets of protected areas to the state's share of the allocation received from the Central Government, which has led to a significant down scaling of funds.

Evaluators
Dr. S.K. Khanduri, Former IG (WL), MoEFCC,
Dr. Arun Mani Dixit, Independent Consultant
Dr. Madhusudan, NCF, Mysore
Dr. Parag Nigam, Scientist, WII, Dehradun

DS Srivastav



20. Chulanur Wildlife Sanctuary, Kerala

Management Strengths

1. This is a small area without human settlements inside. This makes the sanctuary potentially a good location for fostering nature education in an area where forests are located far away.
2. Excellent nature education and interpretation facilities for conducting nature camps for children

Management Weaknesses

1. Relatively weak management plan and unclear management objectives that do not lay out the area's values or management priorities in a focused manner
2. Intense pressure on the sanctuary, as it is a small park marooned in a densely settled landscape
3. Hostility from local community

Immediate Actionable Points

1. Take a proactive stance to seeking legal resolution of the series of litigations concerning the creation and management of this protected area. These cases relate to issues with the past history of vesting of these forests, as well as contest over mining as a permissible activity in the immediate vicinity of the park.
2. Initiate conversation with local communities on the fringe of the park, with whom the relations of the protected area are currently indifferent at best.
3. Establish an annual monitoring programme for peafowl and assess the nature and extent of the interactions of the peafowl with the local communities (who supposedly complain of crop damage caused by peafowl).
4. Review the recent mid-year decision (during FY 2018) of the state government to limit the budgets of protected areas only based on the centrally sponsored scheme of the Central Government.

Evaluators
Dr. S.K. Khanduri, Former IG (WL), MoEFCC,
Dr. Arun Mani Dixit, Independent Consultant
Dr. Madhusudan, NCF, Mysore
Dr. Parag Nigam, Scientist, WII, Dehradun

21. Pampadum Shola National Park, Kerala

Management Strengths

1. Relatively compact area with wet evergreen forests and a wide complement of the region's floristic and faunal elements. Excellent sightings of Nilgiri marten and other small carnivores.
2. Absence of settlements in the park
3. Excellent record-keeping
4. Excellent nature education and interpretation facilities; creative and imaginative engagement of nature camp participants in park management activities (such as restoration)

Management Weaknesses

1. Large part of the area under plantations of eucalyptus and pine
2. Relatively poor coordination with Tamilnadu on the inter-state border
3. The road passing through the park is getting busier.

Immediate Actionable Points

1. Better organisation, access and basic analytics of records, especially those relating to the management of the protected area, would greatly help by providing insights for planning and management.
2. A review of the recent decision of the state government to limit the budget allocation for protected areas to the state's share of funds released by the Central Government under Centrally Sponsored Schemes (CSS).

Evaluators
Dr. S.K. Khanduri, Former IG (WL), MoEFCC,
Dr. Arun Mani Dixit, Independent Consultant
Dr. Madhusudan, NCF, Mysore
Dr. Parag Nigam, Scientist, WII, Dehradun

22. Cauvery North Wildlife Sanctuary, Tamil Nadu

Management Strengths

1. Part of a large elephant landscape with contiguous forests in the south and west.
2. The area is included in the Mysore Elephant Reserve, and thus there are existing management linkages beyond the wildlife sanctuary.
3. As elephant conservation and related issues have been part of the management strategy of Hosur Forest Division, the wildlife sanctuary has the background of existing experience related to the management objectives.
4. Several locations are promising for nature tours and wildlife sightings. A few spots have been developed and are being developed. The protected area can carry out very good awareness and sensitisation programmes in such places in a planned manner.
5. The large forest tracts on the southern side in the Urigam and Anchetty forest ranges of Hosur Division and on the eastern side in the Pennagaram Forest Range of Dharmapuri Division are contiguous with a landscape containing Cauvery Wildlife Sanctuary (Karnataka), Malai Mahadeshwara Hills Wildlife Sanctuary, BRT Tiger Reserve and Sathyamangalam Tiger Reserve. Therefore, it provides an opportunity for expansion of the protected area and securing the habitat of elephants.

Management Weaknesses

1. The wildlife sanctuary is located in the middle of the territorial division
2. The staff strength is as poor as that of the parent division. This strength is not adequate, considering the new mandate.
3. There are frequent transfers of staffs within the division into and out of the wildlife sanctuary. These transfers weaken the focus of the management.
4. Several enclosures within the protected area and considerable fragmentation in the north and north-east aggravate the problem of human-wildlife conflict, particularly with elephants. This situation often leads to crisis management, and there is no focus on basic management.

Immediate Actionable Points

1. The Management Plan of the sanctuary need to be completed, reviewed and approved at the earliest.
2. The proposal for expansion of the protected area may be expedited.
3. Augmentation of the staff strength and filling up vacancies among the frontline staff are to be taken up on priority.
4. A high level of communication and veterinary preparedness is necessary for dealing with the elephant-human conflict situations that arise frequently in the region.
5. Human-wildlife conflict mitigation measures such as erection of electric fences and digging of elephant-proof trenches should be planned together by officers of all the divisions of the landscape after a detailed study on the movement and behaviour of the elephant herds in the landscape is carried out.
6. A mobile-based alert system for dealing with elephant movements in the area need to be planned in all the management units of the landscape.

Evaluators
Dr. S.K. Khanduri, Former IG (WL), MoEFCC,
Dr. Arun Mani Dixit, Independent Consultant
Dr. Madhusudan, NCF, Mysore
Dr. Parag Nigam, Scientist, WII, Dehradun

Subharanjan Sen





Subharanjan Sen

23. Chitrangudi Bird Sanctuary, Tamil Nadu

Management Strengths

1. The sanctuary forms part of large landscape with good ecological connection with other kanmois
2. Primarily a community asset, this has the potential to develop into a model community-driven conservation area.

Management Weaknesses

1. Highly dependent on rainfall and an inlet channel that does not have enough water to feed this and other kanmois
2. No landscape-level and climate change-resilient planning

Immediate Actionable Points

1. Create a landscape-level kanmoi management advisory committee by co-opting members from relevant departments and communities.
2. Monitor Acacia nilotica population within the tank. Specifically, the cause of death of a large number of mature trees needs to be found.
3. Commission a study on the feasibility of water management including sharing water from the Gundar feeder channel.
4. Set up a system of systematic data collection on the migratory fauna and use the information for better planning and management.
5. The current management of one sanctuary of 47 ha may not be able to generate enough conservation gains. It is important, therefore, to enlarge the perspective from a protected area-centric approach to a landscape-level approach for conservation.
6. The managers of the protected area should help the Chitrangudi EDC prepare a comprehensive micro-plan for livelihood and bird conservation purposes.

Evaluators
Dr. S.K. Khanduri, Former IG (WL), MoEFCC,
Dr. Arun Mani Dixit, Independent Consultant
Dr. Madhusudan, NCF, Mysore
Dr. Parag Nigam, Scientist, WII, Dehradun

24. Gangaikondan Spotted Deer Sanctuary, Tamil Nadu

Management Strengths

1. This compact sanctuary was established in 1971, with an area of 228.40 ha and having clearly defined blocks.
2. Close to Tirunelveli town (about 20 km), it is an ideal place for city dwellers to experience herbivores in semi-wild settings. It is easily accessible as situated on a national highway.
3. Protection is not a problem as there is no poaching and there are no predators. No compensation is being paid for crop damage.
4. Groundwater is being harvested from bore wells using solar power, and is being pumped into reasonably big tanks and water holes.
5. Ample support of the sanctuary from local people.
6. Chital, sambar, peafowl and jungle cat are residents and can be seen.

Management Weaknesses

1. Invasive species such as Prosopis need to be controlled.
2. There are failed research plots with Casuarina and other species. These species need to be replaced with local species.
3. The sanctuary is sandwiched between a national highway that runs parallel to the boundary, and a railway line at some distance. Thus the location is a major hazard to wildlife.
4. Mortality of ungulates (1-2 causalities per month) from speeding vehicles remain a major concern.

Immediate Actionable Points

1. The wildlife deaths from vehicle collisions need to be taken up earnestly with the national highway authorities.
2. Either road humps or speed regulators are to be put up over a distance of 2-5 km along the boundary of the sanctuary.
3. The concrete wall parallel to the national highway needs to be strengthened and the height increased to prevent deers from jumping over it.
4. A deep trench needs to be dug along the boundary wall to prevent deer from jumping over it.
5. Bore wells with solar pumps need to be installed at not more than half a dozen places across the park to distribute the deer population.
6. A tourism plan, including the development of short safari roads, needs to be implemented to help wildlife viewing. Tented accommodation needs to be developed near the boundary to create awareness about wildlife conservation, especially among school children and college students.
7. The staff are to be trained in wildlife management techniques to enhance their understanding of wildlife behaviour, conflicts scenarios and mitigation, tourism-related issues, etc.

Evaluators
Shri P. Anur Reddy, Former PCCF, Karnataka
Dr. S. Narendra Prasad, Scientist, OSGS, IIIT, Hyderabad
Shri B.C. Choudhury, Former Scientist, WII, Dehradun
Dr. C. Ramesh, Scientist, WII, Dehradun

25. Guindy National Park, Tamil Nadu

Management Strengths

1. Good support from nature lovers and wildlife conservationists with its being the only forested area within the city limits
2. Attracts the attention of the park management as well as policy makers immediately due to the location close to the headquarters of the forest and other departments
3. The protected area has significant utility in environmental education and awareness.

Management Weaknesses

1. Has a very small extent of area and is surrounded by dense human habitations.
2. No efforts to establish any partnership with institutions such as IIT Madras and local communities
3. No disaster management plan, although located in a disaster-prone area
4. No system of organising the information and data collected during regular patrolling and thus these data not used in management decision making

Immediate Actionable Points

1. Considering the strengths and weaknesses of the protected area, the management objectives of the park and strategy should be redefined. The visibility of the park should be ensured to provide conservation education and promote awareness on par with the best models around the world among urban biological parks.
2. Setting up of a park-level management advisory committee by engaging local stakeholders would enhance utilisation and significance of the park.
3. Considering that IIT Madras is located on the other side of the protected area boundary, the management should start exploring few strategic areas of partnership with the institute. One of the key areas where there can be engagement is in monitoring and modelling augmentation and management of groundwater. IIT Madras can help to design a flood simulation model for Guindy National Park that can be very useful in framing management actions.
4. In the wake of the recent flood (in 2015) and cyclone Vardah (in 2016), Guindy National Park needs to put in place a disaster management action plan urgently. A separate budget needs to be allocated for the purpose.
5. Guindy National Park needs to design a long-term monitoring protocol, mainly through permanent sample plots. This is critical especially for monitoring the impacts on and recovery of vegetation and key faunal groups due to extreme climatic events such as floods and cyclones.
6. It will be good if Guindy National Park adopts an app-based smart patrolling and daily data collection system using basic smartphones. This will help organise wildlife sighting data and information in the spatial domain efficiently. The data would greatly help the planning and management.

Evaluators
Dr. S.K. Khanduri, Former IG (WL), MoEFCC,
Dr. Arun Mani Dixit, Independent Consultant
Dr. Madhusudan, NCF, Mysore
Dr. Parag Nigam, Scientist, WII, Dehradun

26. Kanjirankulam Bird Sanctuary, Tamil Nadu

Management Strengths

1. The sanctuary is a breeding site of the spotbilled pelican.
2. It receives ample support from the local communities through a mutualistic relationship with the protected area.
3. The values of the protected area have been understood well by the management.
4. The zonation is adequate.
5. The protected area has a comprehensive Management Plan.
6. The protected area uses a management concept of an administrative boundary and a 2 km-radius ecological boundary.

Management Weaknesses

1. Subjected to cycles of drought and occasional floods
2. The hydrological sustainability of the wetland and connectivity with the surrounding water bodies have been compromised.
3. The staff of the protected area is inadequate and primarily stationed at the headquarters that is located at a distance.
4. Invasive species such as Prosopis are expanding.
5. Artificial water bodies created for management during the dry season are situated at higher elevations. Thus water retainment is not for sufficiently long durations.
6. Heavy biotic interference in the surrounding landscape, including livestock grazing.
7. Lack of proper infrastructure for interpretation, education and awareness owing to irregular influx of tourists.

Immediate Actionable Points

1. Removal of invasive species such as Prosopis.
2. Extending the availability of water for a longer period in some parts of the bird sanctuary through the use of groundwater drawn with solar pumps
3. Water provisioning is to be carried out in the low lying area of the bird sanctuary such as the canal bed so that the periodicity of the water retention will be longer.
4. Multiple shallow ponds in many parts of the sanctuary will not serve the purpose of water storage because water is stored only for a short duration due to the evapotranspiration loss.
5. The droughts and dry season should not be looked upon as a management constraint but as an opportunity to remove weeds and invasive species to prospect for water sources within the sanctuary.
6. The feasibility of reviving the small seasonal stream beyond the Muthukulathur-Kamati road should be explored. The possibility of surveying the Gundar channel for locating the water blockage points and opening them up should also be explored.

Evaluators
Shri P. Anur Reddy, Former PCCF, Karnataka
Dr. S. Narendra Prasad, Former Scientist, SACON
Shri B.C. Choudhury, Former Scientist, WII, Dehradun
Dr. C. Ramesh, Scientist, WII, Dehradun

27. Kariavetti Bird Wildlife Sanctuary, Tamil Nadu

Management Strengths

1. Kariavetti is one of the bigger wetlands of the state, with an extent of about 442 ha.
2. The PWD formally manages the tank for irrigation. The source of water is Mettur Dam.
3. A large congregation of birds (~188 species) can be found here. Among these are bar-headed geese, pin-tailed ducks, garganeys, shovellers, common pochards, Eurasian wigeons, common teals and cotton teals.
4. There is significant people's participation, with eight village EDCs. Loans are provided to EDCs, especially for women, for livelihood activities.
5. Dalmia Cements contribute to the management of the wetland by constructing large mounds for aquatic birds.
6. There is good infrastructure for tourists.
7. The habitat and birds are being monitored from 2014 onwards.

Management Weaknesses

1. There is a lack of trained staff that impedes effective management.

Immediate Actionable Points

1. Providing local guides for visiting tourists would be a welcome initiative.
2. A good website needs to be put up to create more awareness and attract more tourists.
3. Points suggested in the wetland action plan may be adopted in terms of water management.

Evaluators
Shri P. Anur Reddy, Former PCCF, Karnataka
Dr. S. Narendra Prasad, Former Scientist, SACON
Shri B.C. Choudhury, Former Scientist, WII, Dehradun
Dr. C. Ramesh, Scientist, WII, Dehradun

Khurshid Alam Khan



28. Karikili Bird Sanctuary, Tamil Nadu

Management Strengths

1. Situated in the neighbourhood of the well known Vedanthangal Bird Sanctuary, this sanctuary receives a spillover of birds as well as tourists from Vedanthangal. Effectively it is a satellite wetland to the Vedanthangal and has attractions for tourists. There are well-laid paths, a pergola and other good facilities. Monitoring of aquatic birds is being practiced.

Management Weaknesses

1. Although, it may be good to have wetland sanctuaries, the location of bigger and more attractive habitats such as Vedanthangal Sanctuary in the vicinity, coupled with limited management of the habitat, ultimately takes a toll. Karikili has been invaded by Azolla, and there is little chance of it being a good habitat for the aquatic birds, if drastic measures are not taken. Furthermore, past management practices like introduction of canes, have not effectively contributed to the creation of an open aquatic water habitat.

Immediate Actionable Points

1. Remedial measures for control of Azolla have to be initiated.
2. Removal of cane and other terrestrial vegetation need to be thought of for maintaining an open water habitat.
3. Formal recognition of Karikili as a satellite wetland of Vedanthangal would be desirable. This would help streamline management actions such as assignment of staff duties and others.

Evaluators
Shri P. Anur Reddy, Former PCCF, Karnataka
Dr. S. Narendra Prasad, Former Scientist, SACON
Shri B.C. Choudhury, Former Scientist, WII, Dehradun
Dr. C. Ramesh, Scientist, WII, Dehradun

29. Kodaikanal Wildlife Sanctuary, Tamil Nadu

Management Strengths

1. The forest department has knowledge of the causes of forest fires and the use of scientific methods to prevent them. The preventive measures mentioned in their Theme Plan for Forest Fire Management are to be appreciated.
2. Focused training on wildlife management is provided to the frontline staff at Anamalai Tiger Reserve. However, more specialized training in relevant professional institutions must be availed of.
3. There is public participation in a manner that also meets their livelihood requirements, particularly with respect to NTFP, fire management, honey collection, medicinal herbs and seeds, eucalyptus oil, etc. Women's participation is notable.
4. A good effort has been put into the draft Management Plan, but the plan needs to be refined according to the norms of the Government of India.



Rakesh Ahlawat

Management Weaknesses

1. There has been biotic interference in the protected area, starting with extensive wattle plantations.
2. The staff quarters, patrolling vehicles and strike force vehicles are inadequate.
3. Both the human and financial resources are inadequate.
4. Since the Management Plan is yet to be approved, all activities are taken up as per the APO, which does not provide the management an opportunity to meet the long-term objectives.
5. Tourism in the protected area is a major problem and needs to be handled with a proper visitor management plan so that it does not impede the sanctuary potential.
6. Though the Management Plan has an exhaustive research and monitoring protocol, both lack in implementation and practice. Therefore organisations that are working extensively in the protected area and the surrounding landscape need to be collaborated with.

Immediate Actionable Points

1. Human-wildlife conflicts, poaching with snares and invasion of weeds into shola habitats need to be assessed and monitored.
2. Scientific institutions/universities need to be involved in this monitoring.
3. Zonation according to GoI norms is needed in the final Management Plan.
4. A proper mechanism needs to be put in place to safeguard against the threats that have been identified.
5. There is scope for putting the draft Management Plan in the public domain to prompt suggestions from the people.
6. Shola and grassland restoration needs to be carried out using a scientifically proven method.
7. Better coordination with other departments, the use of modern technology (camera traps, GIS) and capacity building are required.
8. Considering the importance of the protected area, attempts should be made to fill the vacant positions among the staff (30%).
9. More financial resources need to be mobilised from both state and central government sources, considering the range of management activities that are being carried out.
10. Complaints under the RTI Act are being attended to. It should be ensured that complaints received from the public are given top priority, and the management of the protected area should respond in an appropriate manner.

Evaluators

Shri P. Anur Reddy, Former PCCF, Karnataka

Dr. S. Narendra Prasad, Former Scientist, SACON

Shri B.C. Choudhury, Former Scientist, WII, Dehradun

Dr. C. Ramesh, Scientist, WII, Dehradun

30. Koonthakulam Kadankulam Wildlife Sanctuary, Tamil Nadu

Management Strengths

1. The Koonthakulam wetland, spread over 129 ha, is one of the cascading tank systems of southern Tamilnadu. It is a very good example of a harmonious situation between the local people and wildlife that has evolved over a period of more than five decades. Along with the Kadankulam tank, Koonthakulam harbours over 50,000 waterfowl in years when there is a good release of water from Manimuthar Dam. The sanctuary was declared in 1994, and as many as 172 bird species, including terrestrial species, have been recorded. The guano-laden water of the tank is a resource that is sought for irrigating agricultural crops. Also, the silt from the tank is extensively made use of in farms. Hence, the local farmers welcome the presence of the birds and actively protect them. In addition, many local tourists and foreigners visit the sanctuary during October-January.

Management Weaknesses

1. Due to the uncertainty in rainfall and inadequate release of water in years of low rainfall, the number of waterfowl decreased substantially in several years and particularly in 2017, when only 6750 birds were to be seen. Thus water management issues are of top priority. Also, because of PWD control of water release, effective coordination is required for maintenance of the tank by proper removal of silt as well as adequate mechanism for ensuring gravitational water flow into tank. Providing local guides for visiting tourists as is being done in Keoladeo Ghana National Park would be a welcome initiative.

Immediate Actionable Points

1. Management of the water received by the tank is to be dealt with on a priority basis. This needs to be taken up at the highest level of administration.
2. To tide over the water crisis, solar/wind-powered bore wells are to be provided.
3. Management of silt removal and ensuring gravitational flow of water is to be dealt with on priority.
4. Imparting periodic specialized training in wetland management and aquatic bird conservation to the local staff is required.
5. In terms of corporate social responsibility, the focus needs to be on either adoption schemes or funding outreach activities such as nature camps.

Evaluators
Shri P. Anur Reddy, Former PCCF, Karnataka
Dr. S. Narendra Prasad, Former Scientist, SACON
Shri B.C. Choudhury, Former Scientist, WII, Dehradun
Dr. C. Ramesh, Scientist, WII, Dehradun

31. Megamalai Wildlife Sanctuary, Tamil Nadu

Management Strengths

1. The management of the protected area has identified and demarcated the core, buffer and tourism zones in great detail and has prescribed management actions.
2. Employment is being provided to tribal people as temporary watchers, and local communities are being involved in ecotourism activities and are being provided temporary employment in management-related activities of the protected area.
3. The inclusion of various organisations in the development of the sanctuary is a significant step taken by the management.
4. A number of NGOs, tribal people and NGIs are involved in the management of census operations, research and management, awareness programmes, fire control and other such activities.

Management Weaknesses

1. A hydroelectric project; tea, coffee and cardamom estates, plantations and ganja cultivation are impacting the populations of threatened species such as the lion-tailed macaque, Nilgiri langur, Nilgiri tahr, Asian elephant and grizzled giant squirrel.
2. Because of the location of Megamalai along the inter-state boundary, poaching of ungulates and other animals is also a threat.
3. Inadequate numbers of vehicles and insufficient infrastructure in the form of staff quarters, patrolling stations, etc.
4. The resources, both human and financial, are insufficient.
5. An increasing human population and unregulated tourism-related activities are major threats.
6. Conversion of forest areas to agricultural lands is a major concern as this also increases the level of the conflict with wildlife.

Immediate Actionable Points

1. To mitigate identified threats, both policy-level and site-level interventions need to be specified in the Management Plan.
2. Since the draft Management Plan is yet to be approved, all management activities are practiced through the APO. It is recommended that the Management Plan be revised according to the guidelines of the Government of India for a period of 10 years.
3. Since controlling weeds and safeguarding water sources are of importance for conserving the biodiversity of the protected area, the management actions have prioritised these activities.
4. The vacancies among the frontline staff amount to 40-60%. Both in the short term and long term, such a situation is not in parity with the management objectives. It is recommended that all efforts be made to fill in the vacant positions.
5. The top and middle-level management staff must be trained at WII immediately. The frontline staff may be exposed to professional training in the protected area itself by a professional agency.
6. The management of the protected area should maintain relevant registers to record complaints and responses.
7. It is suggested that the protected area have a dedicated website.
8. An interpretation centre needs to be established. The staff need to be trained in interpretation, education and tourism management.

9. The management of this protected area needs to identify thrust areas of management-related research and formally collaborate with academic and professional wildlife organisations in implementing the research and monitoring programme.
10. The management of the protected area needs to work with the village community as well as tribal people to reduce conflicts by taking advance action and through better communication.
11. The management has to hold discussions with local communities on various issues affecting the protected area and on livelihood issues of local communities.
12. The threats identified to animal corridors/migratory paths should be considered seriously.
13. Vaccination of cattle inside the sanctuary should be initiated to prevent the spread of diseases to wild animals.

Evaluators
Shri P. Anur Reddy, Former PCCF, Karnataka
Dr. S. Narendra Prasad, Former Scientist, SACON
Shri B.C. Choudhury, Former Scientist, WII, Dehradun
Dr. C. Ramesh, Scientist, WII, Dehradun

32. Melaselvanoor-Keelaselvanoor Wildlife Sanctuary, Tamil Nadu

Management Strengths

1. The protected area has a comprehensive Management Plan with appropriate research inputs that identify the values of the protected area significantly
2. In spite of being located in an agricultural landscape, the PA is relatively free of significant biotic interference due to multiple sources of water from cascading water bodies.
3. The zonation has been done taking into consideration the practicality of management.
4. The Management Plan emphasises safeguarding of the threatened biodiversity values.
5. The restoration programmes envisaged in the Management Plan are in consonance with the objectives of good wetland management.
6. Since the bird sanctuary is located in a series of wetlands and there are a number of satellite wetlands, the Management Plan has suggested an ecological boundary of 50 km.
7. There is a well-planned interpretation and education centre in the protected area.
8. The local communities are very protective of the birds as they find the guano-rich water useful for agriculture.
9. The bird sanctuary is one of the 12 active heronries and has been identified as an IBA.

Management Weaknesses

1. Stakeholder participation has been proposed, but because there has been a drought for 4 years, its implementation has been minimal.
2. The facilities available for visitors are inadequate.
3. Continuous failure of the monsoons for more than 4 years has resulted in a decline in the numbers of migratory birds.
4. Proliferation of invasive species such as Prosopis

5. Uncontrolled livestock grazing in the protected area
6. Unplanned growth of cash crop agriculture using insecticides and pesticides just along the boundary of the protected area
7. Lack of research and monitoring mechanism that can help management
8. No formal MoU/MoA with a scientific or professional organisation for detailed documentation and monitoring as well as extension and education.

Immediate Actionable Points

1. Creation of supportive infrastructure commensurate with the Management Plan as soon as possible
2. Because the protected area is a wetland reserve, a full proof plan of the hydrological sustainability is to be developed that is aimed at connectivity with the multiple cascading irrigation tanks in the surrounding landscape.
3. Explore the feasibility of creating seasonal (dry season) water-holding structures for groundwater from sources tapped using solar pumps.
4. Establish linkages with professional and scientific institutions to support research and monitoring.
5. Ensure that all the required staff members are posted at headquarters as close as possible to the PA.
6. The symbiotic relationship of the community of the surrounding villages with the protected area needs to be enhanced through proper eco-development programmes that help enhance village livelihoods as well as the habitat of the sanctuary.
7. Explore the possibility of getting Vaigai water to the PA from the main Vaigai river at Mana-Madurai diversion through Melapasali tank to Parthibanur channel and Paraliar regulator. From Paraliar to Ragunatha Kauvery and then to the bird sanctuary.

Evaluators
Shri P. Anur Reddy, Former PCCF, Karnataka
Dr. S. Narendra Prasad, Former Scientist, SACON
Shri B.C. Choudhury, Former Scientist, WII, Dehradun
Dr. C. Ramesh, Scientist, WII, Dehradun

Nasim Ahmad Ansari



33. Eturnagaram Wildlife Sanctuary, Telangana

Management Strengths

1. The geomorphological, cultural, floral and faunal values of the WLS have been documented well.
2. The management has kept in place various protection strategies and has set up a base camp, checkposts, fencing, restoration, etc.
3. The reserve forests adjoining the boundary of the protected area have been identified as the buffer.
4. The status of the habitat and vegetation in the protected area is very good. However, regeneration requires some specific attention.
5. The archeological as well as the geomorphologic values, including the network of streams and rivulets in the protected area, provide a diversity of mosaic.

Management Weaknesses

1. A number of threats, such as encroachments by tribal people, construction of roads and unregulated tourism in the immediate vicinity of the boundary of the protected area, have not been identified in the management plan.
2. Extensive human interference in the protected area is an issue. There are 32 Gottikoya hamlets spread across the protected area. Grazing, illicit cultivation and removal of firewood are some of the major problems.
3. Multiple core zones and overlapping jurisdiction of management have not created an ideal situation.
4. The management plan does not follow the prescribed format of the Wildlife Institute of India, and is not comprehensive.
5. The threats are far greater than the threat abatement strategies.
6. The larger landscape that is contiguous with the protected area does not find a place in the Management Plan, which it deserves.
7. There is a vacancy of almost 45-50 % among the frontline staff.
8. NGOs do contribute to the management of the site, but opportunities for collaboration have not been explored systematically.
9. Populations of threatened/endangered species are declining.
10. The tribal influx from neighbouring states has caused extensive habitat degradation and disturbances to the wildlife. Unless the influx is curtailed, the wildlife populations cannot increase.

Immediate Actionable Points

1. The protected area is the only one of its kind in the floodplain of Godavari River. The management of the sanctuary needs to be particularly effective. A range of safeguards need to be set up, beginning with checkposts, a base camp, a strike force and a fire management plan. The vegetation and grassland management need to be enhanced to target the biodiversity values.
2. It is recommended that the annual plan of operation as well as the Management Plan be prepared in a transparent manner with the involvement of the major stakeholders.
3. Considering the fact that the sanctuary is subjected to serious grazing, encroachment and illegal cultivation, which is impacting the habitats, a greater emphasis on restoration programmes is essential.
4. It is recommended that the senior and mid-level management personnel be trained in wildlife management at the Wildlife Institute of India, Dehradun and short-term and

refresher wildlife management training programmes be organised for the frontline staff at the protected area itself through a professional organisation.

5. Adequate resources need to be allotted for both movable assets such as vehicles (both four-wheelers and two-wheelers) and permanent assets such as quarters to be built in places with minimum facilities (schools and dispensaries, for example).
6. It is recommended that the management of the protected area make an effort to bring about open and transparent stakeholder participation.
7. Collection of some NTFP needs to be regulated. Eviction of illegal hamlets needs to be taken up on priority simultaneously.
8. The protected area needs to develop its own user-friendly website and bring out brochures and pamphlets to create awareness among the public.
9. Local universities have done research in isolation. Their research needs to be integrated with the management of the protected area in issues such as monitoring wildlife populations, wildlife health, regeneration of forests and tourism-related activities.
10. Loss of habitat due to encroachment by tribal people from neighbouring states and hunting has led to a reduction in the herbivore population. Even though the protected area has good forests, there is minimal visibility of wildlife. Urgent and immediate action is required to reverse the trend.
11. The construction of an all-weather highway from Medaram to Eturnagaram is in complete violation of the IWPA, and the highway fragments the forested landscape into small pockets. The state government and the management of the protected area must stop such illegal activities immediately.

Evaluators
Shri P. Anur Reddy, Former PCCF, Karnataka
Dr. S. Narendra Prasad, Former Scientist, SACON
Shri B.C. Choudhury, Former Scientist, WII, Dehradun
Dr. C. Ramesh, Scientist, WII, Dehradun

34. Kasu Brahmananda Reddy National Park, Telangana

Management Strengths

1. Kasu Brahmananda Reddy (KBR) National Park is a unique biodiversity area in terms of its ecological, locational and functional values.
2. Being at the centre of an expanding megapolis, KBR is an ideal place for educating city dwellers and create awareness about wildlife.
3. Has an extent of 142.50 ha, with a conservation zone of 86.50 ha and a visitor zone of 56 ha
4. Rich biodiversity with over 468 plant species such as sandalwood, neem, teak and Drosera. Presence of about 20 mammal species such as the hare, porcupine, civet and pangolin. About 20 reptile and amphibian species such as the cobra, python and monitor lizard are found. Sixty-three bird species including the peafowl, quails and owls. About 24 species of butterfly.
5. Acts as a carbon sink and retains groundwater
6. Entire national park surrounded by a boundary wall and monitored by CC cameras.
7. Regular nature camps, guided birdwatching, nature trails and an interpretation centre

Management Weaknesses

1. Park surrounded by roads on all sides, with heavy perpetual traffic, especially in the mornings and evenings.
2. Atmospheric pollution due to vehicles and garbage are continuous and are ever-increasing problems.
3. The park is an isolated patch of greenery, without any connectivity or corridors to other wildlife/forest areas.
4. Genetic inbreeding is an issue to be addressed.
5. Enclosures [Nizam's property (2.23 ha) and wakf property (3.00 ha)] in the park add to the disturbances. The weed problem (especially Lantana and mahaveera) needs to be tackled.

Immediate Actionable Points

1. Relocation of deer, peafowls and other wildlife in large numbers to sanctuaries nearby should be taken up rigorously.
2. Reintroduce deer from other zoos/parks in small numbers to prevent inbreeding
3. Regulate the entry of people into the enclosures and limit their numbers. Parking of vehicles to be done at the entrance, and they should not to be allowed inside.
4. Wildlife associations, bird clubs and jogger associations to be involved in creating awareness and to act as pressure groups to prevent any further encroachment/disturbance to the park.
5. Create three or four rows of dense vegetation (tall/local species) all around the park to prevent dust and reduce atmospheric pollution.
6. Vehicles plying around the park on the circular roads should mandatorily carry emission tests as the area is an eco-sensitive zone.

Evaluators
Shri P. Anur Reddy, Former PCCF, Karnataka
Dr. S. Narendra Prasad, Former Scientist, SACON
Shri B.C. Choudhury, Former Scientist, WII, Dehradun
Dr. C. Ramesh, Scientist, WII, Dehradun

35. Kinnersani Wildlife Sanctuary, Telangana

Management Strengths

1. The sanctuary has an extent of 635 km2. There is excellent forest cover over most of the area.
2. The presence of a functional corridor with Pakhala Wildlife Sanctuary and Papikonda National Park connecting to a larger landscape supports wildlife survival and dispersal. Papikonda has tigers.
3. Adequate water is available. There is a big dam across Kinnersani River within the park that supplies drinking water to the towns and to industries.
4. The road network is good.
5. The final notification of the eco-sensitive zone has been issued.
6. The interpretation centre has been conceived well, and it is useful in creating awareness.

Management Weaknesses

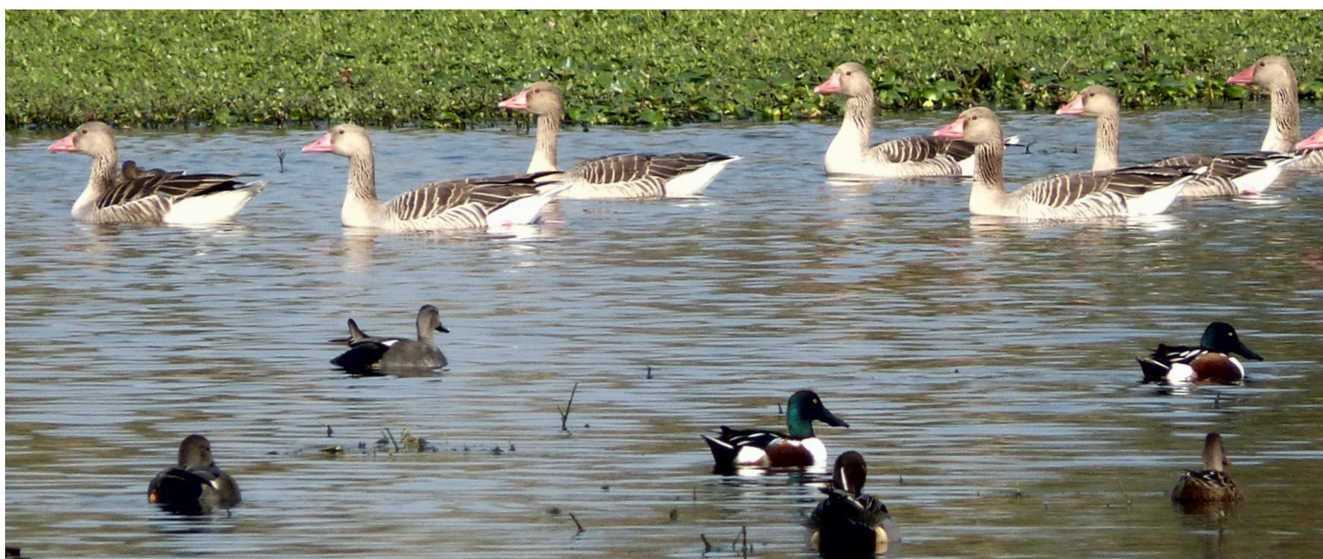
1. There is very little wildlife (both herbivores and carnivores) in spite of the perfect habitat- the deer population in the southern part of the sanctuary is very small.
2. The 54 villages inside the sanctuary (mostly in the southern part) are a major threat to the animals.
3. The Koyas (local tribal people) still hunt with bows and arrows and snares, killing deers and birds, thus depleting their populations.
4. The Gonds have migrated from Orissa and Chhattisgarh after the enactment of the Tribal Act, encroaching large areas of the sanctuary.
5. If tourist cottages were to be built along the backwaters of the Kinnersani river by the tourism department, they would create a disturbance, and the construction would be a violation of the Forest Conservation Act.

Immediate Actionable Points

1. Treated herbivores, especially chital, sambar and gaur from nearby wildlife areas/zoological parks should be released regularly.
2. The protection mechanism must be strengthened.
3. Anti-poaching camps with weapons, communication systems and an informant network need to be prioritized.
4. A protection regime in the form of raids, booking of cases and charge sheets is urgently required to curtail the rampant poaching by the tribal people/locals.
5. The staff need to be trained in wildlife management techniques and wildlife laws, and the human resources need to be developed. Rewards for the staff are to be institutionalised. The staff need to be provided vehicles, including two-wheelers.
6. Research activities carried out in collaboration with universities and research institutions need to be a part of the management exercise to record baseline data and changes over a period of time.
7. Tourism activities are to be regulated and facilities for eco-tourism are to be developed mainly on the periphery.

Evaluators
Shri P. Anur Reddy, Former PCCF, Karnataka
Dr. S. Narendra Prasad, Former Scientist, SACON
Shri B.C. Choudhury, Former Scientist, WII, Dehradun
Dr. C. Ramesh, Scientist, WII, Dehradun

Nasim Ahmad Ansari



36. Mrugavani National Park, Telangana

Management Strengths

1. MNP has a comprehensive Management Plan with values, zonation and prescriptions for management laid out well.
2. Strength of the Management Plan is a review of the action taken report of the previous Management Plan. This is a new approach, and it might be good for other protected areas to follow it.
3. Although MNP is situated at the edge of a metropolis, it is very well protected by a stone and machinery construction (SMC) wall on its boundary, preventing any interference from the surrounding landscape. At the same time, the contiguity of the protected area with the adjoining Chilkur Reserve Forest is maintained.
4. The protected area has well-defined tourism and no-disturbance zones. Because MNP is a small deer park that has been converted into a national park, there are difficulties in defining core and buffer zones.
5. Grassland, wetland and woodland restoration and management operations are on-going, as observed by the MEE team during their visit.
6. NGOs' contributions are systematically sought and negotiated for by the management for some site-level activities.
7. The facilities provided to visitors of the protected area are adequate.
8. There is an innovative agreement between the management of the protected area and the state forest development corporation to improve the eco-tourism facilities and activities.
9. MNP encompasses a typical Deccan plateau granite rock formation, rocky outcrops and sheet rock unique to the Deccan region.

Management Weaknesses

1. Information generated by non-governmental organisations has been used in developing the Management Plan. However, these organisations are not participating in the planning process.
2. 33% of the allocated staff are not in place.
3. None of the staff members of the protected area have undergone any training in wildlife management.
4. There is no system in place to handle complaints.
5. There is no specific website for the protected area in spite of the fact that the park is located in the city of Hyderabad, known as the IT capital of India.

Immediate Actionable Points

1. Being a showcase urban refuge, MNP should have the complement of allocated staff members in position as a large number of urban and rural people visit the protected area regularly, expecting to be made aware of the wildlife in an urban landscape.
2. The spotted deer and sambar, being grazer and browser species, respectively, have made the vegetation of the protected area look as though it has been mowed or trimmed manually. It is recommended that large enclosures be blocked from grazing and browsing in rotation so as to provide the landscape a natural look.
3. A more proactive non-attended visitor interaction mechanism is required as the number of staff members attending to visitors in MNP is very small.
4. An attempt should be made to increase the extent of MNP to cover the entire forest block (490 ha).

5. A more interactive and participatory approach to monitoring the flora and fauna of MNP may be developed.
6. Though MNP has a well-appointed interpretation centre, new, innovative and participatory thematic education and awareness programmes targeted to different visitor groups need to be developed.
7. The hydrological contribution of Chilkur Forest Block in general and MNP in particular to the city of Hyderabad may be projected in the interpretation centre.

Evaluators
Shri P. Anur Reddy, Former PCCF, Karnataka
Dr. S. Narendra Prasad, Former Scientist, SACON
Shri B.C. Choudhury, Former Scientist, WII, Dehradun
Dr. C. Ramesh, Scientist, WII, Dehradun

Nasim Ahmad Ansari



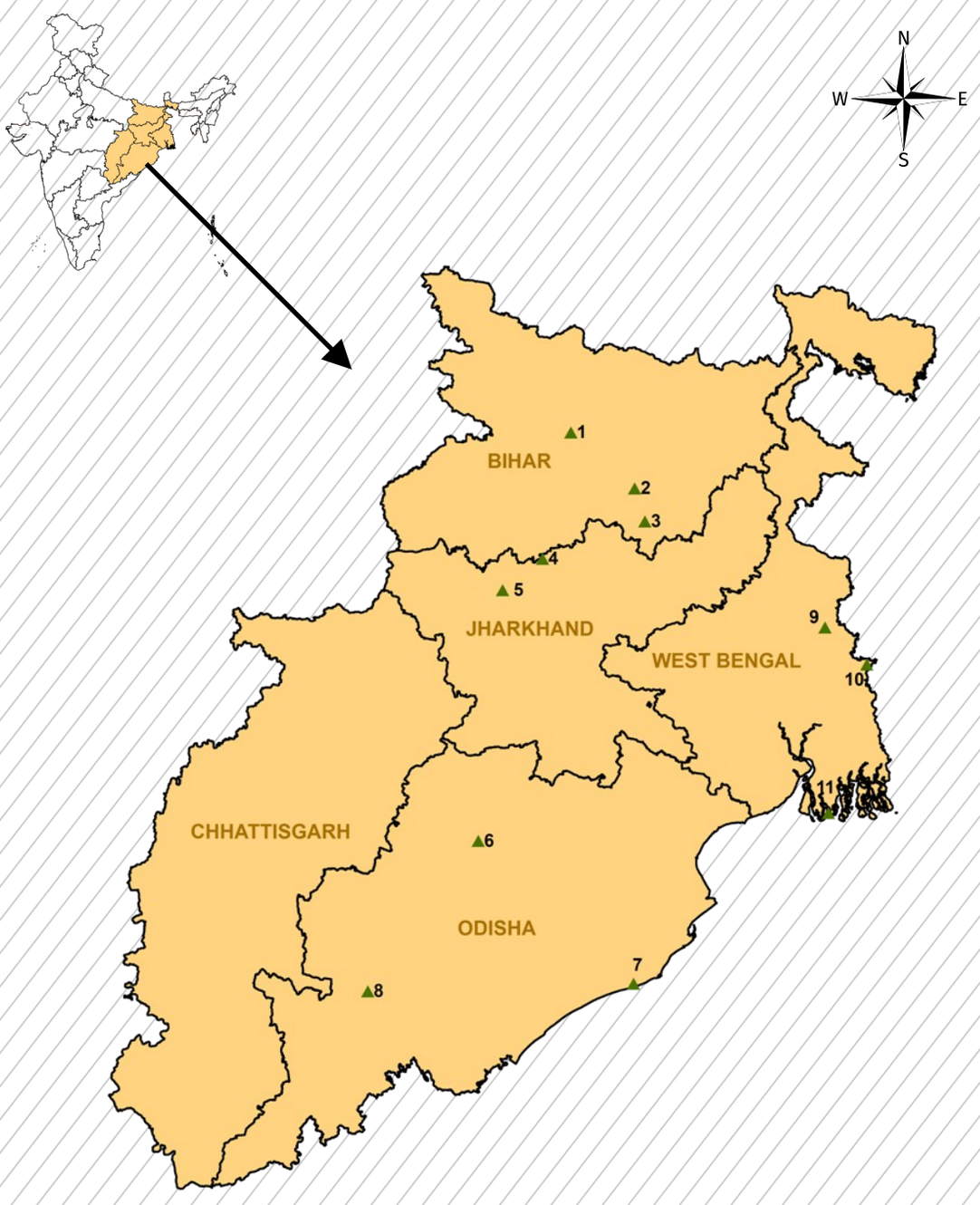
EASTERN REGION

3.3

S. No.	Protected Area	State
1.	Barela Jheel Salim Ali Bird WLS	Bihar
2.	Bhimbandh WLS	Bihar
3.	Nagi Dam WLS	Bihar
4.	Gautam Budha WLS	Jharkhand
5.	Lawalong WLS	Jharkhand
6.	Badrama WLS	Odisha
7.	Balukhand Konark WLS	Odisha
8.	Karlapat WLS	Odisha
9.	Bethuadahari WLS	West Bengal
10.	Bibhuti Bhusan WLS	West Bengal
11.	Chintamani Kar Bird WLS	West Bengal

Udayan Borthakur





S. No.	Protected Area	State
1.	Barela Jheel Salim Ali Bird WLS	Bihar
2.	Bhimbandh WLS	Bihar
3.	Nagi Dam WLS	Bihar
4.	Gautam Budha WLS	Jharkhand
5.	Lawalong WLS	Jharkhand
6.	Badrama WLS	Odisha
7.	Balukhand Konark WLS	Odisha
8.	Karlapat WLS	Odisha
9.	Bethuadahari WLS	West Bengal
10.	Bibhuti Bhusan WLS	West Bengal
11.	Chintamani Kar Bird WLS	West Bengal

1. Dr. Salim Ali Jubba Sahni Bird Sanctuary, Bihar

Management Strengths

1. Barela Jheel, a large water body has influenced the hydrology of the area and the water regime. The protected wetland recharges the water table of the surrounding areas. Barela Jheel provides livelihood opportunities to a large number of local people in the form of fishing and seasonal cultivation, and thus it is of direct significance for them. The adoption of livelihood practices suitable for the area such as pisciculture is likely to become a major strength in conserving the wetland. This sanctuary is home to a large number of local and migratory birds. The area has immense potential for eco-tourism.

Management Weaknesses

1. The human density of the area around the sanctuary is very high. Thus there is a high community dependence on the resources of the wetland. The limited staff strength and the inadequate infrastructure is detrimental to the management of the sanctuary, including the protection capabilities. The lack of visitor facilities affects the overall tourism potential of the area.

Immediate Actionable Points

1. The present staff strength to manage the sanctuary is grossly inadequate. The Government of Bihar needs to recruit young staff members and deploy them for enhancing the protection of the area.
2. The infrastructure of the sanctuary, such as anti-poaching camps and watchtowers, needs to be developed.
3. The sanctuary has excellent eco-tourism potential. Local youths need training in bird watching and can be involved in a community-based tourism programme.
4. Development of facilities such as an interpretation center, signage and tourist accommodation will boost the tourism potential of the area.
5. Small private wetland patches are present within the sanctuary or on the boundary. These wetlands need to be acquired/ purchased. Land use practices compatible with wetland management, such as pisciculture, are being encouraged. These should be taken up on a priority basis as eco-development activities to ensure the integrity of the sanctuary.

Evaluators
Dr. Pradeep Vyas, Former CWLW, West Bengal
Dr. R.S. Rawal, Director, GBPHIED, Almora
Dr. Jamal A. Khan, Professor, Aligarh Muslim University, Aligarh
Dr. Bivash Pandav, Scientist, WII, Dehradun

2. Bhimbandh Wildlife Sanctuary, Bihar

Management Strengths

Bhimbandh Wildlife Sanctuary, spread over an area of 680 km2, is a large ecological forest in the Kharagpur Hills of Bihar. The unique geological characteristic of the area is reflected in the presence of numerous hot springs. The sanctuary has an approved management plan. The natural beauty of the area, along with the hot springs, has the potential to make Bhimbandh an

ideal ecotourism destination in Bihar. The forests of Bhimbandh are of great religious and mythological significance for the local communities, and they are extremely supportive of conservation. Besides, the forests of Bhimbandh act as a major catchment of water in the region. In spite of having to contend with Left Wing Extremist Activities (LWEA), the management has shown determination to protect the sanctuary.

Management Weaknesses

1. The presence of LWEA for several years in the area has been detrimental to the wildlife management, thereby affecting not only the tourism potential of the area but also all aspects of sound wildlife management. Exploiting this situation, there have been illegal mining, illegal extraction of timber and fuelwood and illegal encroachments, affecting the biodiversity of the area.
2. The lack of an adequate number of staff members is a major constraint faced in managing the sanctuary. Now with a significant paramilitary presence in the sanctuary, the management has resumed its activities in the forest.
3. The sanctuary is subjected to extreme biotic pressure due to the presence of 29 villages inside the sanctuary and 434 villages within 3 km from the boundary of the sanctuary.
4. The entire infrastructure of the park, including patrolling camps, staff quarters, rest houses and forest roads, needs to be rebuilt entirely.

Immediately actionable points

1. The staff strength available for managing the sanctuary is grossly inadequate. The Government of Bihar needs to recruit young staff members and place them in their respective positions so as to make the protection strategy effective for the sanctuary.
2. The infrastructure of the sanctuary, such as forest roads and buildings (forest rest houses, quarters) need to be rebuilt in order to facilitate better management of the area.
3. The local people are willing to join hands with the management to conserve the area. This is evident from the excellent soil and moisture conservation activities being carried out in many parts of the buffer area of the park with the active participation of local communities. Considering the fact that there is a large human population in the periphery of the sanctuary, a strict protectionist approach may not be very effective. The participation of the local communities in the rebuilding of the park and reducing biotic interference is mandatory.
4. Once the LWEA are controlled and the sanctuary is well staffed, systematic patrolling and monitoring activities can be initiated.
5. A systematic and scientific population estimation is required to understand the wildlife abundance of the area, which appears to be low. Appropriate measures such as intensive management of habitats and supplementation of prey populations may be undertaken based on the extent and distribution of wildlife population.
6. Bhimbandh Wildlife Sanctuary has tremendous ecotourism potential. Development of facilities such as an interpretation centre, signage and tourist accommodation will enhance the tourism potential of the area.

Evaluators
Dr. Pradeep Vyas, Former CWLW, West Bengal
Dr. R.S. Rawal, Director, GBPHIED, Almora
Dr. Jamal A. Khan, Professor, Aligarh Muslim University, Aligarh
Dr. Bivash Pandav, Scientist, WII, Dehradun

3. Nagi Dam Bird Sanctuary, Bihar

Management Strengths

1. Nagi Dam was initially conceived as an irrigation project. Owing to its rich assemblage of migratory and resident waterfowl, it has been declared a wildlife sanctuary. Nagi Dam is located within a entirely human-dominated landscape and irrigates a considerable extent of agricultural fields, thus playing a key ecological function in the area. Besides agriculture, the local communities are dependent on the dam for fishing and for grazing their livestock. The rich assemblage of waterfowl in this dam provides an excellent eco-tourism opportunity. If planned properly, bird tourism at Nagi Dam can provide the local communities excellent livelihood opportunities.

Management Weaknesses

1. Lack of effective management and systematic monitoring of the bird population appears to be major weaknesses of this area. Despite being easily accessible, the place has not received much attention, and its potential has not been utilized. Lack of information and infrastructure has kept visitors away from this place. The sanctuary is grossly understaffed and does not have an approved Management Plan.

Immediate Actionable Points

1. Preparation of a Management Plan for the area should be the top priority. Further actions can be taken on the basis of the plan.
2. The staff strength available to manage the sanctuary is grossly inadequate. The Government of Bihar needs to recruit young staff members and place them in their respective positions so as to make the protection strategy effective.
3. Nagi Dam provides an ideal opportunity for bird watching tourism. Local youths should be trained in bird watching and should be encouraged to accompany tourists as guides. Instead of government-controlled tourism, the emphasis should be on community-based tourism. The local communities should be involved to manage the tourism in the area.
4. Systematic monitoring of the bird population should be initiated with the help of local birdwatchers, NGOs and universities in order to understand its trend.
5. The significance of Nagi Dam as an important bird habitat needs to be highlighted through scientific studies and advertisements in the print and visual media.

Evaluators
Dr. Pradeep Vyas, Former CWLW, West Bengal
Dr. R.S. Rawal, Director, GBPHIED, Almora
Dr. Jamal A. Khan, Professor, Aligarh Muslim University, Aligarh
Dr. Bivash Pandav, Scientist, WII, Dehradun

4. Gautam Buddha Wildlife Sanctuary, Jharkhand

Management Strengths

Gautam Buddha Wildlife Sanctuary (GBWLS), of the state of Jharkhand and Bihar constitutes a large contiguous forest. This Sanctuary existed as a single Protected Area (PA) in undivided Bihar. The GBWLS of Jharkhand has connectivity with forests of Koderma Wildlife Sanctuary (WLS) and with Lawalang WLS through the forests of Hazaribagh. These, in turn, are contiguous with the Palamau landscape through Latehar Reserve Forest. There is excellent potential to develop a landscape-level conservation plan integrating all these PAs and intervening forested areas. The local communities support conservation if spin off benefits accrue to them. The Sanctuary currently has a low wildlife density, but the habitat is good, and has a potential to support wildlife population, which can repopulate a much larger landscape.

Management Weaknesses

There are 15 villages inside the PA and 17 villages in the immediate vicinity. These villages exert tremendous biotic pressure in terms of grazing, collection of fuelwood and NTFP. The wildlife population in the area is extremely low. A National Highway traverses the sanctuary and the linear infrastructure is being expanded by development of the existing four-lane highway into a six-lane highway. Besides, the proposed dedicated freight corridor will further fragment the sanctuary and will be extremely detrimental for wildlife conservation.

Immediate Actionable Points

1. GBWLS does not have a Management Plan. In the absence of a Management Plan, the sanctuary is being managed through the Annual Plan of Operation. The sanctuary has to be managed under a management plan with clear objectives, strategies and action plan for long term conservation of the area.
2. A holistic eco-development programme needs to be initiated for the local communities so that their dependence on the forest can be minimized to improve the habitat quality and wildlife density.
3. All new linear infrastructure development projects should be avoided, and in case such development works needs to be implemented, they should be implemented only with a comprehensive impact mitigation plan.

Nasim Ahmad Ansari



4. The staff strength available for managing the sanctuary is inadequate. The Government of Jharkhand needs to recruit young staff members and deploy them for enhancing protection of the sanctuary. There is a need to post a dedicated range officer for this sanctuary.
5. The infrastructure of the sanctuary, such as forest roads and buildings (forest rest houses, quarters), needs to be built in order to facilitate better management of the area.
6. The abundance of wildlife in GBWLS appears to be extremely low. The condition of the habitat of the sanctuary needs to be improved, after which supplementation of prey species such as the spotted deer can be planned. However, effective protection is the key to the revival of wildlife in GBWLS.
7. The Government of Jharkhand needs to start landscape-level planning for recovery of wildlife. GBWLS, Koderma WLS, Hazaribagh WLS, Lawalong WLS and Palamau Tiger Reserve are ecologically contiguous and can form a large landscape. The conservation significance of the PAs in this large landscape is high and for protection of biodiversity a landscape conservation strategy is to be developed.
8. The tourism potential of GBWLS is enormous and under-utilized. Eco-tourism is to be encouraged, and accordingly, facilities are to be developed to attract tourists to the area.

Evaluators
Dr. Pradeep Vyas, Former CWLW, West Bengal
Dr. R.S. Rawal, Director, GBPHIED, Almora
Dr. Jamal A. Khan, Professor, Aligarh Muslim University, Aligarh
Dr. Bivash Pandav, Scientist, WII, Dehradun

5. Lawalong Wildlife Sanctuary, Jharkhand

Management Strengths

1. Lawalong Wildlife Sanctuary (WLS) is contiguous with Palamau Tiger Reserve through Latehar Reserve Forest, and constitutes a large forested landscape. It is important to understand the issues at the landscape level so that appropriate interventions can be made to improve management. In spite of left-wing extremist activities, the local communities, in general, support conservation.

Management Weaknesses

1. Left-wing extremist activities have crippled the normal functioning of the Sanctuary. The Sanctuary management has initiated dialogue with local communities for their support in conserving the biodiversity of the area. There is extreme biotic pressure on the natural resources of the Sanctuary due to the presence of 29 villages inside the PA. The population of wildlife in the area is extremely low. The infrastructure of the Sanctuary is inadequate.

Immediate Actionable Points

1. Lawalong WLS does not have a Management Plan. In the absence of a Management Plan, the Sanctuary is being managed through the Annual Plan of Operation. . The sanctuary has to be managed under a management plan with clear objectives, strategies and action plan for long term conservation of the area.
2. The staff strength available for managing the sanctuary is inadequate. The Government of Jharkhand needs to recruit young staff members and deploy them for enhancing protection of the sanctuary. There is a need to post a dedicated range officer in charge of this sanctuary.

3. The infrastructure of the Sanctuary, such as forest roads and buildings (forest rest houses, quarters), need to be built in order to facilitate better management of the area.
4. The abundance of wildlife in Lawalong WLS appears to be extremely low. The quality of the habitat of the sanctuary needs to be improved, after which supplementation of prey species such as the spotted deer can be planned. However, effective protection is the key to the revival of wildlife in Lawalong WLS.
5. The Government of Jharkhand needs to start landscape-level planning for the recovery of the wildlife. The connectivity between Lawalong WLS and Palamau Tiger Reserve is to be maintained, and ecologically contiguous habitats can form a large landscape. It is important to understand the connectivity issues in this large landscape and accordingly develop a landscape conservation strategy.

Evaluators
Dr. Pradeep Vyas, Former CWLW, West Bengal
Dr. R.S. Rawal, Director, GBPHIED, Almora
Dr. Jamal A. Khan, Professor, Aligarh Muslim University, Aligarh
Dr. Bivash Pandav, Scientist, WII, Dehradun

6. Badarma Wildlife Sanctuary, Odisha

Management Strengths

Badrama wildlife sanctuary along with the adjoining Khalasuni Wildlife Sanctuary constitutes a large forested landscape conducive for long term survival of a host of species including the megaherbivore elephant The ecological contiguous forests provide corridors for gene flow for most of the species of the landscape. Though the area was affected by the activities of left wing extremists, recently these activities have declined, and now the prescriptions of the management plan of the Sanctuary is being implemented. The management has developed extremely good relations with local communities in a very short time, which is a major strength under the difficult conditions that are prevailing. Financial resources are not a limitation for this park. The availability of resources and the dedicated park management are the greatest strengths of Badarma Wildlife Sanctuary.

Management Weaknesses

The presence of a large number of villages and linear infrastructure in the form of roads in the area continues to be a major threat. The Management Plan recommends that an extent of 309.710 km2 area of the ecological contiguous forest of Bamara Wildlife Division, and territorial forests of Sambalpur South Division and Deogarh Forest Division be declared as the buffer zone of the sanctuary. These contiguous forest areas should be integrated under a single management unit for biodiversity conservation management across the large landscape. The left wing extremist activities are minimal; however, a shadow of these activities remains, representing a limiting factor that is beyond the control of the management. The inadequate staff strength along with a large number of vacancies is detrimental to the management of this large landscape.

Immediate Actionable Points

1. The existing large vacancy of the staff (nearly 30% of the staff strength) is a matter of concern. The state Government should urgently post staff for the effective management of this area.

2. Some of the villages within the core area need to be resettled in order to consolidate the inviolate areas within the sanctuary.
3. Wildlife is not abundant in the area, habitat improvement works are necessary to supplement the prey base in the area.
4. Badarma and the adjoining Khalasuni Wildlife Sanctuary have immense eco-tourism potential. Infrastructure facilities be developed for promoting tourism, such as an interpretation centre and accommodation for the tourists visiting the sanctuary.
5. Badarma and its buffer zone as proposed in the Management Plan should be integrated into a single management unit.

Evaluators
Dr. Pradeep Vyas, Former CWLW, West Bengal
Dr. R.S. Rawal, Director, GBPHIED, Almora
Dr. Jamal A. Khan, Professor, Aligarh Muslim University, Aligarh
Dr. Bivash Pandav, Scientist, WII, Dehradun

7. Balukhand-Konark Wildlife Sanctuary, Odisha

Management Strengths

1. Balukhand-Konark Wildlife Sanctuary has a well drafted Management Plan.
2. The financial allocation by the State Government is satisfactory to meet the management requirements of the sanctuary.
3. Balukhand-Konark Wildlife Sanctuary has a compact shape and is fairly accessible by road. The sanctuary is close to Puri town.
4. The Sanctuary has a well-defined natural boundary. Small but focused actions can improve the status of the wildlife in the sanctuary.
5. People's participation in the management of the Sanctuary, particularly protection, is praiseworthy. There are a number of eco-development committees assisting the Forest Department in planning as well as implementation of regular management tasks such as plantation, meadow development, eco-tourism and protection.
6. The practice of enrolling local village youth in anti-poaching patrolling teams is a very innovative and effective protection measure. In most of the anti-poaching patrolling camps, the constitution of a patrolling party is one Forest Guard + four Protection Assistants (local villagers). Villagers also volunteer for protecting the sanctuary area against poaching and illicit felling.
7. The staff placement of the Sanctuary is satisfactory. The sanctioned strength of the staff in Balukhand-Konark Wildlife Sanctuary is 34, of which 28 positions are currently filled.
8. The water supply in the sanctuary is very good as the water table is very high in the area. Ponds have been dug within the Sanctuary, and therefore there is no shortage of drinking water for wildlife.
9. Owing to habitat management by the Forest Department in terms of grassland development and plantation of fodder species; habitat quality of the Sanctuary was found to be good for wildlife. Man-animal conflicts are minimal, except for some crop damage in the agricultural fields, for which compensation is given regularly.
10. With Balukhand-Konark Wildlife Sanctuary being located between Puri and Konark, two very important tourist hubs of Odisha, ecotourism is also well developed and is promoted by the Department.

Management Weaknesses

1. The Sanctuary was initially declared for conserving the blackbuck, which has now become extinct from the Sanctuary. Main reason for the disappearance of blackbuck is reported to be the tsunami and Cyclone Phailin, which had hit the eastern coast in 2013. However, man-animal conflicts could have also resulted in retaliatory killing of blackbuck by the villagers, as the species caused economic loss by damaging crops.
2. As an offshoot of historical plantations of exotic Casuarina and Cashew, major part of the Sanctuary has been converted into monoculture replacing many indigenous floral species. Currently, efforts are being made to conserve and promote the small patches of local vegetation for supporting biodiversity.
3. The National Highway connecting Puri and Konark towns and passing through the Sanctuary poses the greatest threat towards its biodiversity conservation as it results into a substantial number of wildlife mortality. As per official records, on an average about five to seven deer are injured/killed in road accidents per month.
4. Everyday large numbers of villagers living in the peripheries of the Sanctuary venture inside the forest for sustaining their livelihood needs. These anthropogenic disturbances have caused habitat loss and degradation inside the Sanctuary. Therefore, the resident animals are usually forced to disperse out of the forest in crop field causing man-animal conflicts and road kills.
5. It is reported that with several institutions (educational) and small industries having come up all around this sanctuary in recent years, the biotic pressure on the sanctuary has gone up substantially. The effective area of the sanctuary has shrunk further due to human encroachments and the ever-increasing anthropogenic pressures.
6. As the Sanctuary is in close proximity to Puri and Konark towns, two well-known tourist attractions, there has been unregulated growth of tourism inside the sanctuary, causing disturbance to the animals.
7. Olive ridley turtles nest sporadically on the coast, but commercial activities such as fishing, trawling etc. close to the coast is reported to be killing the turtles in large numbers. The turtles also fall prey to jackals, dogs, crows, etc., which are their natural predators.

Immediate Actionable Points

1. Steps need to be taken immediately to increase the staff strength in the Sanctuary and engage a veterinary doctor available round the year to treat the injured animals.
2. Tourism inside the Sanctuary is not properly managed as evident by littering of the area by polythene. This needs to be appropriately addressed by engaging local people as guides and making this mandatory.
3. Currently, several man-made trails are crisscrossing the Sanctuary and some of them have even become motorable providing illegal entries inside the Sanctuary. All these illegal entry points should be closed either with barriers or by digging trenches.
4. In order to minimize human-wildlife conflict and wild ungulate mortality due to road accidents, some strategic parts along the fringes of the Sanctuary could be fenced.
5. Initiatives need to be taken to develop the habitat. More meadows and a few freshwater pools need to be developed inside the Sanctuary for wild ungulates.
6. Most of the wildlife mortality occur in between 7 PM - 10 PM. Therefore, initiatives must be taken to control the vehicular speed on Puri-Konark highway during these hours.
7. Fishing and all commercial activities should be banned on the coast of Balukhand Wildlife Sanctuary during the breeding period of Olive ridley turtles.
8. The monocultures of casuarina and cashew should gradually be converted into mixed multi-layered forests by planting indigenous species with higher nutritional/forage values for wild ungulates.

9. Efforts should be made to reintroduce blackbuck in the Sanctuary by developing large grasslands that are suitable for deer and blackbuck and by improving the protection status of the Sanctuary.

Evaluators
Shri Azam Zaidi, Former CWLW, West Bengal
Dr. Bibhav Talukdar, AARANYAK, Guwahati
Dr. Diwakar Sharma, Director, PM, M&E, WWF-India
Dr. Bilal Habib, Scientist, WII, Dehradun

8. Karlapat Wildlife Sanctuary, Odisha

Management Strengths

1. Karlapat Wildlife Sanctuary has a well-drafted Management Plan.
2. Karlapat Wildlife Sanctuary is compact, and access by road is fairly good. The Sanctuary is close to Bhawanipatna town.
3. Good wildlife habitat with well-defined natural boundary. Small but focused measures can improve the status of the wildlife in the Sanctuary.
4. The practice of enrolling local village youth in anti-poaching patrolling teams is a very innovative and effective protection measure. In most anti-poaching patrolling camps, the constitution of a patrolling party is one Beat Guard + four Protection Assistants (local villagers). Reposing confidence in the locals for protection of wildlife sends a positive signal of recognition and of being highly valued by the Forest Department to the villagers, who are mostly tribal and traditional hunters.
5. Staff placement of the Sanctuary is satisfactory. The sanctioned strength of the staff of Karlapat Wildlife Sanctuary is 27, of which 25 positions are filled now.
6. Water supply in the Sanctuary is very good as there is a perennial flow of water in the stream in the sanctuary, and as such wildlife species face no shortage of drinking water.
7. The Sanctuary provides good natural habitats to a variety of faunal species. Natural regeneration is taking place, and the Department has also taken steps to develop fodder plantations wherever required.
8. Bamboo plantation was taken up throughout the Sanctuary as part of habitat improvement measures during last 12-13 years. This has created good forage availability for elephants resulting in regular elephant movements within the Sanctuary. A few elephants have also become permanent residents of Karlapat Wildlife Sanctuary.
9. Man-animal conflicts are minimal except for some crop damage in the agricultural fields, for which compensation is given regularly.
10. The budgetary allocation for management as per the plan is satisfactory.

Management Weaknesses

1. The sanctuary has 19 villages, 10 of which are regularised revenue villages and nine are unauthorized illegal encroachments. Sincere and urgent efforts should be made to relocate these villages outside the Sanctuary.
2. Presence of villages inside the sanctuary is highly detrimental to the effective management of the Sanctuary.

3. Also, this provides villagers, most of whom are traditional hunters, a perverse incentive to poach animals for their own consumption.
4. Control of pot hunting (poaching for consumption) by local tribal communities ineffective.
5. No Eco-development committee has been formed among the villagers residing inside the Sanctuary or in the fringe areas.
6. Not many efforts have been made to promote ecotourism in the areas around the Sanctuary.
7. The aptitude for wildlife conservation amongst the frontline staff (Forest Guards) needs to be improved as part of their orientation towards wildlife protection, conservation and management. There is a need to train the frontline staff in wildlife management.
8. The committee was informed that extensive bamboo flowering took place during 2016, as a result of which most of the bamboo culms have now dried up. It was noted during the field visit that the dried bamboo culms in the large area of the Sanctuary are now prone to fire damage, and weed infestation during the dry season may also cause fire damage.
9. Inadequate rescue and conflict mitigation capability and infrastructure, including lack of veterinary facilities.
10. At present, six anti-poaching camps are functional, with an average area coverage of 24.6 km2/camp. Based on the threat perception, it would be appropriate that each camp should not have a jurisdiction of more than 12 km2. This implies that a total of about 10-12 camps are required to manage and protect the entire Sanctuary effectively.
11. Malaria attacks are causing the staff to be out of action very frequently. This is causing difficulties for the protection and management of the sanctuary.
12. Information on population estimation and trends of major mammalian species in the Sanctuary is inadequate. There are no data relating to the bear population of the sanctuary although there are records of man-animal conflicts showing injuries and casualties caused by bears. Similarly, the leopard and elephant as well as herbivore populations have not been properly estimated in the Sanctuary.

Immediate Actionable Points

1. Village resettlement plans in adherence to the Government Policies should be made for relocation of villages from Karlapat Wildlife Sanctuary.
2. Efforts should be made to orient the field staff towards biodiversity, wildlife conservation and management, it will be essential to expose them to basic training in wildlife management. It is recommended that short (one-two weeks) orientation and capacity-building courses, short tours to other Protected Areas of the State should be arranged for different levels of field staff of Karlapat Wildlife Sanctuary.
3. Improving awareness of locals and confidence-building measures such as enrolling local youths as Protection Assistants in the core and buffer areas of the Sanctuary can prove to be very effective in conserving wildlife.
4. People's participation is also required for effective management of the sanctuary. Therefore, Eco-development committees should be formed, and they should be involved in the management, particularly in the protection, of the Sanctuary.
5. Besides making provisions for the livelihoods of the villagers, some additional support activities should also be taken up in the villages to garner their confidence.
6. There is an urgent need to provide veterinary facilities to cater for the emergency needs of wildlife rescues in the Sanctuary. It is recommended that a mobile veterinary service unit be established to take care of wildlife-related rescue emergencies in and around the Sanctuary.
7. It is recommended that the staff be made aware of the precautionary measures required to control malaria. Adequate medical facilities and quick reimbursement of medical bills of the staff should be ensured.

8. A special provision may be provided in the budget for removal of the dried bamboo from the entire Sanctuary, and weeds should also be eradicated on a regular basis.
9. The sanctuary is very close to Bhawanipatna town. Therefore, ecotourism needs to be promoted by creating the required facilities for visitors. It is recommended that awareness campaigns be planned in consultation with local communities and implemented in a phased manner. The concept of developing homestays could be promoted in the fringe areas around the Sanctuary. The hospitality facilities may include ecotourism camps and catering, accommodation and camping services managed by the local communities.
10. A nature interpretation centre could also be created for the purpose of creating awareness and promoting ecotourism.
11. Forest Department should carry out wildlife estimation exercises and monitor vegetation dynamics of the Sanctuary regularly. Assistance of local universities/institutes working on wildlife science may be sought, if required.

Evaluators
Shri Azam Zaidi, Former CWLW, West Bengal
Dr. Bibhav Talukdar, AARANYAK, Guwahati
Dr. Diwakar Sharma, Director, PM, M&E, WWF-India
Dr. Bilal Habib, Scientist, WII, Dehradun

9. Bethuadahari Wildlife Sanctuary, West Bengal

Management Strengths

1. Despite the Sanctuary being an isolated patch, it is very well protected against illicit felling, grazing, fire and poaching. A 8-10 feet high mesh iron fencing has been installed all around the Sanctuary.
2. The availability of fodder in the Sanctuary is being improved by opening the canopy and planting grasses in patches of 1-2 ha. The plots are opened in rotation for wild ungulate grazing.
3. Because of the continued growth of the chital population in the Sanctuary, some of these animals were translocated to Buxa Tiger Reserve to replenish the prey population there in 2012.
4. There are two water bodies inside the Sanctuary, which are being maintained regularly. As such there is no shortage of water for the animals.
5. The diverse flora and fauna provide a good resource for conducting education and awareness programmes for students.
6. Being close to Krishnanagar town and NH 34, the Sanctuary is a good tourist attraction.
7. The staff and EDC members show their commitment and sincerity and ensure that tourists visiting the Sanctuary/park do not cause any harm to the fauna and flora.

Management Weaknesses

1. The Sanctuary is not connected with any other Protected Area or forested landscape as it is an isolated patch located near a town.
2. Bethuadahari Wildlife Sanctuary is largely being managed as an urban forest, park or mini zoo rather than a wildlife Sanctuary. No real purpose is being served by its having been declared as a Sanctuary. The site belittles the concept of a wildlife Sanctuary and creates a different impression in the minds of the people who visit it.
3. There is no trained manpower available for wildlife management.



Udayan Borthakur

4. The sanctity of Sanctuary is not maintained as it is open to tourists and people are allowed to visit each and every part of the park.
5. Uncontrolled tourism does pose a threat to the site. The site faces biotic interference from the tourism activities as there are trails all over the Sanctuary.
6. The chital population is not increasing during recent years.
7. Polyalthia suberosa (hamjam) is proliferating like a weed. Although some efforts are being made to eradicate/remove the hamjam, they are not successful.
8. The nature interpretation centre (NIC) in the Sanctuary showcases mostly the tourist attractions of the district, and there is not much information about Bethuadahari Wildlife Sanctuary itself. The NIC need to be re-developed to depict the fauna, flora, natural ecosystem and forest of the area.

Immediate Actionable Points

1. Prior to 1980, the area was used as a nature park and rescue centre for injured wild animals and/or animals that strayed outside the natural forest. Even now it is being treated as an urban forest and mini zoo. The state government should review the present status of the area as a Sanctuary since the sanctity and objective of a Sanctuary are not being maintained.
2. The forest of the area is an appropriate place for conservation of biodiversity. The state/national biodiversity board should be consulted to study the biodiversity of the area and maintain it as a natural park.
3. As a number of tourists and students visit the area, the plants should be identified. Their common and scientific names should be displayed for education and creating awareness. An arboretum can be created for this purpose near the NIC.
4. Micro plans are to be developed with the involvement of the EDCs.
5. Currently, the frontline staff use their own mobiles and also recharge them on their own for making official communications. They should be provided with mobile phones and phone allowances as per the admissible rates.
6. The NIC centre needs to be re-developed with the involvement of professionals. Models of different local animals, plants, significance of conserving forests, biodiversity and ecosystems should be displayed.
7. Polyalthia suberosa forms majority of the undergrowth of the Sanctuary. This species needs to be controlled effectively.

Evaluators
Shri Azam Zaidi, Former CWLW, West Bengal
Dr. Bibhav Talukdar, AARANYAK, Guwahati
Dr. Diwakar Sharma, Director, PM, M&E, WWF-India
Dr. Bilal Habib, Scientist, WII, Dehradun

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10. Bibhutibhushan Wildlife Sanctuary, West Bengal

Management Strengths

1. This Sanctuary has the only natural habitat found within 24 Parganas (North) District. The other natural habitats in the district are under the Social Forestry Division of the Sunderban Biosphere Reserve.
2. The vegetation within the limits of the Sanctuary is natural.
3. Chital population inside the Sanctuary seems to be healthy and growing.
4. Local people are generally supportive of conservation.
5. Minimal dependence of local communities on the forest resources of the Sanctuary.
6. Healthy chital population is a source for reintroduction or translocation in other areas.
7. The area also harbours other rich biodiversity of the region.
8. The Sanctuary area has a very rich avifauna.
9. A good tourist attraction
10. The Sanctuary is encircled on three sides by river Ichhamati, which is also a resting place for many migratory birds in winter.

Management Weaknesses

1. According to the records available, the entire current population of about 200 chital has been built up from 14 individuals, and this may have caused severe inbreeding.
2. Extensive growth of unpalatable species in open areas
3. Untrained staff. Most of them are aging and on the verge of retirement.
4. Poor involvement of local people in tourism activities.

Immediate Actionable Points

1. Minimising stall feeding of chital inside the enclosures by developing fodder by habitat improvement and removing non-palatable species.
2. Regular monitoring of the heath of the growing chital population.
3. Upgrading the existing tourism infrastructure. State-of-art interpretation centre highlighting the importance of the area and associated bird species.
4. According to the records, the chital population started with a founder population of 14 individuals. It is therefore important to keep adding chital from other areas to avoid inbreeding in the population.
5. Biodiversity assessment of the area to generate baseline data on species presence, vegetation dynamics, etc. needs to be initiated.
6. Need to develop surrounding area as Important Bird Area, considering the rich bird diversity of the area.

Evaluators
Shri Azam Zaidi, Former CWLW, West Bengal
Dr. Bibhav Talukdar, AARANYAK, Guwahati
Dr. Diwakar Sharma, Director, PM, M&E, WWF-India
Dr. Bilal Habib, Scientist, WII, Dehradun

11. Chintamoni Kar Bird Sanctuary, West Bengal

Management Strengths

1. The Sanctuary is the only natural habitat in the middle of an urban sprawl. It is very well managed and protected as a natural ecosystem.
2. It meets the aspirations of the local people. The site is used very well by local people for birdwatching and recreational purposes.
3. The area is reasonably well protected because of being surrounded by a boundary wall.
4. The local people are generally supportive of conservation.
5. Local communities do not depend on the Sanctuary for resources.

Management Weaknesses

1. Poor availability of water for the wildlife within the Sanctuary during the lean season.
2. Untrained staff in the Sanctuary.
3. Proposed Kamalgazi-Baruipur extension of the Eastern Metropolitan Bypass along either side of the Adi Ganga (a flow of river Hooghly also known as Gobindpur Creek or Tolly's Nallah and flowing in between Tollygunge and Bay of Bengal) is a threat to this bird haven, as it would transgress a portion of the ecologically sensitive Chintamoni Kar Sanctuary.

Immediate Actionable Points

1. The importance of the Sanctuary as an Important Bird Area needs to be highlighted.
2. Display boards highlighting the biodiversity of the Sanctuary and its importance should be placed within the Sanctuary and its adjacent areas.
3. The government may consider enhancing the strength of the trained field staff.
4. State-of-the-art interpretation centre highlighting the importance of the area and associated bird species should be constructed.
5. Arrangements should be made for provisioning water for wildlife during lean season.
6. Local universities, Institutions should be engaged for carrying out a biodiversity assessment of the area to generate baseline data on species presence, vegetation dynamics, potential threats etc. Since the area is well protected, this information can be used for long-term ecological monitoring.
7. Forest Department in collaboration with the state Tourism Department may promote this park as a popular tourist destination by developing regulated eco-tourism with involvements of the local communities.

Udayan Borthakur



WESTERN REGION

3.4

S. No.	Protected Area	State
1.	Gaga (Great Indian Bustard) WLS	Gujarat
2.	Hingolgadh WLS	Gujarat
3.	Jambughoda WLS	Gujarat
4.	Jessore Sloth Bear WLS	Gujarat
5.	Kachchh (Lala) Great Indian Bustard WLS	Gujarat
6.	Kachchh Desert WLS	Gujarat
7.	Mitiyala WLS	Gujarat
8.	Fossil NP	Madhya Pradesh
9.	Gandhi Sagar WLS	Madhya Pradesh
10.	Kheoni WLS	Madhya Pradesh
11.	Narsighgarh WLS	Madhya Pradesh
12.	National Chambal WLS	Madhya Pradesh
13.	Orcha WLS	Madhya Pradesh
14.	Van Vihar NP	Madhya Pradesh
15.	Aner Dam WLS	Maharashtra
16.	Bhamragarh WLS	Maharashtra
17.	Deulgaon-Rehekuri WLS	Maharashtra
18.	Gautala-Autramghat WLS	Maharashtra
19.	Jaikwadi WLS	Maharashtra
20.	Kalsubai Harishchandragad WLS	Maharashtra
21.	Karanja Sohal Blackbuck WLS	Maharashtra
22.	Katepurna WLS	Maharashtra

Varun Kher



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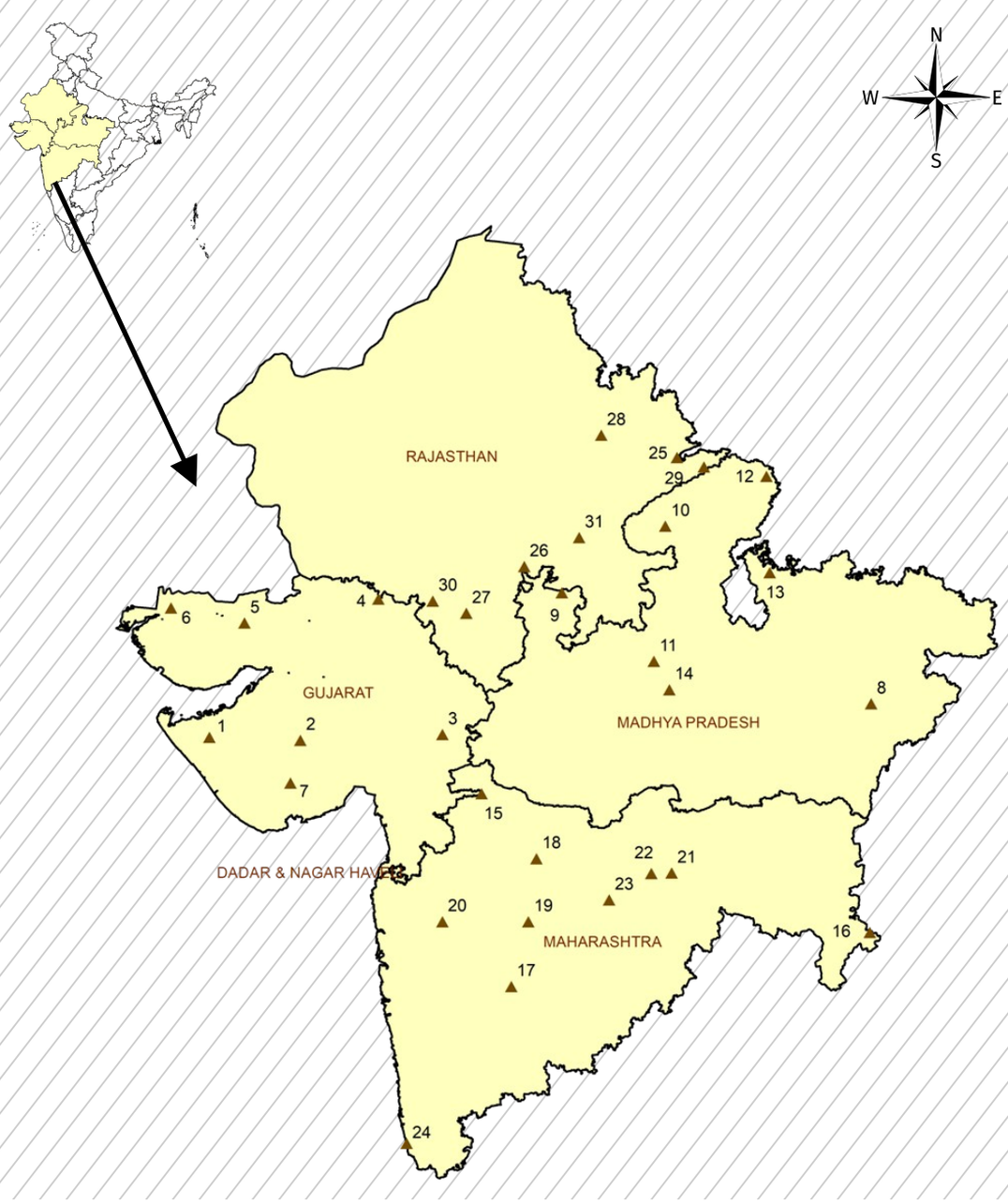
21.	Karanja Sohal Blackbuck WLS	Maharashtra
22.	Katepurna WLS	Maharashtra
23.	Lonar WLS	Maharashtra
24.	Malvan Marine WLS	Maharashtra
25.	Bandh Baratha WLS	Rajasthan
26.	Bassi WLS	Rajasthan
27.	Jaisamand WLS	Rajasthan
28.	Jamwa Ramgarh WLS	Rajasthan
29.	Kesarbagh WLS	Rajasthan
30.	Phulwari Ki Nal WLS	Rajasthan
31.	Ramgarh Vishdhari WLS	Rajasthan



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30.	Phulwari Ki Nal WLS	Rajasthan
31.	Ramgarh Vishdhari WLS	Rajasthan

1. Gaga GIB Sanctuary, Gujarat

Management Strengths

1. Conservation values and threats are well articulated
2. Given the resources, the habitat restoration effort is good and strategies on track
3. Good efforts behind protection, which when extended have good prospects of succeeding
4. A good opportunity for seeking support from Tata Salt Works next door to enhance conservation values

Management Weaknesses

1. Area divided into two portions separated by revenue wasteland
2. Surreptitious livestock grazing and attempts at breaching sections of perimeter fence by local miscreants
3. Poor access to the area during monsoon and access between the two patches is circuitous, creating problems for protection and planned management strategies
4. Negligible stakeholder participation
5. The area is looked after by the Jamnagar forest division. There is no staff posted except a chaukidar. A forester and a guard from the division are vested with management responsibility
6. No separate financial allocation. Even the APO is neglected
7. No NGO support
8. No research. Monitoring population of birds is not taking place
9. Little or no support from local communities
10. The last GIB was seen some 25 years ago and since the bird is tagged with the PA, there is possibility for uncertainty for the existence of the sanctuary. At the time of notification of the sanctuary, substantial tract of the revenue 'waste land' surrounding the site was favourable for GIB and winter immigrants (birds). It functioned as the 'core' by default. Local livestock had space as grazing land. Since then those areas are overrun by Prosopis juliflora and other weeds-now irrelevant as wildlife habitat (birds-the primary focus) and space for grazing livestock.
11. Windmills are coming up in proximity in an arc which is dangerous for wintering birds, especially for large sized birds that move in flocks such as flamingos, cranes, pelicans and ducks that fly low while landing and taking off. These species are seen in good numbers at present

Immediate Actionable Points

1. The current difficulty of access between two patches of the PA, survey numbers 53/1 and 53/2 can be surmounted by dialogue Tata Salt Works (TSW) with a good proposal under CSR or otherwise. The Tata group of companies in different states for disparate conservation issues have lent good support. The raised road in survey 53/2 can be extended to join the raised road of TSW to the west, which would provide an all season access to both patches obviating the problem of impassable road through Gaga village.
2. TSW has wetland habitats that could be an extension of PA values. When there is an understanding, ownership of land will not matter
3. An attempt has to be made to acquire the revenue wasteland between the two PA patches and more if needed. In Gujarat there is precedence in context of Lala GIB WLS. The area needs to be treated for removal of Prosopis and other weeds to restore grassland habitat. A pact needs to be made with local inhabitants of Gaga and one or two more villages in

proximity for active support to protection of habitats and wildlife in exchange for concession for removal of cut grass in patches as would be prescribed in the management plan (not grazing).

4. The Research and monitoring component in the Management Plan needs to incorporate Research on Habitat restoration, Bird ringing program, population monitoring and Habitat evaluation.
5. Enter into dialogue for cooperation of other departments to extend benefits under various schemes to the concerned villagers under the flag of the PA to cement positive relationship with neighbouring villages. There needs to be regular dialogue with gram sabhas of the villages
6. It would be obvious that appropriate staff strength, wherewithal of matching resources and adequate financial support is essential with revision of management plan
7. It is easy to let go PA areas on basis of some arguments not in their support-made out to be hopeless cases or otherwise helplessness. There already are some bad examples of area reductions on grounds of 'star species' no longer being seen or decline of wildlife populations or some such reasons. Such grounds are inappropriate. Besides making concerted efforts to upgrade planning and management there is another consideration. There are now species recovery programmes for some species and going by the poor standing of the forest department in terms of its importance within the country and in the states vis-à-vis other government departments that is easily judged by the size of funding, more species could be seen entering the list of species recovery projects. To ensure success for such ventures-hopefully such slide does not happen--habitats need to be intact and therefore every PA, whatever its current status is important
8. Gujarat is in the lead-environmental education and NGO support for conservation of wildlife and nature, therefore efforts need to be made for participation of NGOs in different facets of management for Gaga.
9. The issue of windmills needs to be addressed at the highest level of administration. These ought not to be permitted in proximity of PAs and other important habitats, especially habitats used by large congregations of wetland dependent birds and those listed among the threatened species.

Evaluators
Shri V.B. Sawarkar, Former Director, WII, Dehradun
Dr. Ashish David, Professor, IIFM, Bhopal
Dr. Nita Shah, Scientist, BNHS, Mumbai
Dr. Gautam Talukdar, Scientist, WII, Dehradun

Nasim Ahmad Ansari



2. Hingolgadh Wildlife Sanctuary, Gujarat

Management Strengths

1. The sanctuary has a good management plan
2. Participation of stakeholders in planning
3. Good habitat restoration strategies
4. Supporting livelihoods of local community
5. Contribution of NGOs in support of livelihoods of local communities and nature education programmes
6. Integration of traditional knowledge to train members of local community as resource persons for some of the nature education programmes
7. Earning local community support for the PA

Management Weaknesses

1. Livestock grazing and activities of livestock owners
2. Inadequate staff strength for protection and other managerial functions
3. Lack of training for department personnel in nature education and in basic ecological monitoring
4. Poor mobility and communication
5. Inadequate financial support
6. Inadequate monitoring of change in vegetation and wild animal population

Immediate Actionable Points

1. Realistic assessment of staff strength in the field for protection, other management functions of the PA and a data entry person with the necessary equipment to maintain database for programmes conducted and their outcomes
2. Staff training to support the PA's role in nature education; monitoring change in vegetation estimating population of wild animals; and developing skills for Ecodevelopment strategies
3. Taking advantage of the support of local communities, strengthening the protection functions
4. Requirement of at least one four-wheel field vehicle, preferably a pickup, a tanker that can be hauled by the vehicle, one motorcycle and a close conference mobile communication system to maintain real time contact with RFO and ACF who have HQs located at distances
5. Establish transect based design to monitor change in vegetation as a response to management
6. Need to use more than one established field technique to estimate population of wild animals and monitoring. Assessment of avifauna by point sample counts
7. Regular media coverage needs to be undertaken with continuation of the radio programme.
8. Possibility of increasing the numbers of education camps needs to be explored. Lavkumar Khachar's writings need to be translated in Hindi and English which would be an excellent material for the education camp. These could be published and offered on sale to visitors. Other informative material such as picture field guides (bilingual) on birds, insects, butterflies, mammals, plants including medicinal plants, geology need to be produced in good quantities for distribution.
9. All village wells need to have parapets to prevent animals from falling in. Rainwater harvesting structures and actions need to be promoted in the surrounding villages
10. Possibilities for patenting the soft drink Findla made from opuntia flowers needs to be explored

11. Facilities and amenities for staff and awards for meritorious work need to be part of the system
12. A good film on Hingolgadh and its role in nature education and other services needs to be planned
13. Adequate financial support for running the nature education programmes and for sustaining other suggestions made for strengthening management of the PA must be provided.

Evaluators
Shri V.B. Sawarkar, Former Director, WII, Dehradun
Dr. Ashish David, Professor, IIFM, Bhopal
Dr. Nita Shah, Scientist, BNHS, Mumbai
Dr. Gautam Talukdar, Scientist, WII, Dehradun

3. Jambughoda Wildlife Sanctuary, Gujarat

Management Strengths

1. Appropriate management plan in place
2. In spite of inadequate staff-consistent with the shortcomings-persistent efforts for protection
3. Habitat restoration strategies are practical
4. Reasonably good support of NGOs in some activities
5. Determined efforts at supporting livelihoods of local communities with varied initiatives
6. Although wildlife based ecotourism under the circumstances of biotic pressures has not quite taken off, the three visitor centres offer the necessary facilities and are well managed. Good efforts at conducting many nature awareness camps each year
7. Man-animal conflict efficiently handled

Management Weaknesses

1. There are 31 villages inside the PA therefore issues such as livestock grazing, fires, encroachments, illegal cutting of trees, poaching, proliferation of weeds and the consequent habitat degradation are spread across the PA habitats
2. Stakeholder participation is weak
3. Inadequate staff strength, patrolling camps, staff amenities and essential equipment. Communication facilities are weak
4. A pilgrimage site is visited by 5-6 lakhs people every year; the most numbers are within one month. There is no plan to manage visitors to reduce impacts
5. A 25 km stretch of road with very heavy traffic passes through the sanctuary. This is highly disturbing besides causing road kills of wild animals
6. There is little research except floral and faunal surveys conducted in past. There is daily monitoring-some observations-by staff on patrolling duties but an appropriate database is lacking
7. Although the PA is not integrated in a landscape at present, there is good scope of doing so.
8. Financial support is inadequate

Immediate Actionable Points

1. Cogent proposals for the required staff strength, including regular filling up of vacancies as those arise, infrastructure support and basic amenities for staff have been made. These need to be considered and provided. This implies the necessary financial outlay from state and central sector budgets. Support under CSR also needs to be explored
2. The conservation issues are diverse. While strong protection is essential, the strategies require addressing the causal factors of the biotic pressures. For this purpose, the support and cooperation of other government departments through their schemes and laws is essential. The forest department needs to express such expectations following which the mechanism needs to be put in place by the government
3. An eco-tourism plan is needed that addresses high volume of pilgrims visiting the temple mentioned in the report-the plan needs to include facilities for pilgrims and ways of reducing impacts. The plan also needs to integrate management of the department's visitor centres, establishing and managing an interpretation facility and the nature awareness programmes already being conducted by the management
4. There is a 40 km stretch of road from Halol to Bodeli of which 25 km passes through the PA. Speed breakers at regular intervals are required. Estimated 1000 vehicles/day including 200 to 300 trucks/night use this 25km stretch through the PA. Road kills often take place on this stretch. Among large animals, 2 leopards, one hyena and 2 nilgai have died in 2017. There is an alternative route from Pavagadh via Bhamaria to Bodeli that can avoid this vulnerable stretch and thus could significantly reduce the pressure on the sanctuary. This needs to be explored.
5. Concerted efforts need to be made to elicit stakeholder participation. While local communities are important, citizens in areas outside also need to be approached. As an example, Vadodara is a seat of education. The citizen's interest in environmental issues and in science could be tapped
6. While areas of research have good chances of emerging from stakeholder engagement in scientific and educational institutions and NGOs, monitoring populations of wild animals and tracking change in vegetation/habitats can be accomplished, documented and evaluated by established field techniques.
7. Although the PA is not integrated in a landscape, at present the managers feel that there is good scope of doing so and managing the conservation objectives through revised plans or portions thereof to the extent necessary. This could be achieved by Working plans, PA management plans or by an overarching landscape based management plan. Such ac landscape could be made up by Jambughoda along with tracts of Ratanmahal, Chota Udepur and Shoolpaneshwar PAs. The species that stand to be benefitted (along with the other associated native wild animals and vegetation) are leopard, sloth bear, chousingha and barking deer. The PAs are connected with corridors constituted by territorial forests and the Narmada drainage and its associated broken terrain. Such a proposal is worthy of consideration.

Evaluators
Shri V.B. Sawarkar, Former Director, WII, Dehradun
Dr. Ashish David, Professor, IIFM, Bhopal
Dr. Nita Shah, Scientist, BNHS, Mumbai
Dr. Gautam Talukdar, Scientist, WII, Dehradun

4. Jessore Wildlife Sanctuary, Gujarat

Management Strengths

1. Conservation values and threats are appropriately articulated
2. Together with the adjoining Balaram Ambaji PA, Jessore WLS shares common issues strategies. Excellent opportunity to manage the riparian habitats along the Balaram river that act as a corridor between the two Pas
3. Appropriate habitat restoration strategies
4. Plans for reintroduction of sambar, chital and grey jungle fowl
5. Cogent proposals for enhancing staff strength, infrastructure and financial support
6. Good effort at addressing man-animal conflict-specifically involving sloth bear
7. There is strong will to do better

Management Weaknesses

1. The area is not zoned
2. Some serious biotic pressures-there are 18 villages inside the PA and numerous hamlets. Grazing pressure is high because of livestock across the border entering the PA frequently-the northern border of the PA is conterminous with the interstate boundary with Rajasthan that runs for ~100km. The common border has the usual issues of other illegal activities and problems of apprehending the culprits
3. Although currently the internal and external boundaries are clear, the settlement under FRA is pending. Transfer of four collectors within a year has complicated the process.
4. Illegal cutting of trees, sale of firewood by headloads, poaching, fires, proliferation of weeds such as Prosopis juliflora and lantana, thus degradation of habitats and decline of wildlife populations
5. The surrounds are disturbed by the presence of several industries
6. There is little stakeholder participation and support of NGOs
7. Staff strength, mobility, communication and finance are inadequate. The important ecodevelopment planning and strategies on the ground to gain support of the local communities have not been able to make any headway for the reasons of inadequate wherewithal for management as mentioned above
8. Techniques for monitoring populations of wild animals and change in vegetation/ habitats are weak

Immediate Actionable Points

1. The area needs to be zoned. The least disturbed area needs to be earmarked as core zone. It is possible that there could be more than one such area. The rest could constitute habitat restoration zone. There is a temple complex within the PA visited by some 50,000 pilgrims during Shravan and Shivratri. This could be constituted a visitor/tourism zone. In the habitat restoration zone the current efforts at restoration need to continue with monitoring. Prosopis, lantana and other weeds need to be removed. In the hills, watershed management strategies need to be employed. The corridor connecting the PA with Balaram Ambaji sanctuary-the riparian habitat along the Balaram River needs to be protected and conserved. On suitable sites the native bamboo, Dendrocalamus strictus could be planted. The pilgrimage area can form the visitor zone so that visitor specific strategies could be put in place
2. Although Banaskantha division has been declared as a wildlife division, it has several territorial functions. The PA needs staff that is exclusively deployed for the management of PA and that the strength needs to be enhanced as per the proposal already made. Needless

to state the staff facilities, amenities, field accoutrements, infrastructure, mobility, communication must be appropriate. This is not possible unless there is adequate funding from state and central governments including CAMPA. There are industries around the PA. Opportunities to elicit support under CSR need to be actively explored

3. There are industries in the proximity of the PA. More are slated to come. These need to be engaged in dialogue and process for constructive support under CSR
4. The personnel need to be trained in broad based wildlife management skills and techniques to start with. This could be done in phases.
5. Expertise in control of sloth bear related conflicts, especially attacks on humans is developed by the NGO SOS. Staff members could be sent for such training at the captive sloth bear facility at Agra or at the Bannerghatta Biological Park where SOS has presence. The issues of crop damage by nilgai and wild pig can be minimized by the locals themselves by employing machan based vigilance and associated non-lethal deterrents.
6. A facility for the reintroduction of the ungulates, sambar and chital has been initiated. However, the founder population-the currently planned numbers of 2 males and four females each for chital and sambars is too small-the populations need to be sufficiently large to succeed in the mission. Without getting into the debate of genetic viability it is necessary to consider viability in numbers to contend with random natural events that influence mortality and recruitment. At least 50 chital and 30 sambars with sex ratio of 1 male to 3 females for each species could be considered to serve as reasonable sizes of founder populations. The best recourse would be to capture animals in the wild from PAs that are capable of contributing towards the numbers and transport these to Jessore WLS for release. This could be achieved in batches over a period of a month. The existing enclosure might need appropriate expansion to receive the animals for the purpose of soft release. Approach for monitoring the population in the post release phase must be clear and technically appropriate. The most important requirement is to meet the five principles of re-introduction of a species advocated by IUCN, although the situation is not about local extinction of the species concerned. The pressure of biotic factors needs to be reasonably under control with adequate space of restored habitat.
7. With regards to the grey jungle fowl, advice-for all phases and founder population size-from the pheasant specialist group of scientists is necessary, including the rationale for breeding the red jungle fowl which biogeographically has no place in the area and ought not to be released in the PA. Even the survival/successful establishment of the reintroduced population of ungulates and the grey jungle fowl, the latter being particularly difficult to monitor, will depend on adequate, and trained (to a degree essential) staff strength with appropriate resources.
8. The problem of livestock coming from Rajasthan and other associated illegal activities could be addressed by engaging help of the forest division across the border. There could be dialogue between the CWLWs of the two states if necessary if high level assistance is needed to resolve the issues. The revenue departments on both sides (relevant district/s, tehsils) need to be involved as well. Building a 100 km wall along the boundary is not a practical proposition because of the very high cost, repetitive maintenance with additional resources over and above those that have been projected to manage the area. The vulnerable points of entry need to be assessed and mapped. Patrolling camps with adequate support need to man these to strengthen protection along the border. All cattle need to be immunized against infectious diseases at intervals prescribed for a particular disease.
9. The settlement under FRA needs to be completed expeditiously. It is likely that some of the internal boundaries between villages, hamlets and PA forest would change with legal as well as management implications.

10. Concerted efforts are needed to enlist participation of NGOs in management. Ecodevelopment initiatives are crucial and support of NGOs specializing in such skills would be invaluable
11. There are standard field friendly techniques to monitor populations of wild animals which need to be put in practice. There are transect and plot based techniques to monitor change in vegetation/habitats those could be adopted. A database-nothing fancy-needs to be established to evaluate change
12. To emphasize the point, that unless staff strength, wherewithal and funding appropriately support the planned strategies even good plans have little chances of succeeding. Whatever the earlier proposals, suggestions made above may be considered to plan and provide the needed strength of staff, its training, facilities, amenities, the infrastructural and logistic support.

Evaluators
Shri V.B. Sawarkar, Former Director, WII, Dehradun
Dr. Ashish David, Professor, IIFM, Bhopal
Dr. Nita Shah, Scientist, BNHS, Mumbai
Dr. Gautam Talukdar, Scientist, WII, Dehradun

Nasim Ahmad Ansari



5. Lala GIB Sanctuary, Gujarat

Management Strengths

1. Conservation values and threats are well-articulated
2. An additional extent of 1593-hectare has been acquired and a fence of 5000m has been raised for protection. Further, 4000m length of fence would be completed which stands in good stead.
3. Habitat elements such as trees, scattered shrubs and open grassy patches are present. Appropriate management will favour the GIB and associated species.
4. Additional 14 chaukidars are engaged for protection

Management Weaknesses

1. There is no exclusive forest department staff assigned for management of the PA and the additional area. One forester and two forest guards from the territorial division Bhuj (West) are detailed for management purpose with no training in wildlife management
2. Infrastructure such as barriers and chaukis except for isolated ones, mobility and communication are inadequate
3. An appropriate plan for maintaining/re-constituting GIB supporting habitat is warranted.
4. There is next to no stakeholder participation.
5. NGO support is weak. The Kutch Ecological Society makes some contribution for awareness.
6. Inadequate financial support from state plan.
7. Monitoring populations of birds-especially of GIB and animals is weak and adhoc. There is hardly any research. There is one doctoral study on GIB by WII in which this area features among many others but a long-term sustained research and monitoring is lacking.
8. A number of windmills have come up in the larger surrounding area which has created a maze of powerlines along with those of the conventional powerline network. The vertical intra space between cables is just 2.5m. Such obstructions cannot be negotiated by heavy and low flying bird like the GIB. One GIB in 2017 had died after colliding with cables. Death of one bird in the already very small population of GIB in the country is disastrous. The issue is particularly serious since Lala and Bhanada count among critical nesting sites of the GIB.
9. Male GIBs have significantly declined in numbers. Three of the five recorded are not being seen anymore. This has serious implications for the future of the species in this region besides the other contributing factors to the overall decline of the species in the country.

Immediate Actionable Points

1. The staff strength of Bhuj (West) division needs to be enhanced by at least two foresters and five guards as stated in the report with a proposal that such additional staff is exclusively deployed to manage Lala and Bhanada areas. Such personnel then need to be under control of the nearest RFO vested with responsibility for direct supervision. The higher ranking supervision has to continue on regular basis. This staff ought to be given short term training in phases for the skills needed. The training needs to extend to more staff members other than those to be exclusively deployed for management of Lala and Bhanada in consideration to the turnover of personnel.
2. The acquired area needs to be notified as an extension of Lala GIB sanctuary with elevation to the PA status.
3. The additional staff needs to be provided residential accommodation at the nearest suitable place with support of one tractor with water tanker, one pickup vehicle, a motorcycle and facility for closed conference mobile system. Barriers and chaukis need to be added strategically with appropriate deployment of chaukidars.

4. It is necessary to hold dialogue with the resident community nearby, graziers and others whose activities are detrimental to the management for the purpose of addressing the negative issues. Cooperation of other concerned departments and NGOs needs to be sought. There need to be awareness programmes for the local community.
5. It is necessary to explore NGO support in addition to that provided by the Kutch Ecological Society for the purpose of developing skills needed for better management-this includes providing some livelihood support to communities that are dependent in some ways on the management area, monitoring populations of birds and animals on regular basis with techniques that are repeatable. Likewise, for tracking change in vegetation and habitats, and of threats in and outside the management area
6. The concern for the future of the GIB is scientifically established by the large platform research project of WII. Although this has led to one doctoral study, it has captured most issues of conservation import. This is not enough. It is necessary to have sustained long-term research and monitoring.
7. To maintain an overall woody savannah with scattered trees mainly to favour the GIB and associated species- eucalyptus need to be completely removed among the existing plantations in the acquired area. Plantations of the indigenous Acacia senegal and A. leucophloea need to be thinned to create scattered clusters of trees among open grassy areas with canopy density not above 0.4. The spreading growth of Prosopis juliflora and other weeds like Cassia tora need to be removed. Outside the plantation areas there is scattered growth of the two Acacias to provide shade for the GIB, the Houbara, the chinkara and associated species adapted to woodland savannah. The grassy patches/open areas where necessary could be better managed with reintroduction of indigenous grass species as and where required. An appropriate plan for the purpose is needed.
8. The serious problem of burgeoning numbers of windmills and the intricate pattern of powerlines can have solutions only at the highest levels of administration in the state. Efforts to address solutions need to start sooner than later. Besides an appropriate awareness programme, the alternative of solar energy needs to be explored. The transmission lines in critical stretches need to go underground (there is one example from the Kachchh desert sanctuary). The power cables between Sindhori to Jhakau along the coast are the shortest stretch that needs to be placed underground.
9. With upgradation of strength of personnel, infrastructure resources and plans for needed strategies, adequate financial support from the state, the centre and other potential sources needs to be planned and provided.
10. The management plan needs to include such planning and strategies as an addendum even before the revision of the current plan is due.

Evaluators
Shri V.B. Sawarkar, Former Director, WII, Dehradun
Dr. Ashish David, Professor, IIFM, Bhopal
Dr. Nita Shah, Scientist, BNHS, Mumbai
Dr. Gautam Talukdar, Scientist, WII, Dehradun

6. Kachchh Desert Wildlife Sanctuary, Gujarat

Management Strengths

1. Values and threats are well articulated.
2. Amazingly rich habitats-terrestrial (grasslands) and seasonal wetlands--for resident and migratory birds unparalleled in the country, if not necessarily in species richness but most certainly in phenomenal numbers and as breeding sites for many species. The birds overshadow species in other classes within the PA.
3. Given its mismatched resources, the Kachchh forest region (Circle) is still engaged in doing its best to address complex issues of management and deserves the support it needs.
4. As a first in the country, powerlines over some stretch have been put underground to avoid death of large birds due to over-head collisions; this serves as a lesson and encouragement to address sensitive stretches within Gujarat and in other states facing similar threats.
5. Efforts at amelioration of habitat--creating waterholes with sweet water for animals on Tragadi bet.
6. Banni grasslands have a working plan for their management. The issues have been appropriately identified.
7. Area is rich in fossils-although evidently there have been small scale explorations-thus the PA represents a unique ecosystem connecting extinct species of the ancient geological times to those extant in present times

Management Weaknesses

1. The very nature of the desert ecosystem-the name desert--invokes ill-informed and unsustainable belief across the board with the exception of the forest department. The general belief is that a 'desert is a desert' where trees or vegetation do no grow, is no good for farming or other such use and has mostly brackish and salt water, and therefore lends itself to artificial modification of the system-by whatever means. Wildlife by all its connotations including habitats might hold an important place in the Constitution of India and the specific laws for the purpose, but the matter of conserving the entities, living or otherwise have received reluctant acceptance and little actions-platitudes--that do not serve the interest of the magic land that GRK is.
2. The sanctuary has the largest extent among all PAs in the country, yet there is no exclusive staff barring some chaukidars posted in the field for management. The staff of some ranges in Bhuj (West and East) territorial divisions are detailed for the purpose. However, they too face limitations of force strength, wherewithal for addressing the varied management needs of the PA which include the limitations imposed by the priorities of the territorial divisions. The staff is not trained in wildlife management which is imperative for an area that is highly fragile at the same time has unparalleled and astounding ecological riches and complexities
3. Forest department personnel are not allowed to have camps/chaukis inside large portions of the PA manned by BSF because of security concerns.
4. Portions of 39 villages are included in the PA. There are disputes in settling the boundary while no efforts are spared for legal delineation by the forest department. Settlement under FRA is not through. Grazing of livestock and consequently degradation of the fragile habitat is a matter of concern especially so in the Banni grassland area. Whatever happens in Banni grassland outside the PA jurisdiction affects the portions included in the PA. The issues cannot be viewed in isolation.
5. The Adani Desert Car Rally stretch within Banni grassland might be outside the PA area but such activities undertaken on the premise that it is only an unproductive desert by the Kutch Infrastructure Development Society is wholly unacceptable.

6. The attempted road alignments across some portions of the desert for different purposes is unsustainable whatever be their economic basis-engineering wise and ecological--are not without natural consequences.
7. The fossil park does not have the attention it deserves. There is much more to the palaeontological treasure in the area than the little-good as it is--that the fossil park represents. During January 2016 near village Lodai (outside the sanctuary) a complete fossil of ichthyosaur was discovered. The fossil is said to be 152 million years old.
8. Habitat restoration attempts on savannah grassland on Tragadi bet are ecologically impactive. This also needs to be viewed by the fact that it is a small, 4km2 island that attracts the principles of insular biogeography.
9. There is next to no participation of stakeholders.
10. There are ownership issues about land on Kaladunger that have dragged on for some years in the courts.
11. There is no participation of NGOs.
12. There are no ecodevelopment initiatives.
13. There is little research and monitoring.
14. The weakness-inadequate staff strength, wherewithal and those weaknesses in management issues are a reflection of poor financial support.
15. There are large numbers of windmills already occupying an arc around the PA and any number that are slated to come.

Immediate Actionable Points

1. The management plan would gain greater strength and would be easier to apply by including theme plans e.g. the nesting sites of the greater and lesser flamingo; the portion of Banni grassland which is quite different; the different bet areas etc.
2. The weaknesses narrated might read as criticism of management of the PA but most certainly it is not so intended. The Kachchh forest region/circle and the two forest divisions have spared no efforts in looking after the vast area of the sanctuary but given the resources they have severe limitations. There are many actions that are within the purview of other departments and decision making at high levels of governance of the state.
3. Consistent with conservation issues, the immediate need is for a realistic appraisal of staff strength. The sanctuary must be treated as a separate unit of management-not just an extension of the two territorial divisions. There has to be matching support of staff strength, infrastructure, mobility, effective communication system and other relevant resources. Appropriate training of personnel-in phases as it would need to be, preparation for research and monitoring system and then making the necessary funding available must follow.
4. On basis of cogent expression of the forest department, decisions need to be taken at high levels of administration of the state to ensure that all concerned departments lend the necessary helping hand-actions that those other departments need to take according to their terms of reference--to the forest department enabling it to address the complex issues of management.
5. Forest department is not being allowed to raise camps in certain tracts of the sanctuary by the BSF on the basis of security concerns. This is acknowledged since Pakistan's misadventure-Operation Haider as they called it-had begun in January 1965 along the northern border of the Rann of Kutch that defines the boundary between India and Pakistan in this region and which later developed in war with Pakistan. The forest department represents a responsible, disciplined and highly organised uniformed force used to law enforcement as per its responsibility and working under very harsh conditions. It is legally mandated to have its presence inside PAs in the country for the purpose of

management. The flamingo city, the only known nesting island of the greater flamingo falls in this area. On the basis of recommendation/proposal of the forest department, an appropriate dialogue needs to take place between government of Gujarat, joined by the Ministry of Environment, Forests and Climate Change, Government of India (GoI) with the Ministry of Home, GoI to resolve the anomaly. The forest department could work with the necessary support to its force inside the sanctuary in areas under question alongside the BSF on mutually agreed terms.

6. The Kutch Infrastructure Development Society and other such organizations along with the larger corporate sector that is present in the region need to engage in activities that are supportive of the fragility of the desert ecosystem. The forest department needs to state its expectations. It would be obvious that the government of Gujarat would need to step in for the purpose.
7. Explorations by competent palaeontologists-it is an 'endangered' breed of scientists in India--in areas outside the sanctuary could lead to exciting discoveries. Extrapolating such values by analogy to the PA without disturbing the habitats stands to add unique values to the PA. Further, searching for fossils on the surface selectively in buffer zone of the PA could also be equally rewarding. This would significantly enhance its conservation importance. This is not a place to elaborate what this would mean in terms of constructing the geological history of this area and its relationship with the life we see now. Needless to state that it would add a dimension to the protection needs.
8. Priority needs to be accorded to settle issues of demarcation of the sanctuary boundaries concomitant with settlement of rights under FRA with cooperation from all agencies/departments concerned. Likewise, for the issues of conservation of the Banni grasslands.
9. Consistent with ecological needs, the economic issues need to be addressed-e.g. those relating to Banni grasslands and others. This is never easy, but it is axiomatic that an economy that is not based on ecology cannot be sustainable and when such economy fails it is impossible to resurrect it because its ecological foundation will have disappeared by then.
10. Gujarat has firmly established the institution of NGOs. Efforts are needed to engage those that have appropriate agendas to support the cause of the sanctuary. This would also include priority research--needs that have good chance of emerging from such engagement along with scientific institutions of repute such as WII and BNHS and for arriving at techniques for monitoring change in the desert ecosystem and its wildlife (please also see remarks under section 5.3 of the report). The BSF personnel and the military need to be sensitized and made aware of their ecological responsibilities-in addition to their mandate. The Army has an Adventure Cell at its HQ in Delhi and has been proactive in designing wildlife conservation short courses for the army personnel. Such contact will be useful and a parallel proposal of this kind needs to be moved in the Ministry of Home, GoI for BSF and other para military forces through the Ministry of Environment, Forests and Climate Change, GoI.
11. There is need for participation of stakeholders with transparency in planning strategies and management of at least some actions on the ground. This would pave the way for ecodevelopment initiatives that are important to sustain the ecosystem.
12. It is to repeat that emergence of windmills as a force poses serious threat-not just the rotors and their sweep but with the sounds they produce, the spread of sound frequencies and the network of powerlines together--to the hundreds of thousand birds that depend on the habitats within the sanctuary. This is not about tilting at the windmills. There are complex economic and ecological factors in play. One thing is certain the windmills do not have a place in this region whatever the economic argument. Solar energy is an alternative with high initial capital costs, but those would be small in consideration to what the

priceless ecological system that stands to lose. The issues need to be resolved at the highest levels within the state government. The sanctuary, including Banni is located within the Central Asian Flyway which is all the more significant. It is essential to mount a large platform research to address the menace of windmills/windfarms and their economics against ecological costs.

13. There are many unregulated china clay mines around the Bela and Khadir bets that need to be surveyed and the illegal operations need to be stopped. A road connecting Khadir, Bela and Kaladunger is under construction and could have negative implications for Tragadi bet. This needs to be assessed and mitigation as necessary is required to be planned.
14. GRK is best known for the annual desert festival. The magical land of nature that the sanctuary is does not appear even as a squeak in the minds of citizens. An excellent outreach plan that reveals the wondrous chapter of India's ecological riches must find a place in the minds of citizens of this country. Engaging experts to do that would be among the least efforts towards forcing informed decision making to secure this landscape. The government of Gujarat has taken resolute care to secure the future of the Asiatic lion within the state. By similar analogy the other species inhibiting the Kachchh desert sanctuary and the fragile ecosystem deserve no less.
15. From the existing water pipelines water connections need to be provided for forest offices and camps in the western part of the sanctuary which is particularly dry. Towards the east the need is specifically on the axis Amrapur to Dholavira.
16. Wading through the complexities of management needs and their resolution must lead to a new management plan.

Evaluators
Shri V.B. Sawarkar, Former Director, WII, Dehradun
Dr. Ashish David, Professor, IIFM, Bhopal
Dr. Nita Shah, Scientist, BNHS, Mumbai
Dr. Gautam Talukdar, Scientist, WII, Dehradun

Nasim Ahmad Ansari



7. Mitiyala Wildlife Sanctuary, Gujarat

Management Strengths

1. Site included in integrated plan for the Gir PA
2. Laudable efforts to address conservation issues-lion and other species including rescue and treatment in spite of inadequate staff strength and financial support
3. Habitat restoration and protection efforts consistent with the available manpower and finance
4. Regular dialogue with local communities to strengthen protection
5. Long-term research on lions with telemetry has been done by WII in collaboration with the Forest Department and results have been duly incorporated for upholding conservation of in the area.

Management Weaknesses

1. Livestock grazing including immigrant graziers, fodder collection, habitat degradation
2. Illegal lion shows conducted by some farm house and resort owners
3. Although the site is included in integrated planning for Gir PA, site specific planning and support is lacking. The PA management is part of the Dhari territorial division therefore even when there is will to do better, the territorial issues mask the needs of the PA
4. Inadequate staff. Out of 11 posts of RFOs in Dhari division 9 are vacant. The RFO made responsible for the PA (charge held by a Forester) has territorial duties. There are only three guards on the site although territorial staff-the RFO and a forester help
5. Depredation of livestock by lion and leopard and crop raiding by wild pigs and nilgai that need real time attention-staff strength is a problem to address issues
6. Inadequate financial support. Just for ex-gratia payment for depredation of livestock, Dhari division has to pay Rs 55-60 lakhs annually. To be effective an annual funding of Rs 75 lakhs is needed
7. Degradation of corridor habitat between Gir and Mitiyala. The information is not comprehensive
8. No clarity on population estimation techniques for wild animals
9. Ecodevelopment efforts are lacking. There are 17 villages on the periphery
10. 33 windmills are slated to come up in proximity of the PA boundary and along dispersal corridors
11. Encroachment of agricultural lands into the northern fringes of the WLS

Immediate Actionable Points

1. Although the site is included in the integrated management plan for Gir PA, which is a strength, the Gir sanctuary and national park together have numerous issues and therefore a satellite area like Mitiyala not receiving site specific attention as needed can be understood. However, this can be overcome by site specific planning by an extended team of planners-for all satellite areas of Gir (lions driving the planning as flagship), is essential. It necessarily would be a protracted process vis-à-vis that for a single standalone PA plan
2. There are issues of protection relating to livestock grazing, fodder collection, illegal lion shows, habitat restoration, crop raiding and livestock depredation that could substantially be addressed by providing realistic and exclusive staff strength to Mitiyala. The existing vacancies and lack of promotions are issues of concern and need to be suitably addressed at the earliest. It follows that basic staff amenities and incentives need to be in attendance. The size of the PA might be small but conservation of lions is involved and along with that a host of other issues in areas outside the PA. Local communities respect

lions and are proud of the fact that the species is extant only in Gujarat. Advantage needs to be taken of this fact to involve the local communities constructively in management. The current dialogue with them mainly concerns with their problems of crop and livestock depredation that needs to be extended to their cooperation in management

3. There are 17 villages but there are next to no Ecodevelopment efforts. This can be understood in the light of lack of resources. Village level microplanning, sourcing funding through the various relevant schemes of other departments needs to be explored to gain support of the local communities
4. The illegal lion shows is a serious matter and needs to be addressed by resolute enforcement of law, if needed by specifically framed rules that hold the perpetrators as well as those attending the show on equal footing for the offence/s
5. Considering the management issues, reasonably adequate financial support for all upgradation in planning and management, including additional staff strength needs to be provided
6. On research and monitoring front two priority actions are needed-detailed investigations about the status of dispersal corridors and possible conservation measures and secondly to employ more than one established population estimation technique for monitoring population of wild animals on a regular basis
7. Strong NGO support needs to be explored. Lion conservation can attract several NGOs who might have different expertise. Gujarat leads in NGOs that work for varied conservation causes.
8. There are 13 windmills along the periphery of the PA and it is learned that in all 33 are slated to be established. This has several implications those that need to be considered at the highest level of the state administration. All tracts in the proximity of key conservation areas like PAs and other significant habitats especially wetlands are threatened by such installations. A multifaceted research is necessary. Some windmills were raised in gauchar areas within corridor tract following which there were PILs in 2014 and 2017.

Evaluators
Shri V.B. Sawarkar, Former Director, WII, Dehradun
Dr. Ashish David, Professor, IIFM, Bhopal
Dr. Nita Shah, Scientist, BNHS, Mumbai
Dr. Gautam Talukdar, Scientist, WII, Dehradun

8. Fossil National Park, Madhya Pradesh

Management Strengths

1. Connecting wild species during the geological past with those of the present times provides a new dimension to conservation of wildlife
2. Protection is effective
3. Excellent interpretation centre, equally good displays in the field with signage
4. Excellent staff capability at the interpretation
5. Good visitor services

Management Weaknesses

1. The park does not have a management plan. Management is driven by annual plan of operations (APO)

2. The perimeter fencing has some weak sections
3. Some signages in the field are deteriorating
4. Lighting in the interpretation centre is poor
5. In the visitor area many electricity fixtures, including those that run on solar energy are not functioning
6. Staff mobility is poor
7. Staff strength and training to the staff is inadequate
8. There is no NGO support
9. There are other potential biological values in the park that have not been explored
10. Staff amenities and recognition of good work are weak

Immediate Actionable Points

1. The park needs to have an appropriately developed management plan.
2. The park has values in species of different classes-mammals, birds, herpetofauna, butterflies and bee hives. A survey is needed to establish these values and integrated in the management plan. For example, bird watching as an additional attraction could be rewarding for visitors
3. The perimeter fence needs to be redone where the sections are weak and ineffective to prevent entry of intruders and livestock
4. Regular maintenance is needed for the interpretation centre including the inside lighting and signages in the field that was originally established by CEE. An Annual Maintenance Contract with CEE is needed for their appropriate maintenance. A map of the site indicating features needs to be displayed in the interpretation centre. Well-designed folders that represent the values of the site are needed.
5. There are 10 electric poles in the visitor areas but the halogen bulbs are presently defunct. During 2009 solar lighting was established. There are 20 solar lights but many do not function because of lack of maintenance. Support of Urja Vikas Nigam is essential for the purpose. The daily wage personnel could be trained for standard maintenance.
6. Staff strength is inadequate. The position of the RFO is vacant for some years. The effective staff on the site includes one forester and two guards and two persons on daily wages. The interpretation centre needs at least two FGs, one of these to attend to the visitors in the open display area and two more for protection. At least a Deputy RFO is needed to oversee management. The staff strength cannot be based purely on the size of the area but on its values and functions
7. While one lady forest guard has excellent skills for interpretation with another equally good in the field; the staff in general, including additional personnel when in place need to be trained in skills demanded by this PA
8. As for resources to increase the efficiency of personnel residing at the site, their quarters suffer from deficiency of water and upkeep. The overhead tank and mechanisms for distribution of water have not been maintained appropriately. There needs to be an integrated water supply system along with the Guest House facility, supported by a pump and pipes connecting to the water supply line of the staff quarters. Establishing water harvesting systems in all structures may also be considered.
9. At least two motorcycles are needed to maintain contact and seeking help from outside the site. There is no such mobility at present.
10. The visitor paths and shelters are well laid out and located. Drinking water points in shelters are lacking. There needs to be an adequately equipped first aid facility with staff trained for attending to its functions.

11. The Birbal Sahani Institute of Palaebotany at Lucknow was initially involved in investigations and developing the park values. The Geological Survey of India is another organization that could be involved.
12. To recognize the good work of staff and to provide encouragement those with merit need to be recommended for award/s as instituted in the state.
13. Support of NGOs needs to be explored. There is some excellent infrastructure and logistic support provided by NGOs to some of the tiger reserves in the state. They could provide the necessary support to the park.

Evaluators
Shri V.B. Sawarkar, Former Director, WII, Dehradun
Dr. Ashish David, Professor, IIFM, Bhopal
Dr. Nita Shah, Scientist, BNHS, Mumbai
Dr. Gautam Talukdar, Scientist, WII, Dehradun

9. Gandhisagar Wildlife Sanctuary, Madhya Pradesh

Management Strengths

1. Considering the management model for the sanctuary--PA being part of the territorial division of Mandsaur, the resources of the division are deployed in the best possible manner. This does not however mean that the staff strength is adequate.
2. One of the best habitats for the critically endangered vultures.
3. Strong potential for eco-tourism and nature awareness-historic sites, scenic places, aquatic habitats and species, vulture conservation.
4. Opportunity for developing support for the PA through the 12 eco-development committees.
5. The sanctuary is categorised in the Vulture Safe Zone (VSZ), mainly because the Principal Long Billed Vulture colony is situated along the Chambal River in Kota, Rajasthan.

Management Weaknesses

1. Area is not divided into appropriate zones.
2. Livestock grazing pressure from large number of cattle during monsoon, free ranging cattle, immigrant sheep and goat. Protection is an issue.
3. Considerable vacancies in the rank of forest guard.
4. Stakeholder participation in management is low.
5. Staff strength and training in wildlife management, especially considering the values, are inadequate.
6. Mobility and communication could be much better.
7. NGO support is weak.
8. Information about the PA in public domain is weak.
9. Research and monitoring is neglected.

Immediate Actionable Points

1. Area needs to be zoned-a core area including the valleys, portion of the plateau and stretch of Chambal River (the best vulture nesting sites along cliffs, critical areas for crocodiles and otters. Dialogue with the Irrigation and Fisheries department is necessary. The degraded areas could be identified to constitute habitat restoration zone. The sites of visitor interest-

cave paintings, fort, scenic points could constitute the visitor zone. Dialogue with the Tourism department is necessary especially since a resort is being developed.

2. Vacancies in the forest guard need to be filled up. Staff strength is always an issue with PAs and although having a PA as part of a territorial division has some argument in its favour, the PA management falls within the priorities of the territorial division. The territorial divisions, without exception are overburdened with management issues and there is every likelihood of the PA not getting the attention required. This of course is a general statement. It is necessary to have a realistic assessment of staff strength needed and then to persist with it for approval. Having enough number of well-supported patrolling camps is a necessity. Likewise need of at least one pick-up vehicle, some motorcycles, wireless connectivity and one boat with outboard engine of required capacity are the corresponding needs.
3. The management is trying its best in addressing the livestock pressure. It has embarked upon 'Bhed abiyaan' to address the issue of the large seasonal influx of sheep and goat across the border. There needs to be an arrangement of cooperation at high level with the government of Rajasthan across the border to address the menace of releasing large number of cattle within the sanctuary, seasonally or otherwise.
4. Stakeholder participation, locally and those interested from outside is necessary. There already are 12 eco-development committees within the PA. The next step would be to involve those in micro level planning and seeking benefits of the many schemes under various departments that are meant for the welfare of the local communities. While some can be achieved at the district level coordination committee meetings this needs to be pursued at highest possible levels. When local communities perceive benefits associated with the PA their vital support for protection can be a reality.
5. Frontline staff members need to be deputed for short term courses at the wildlife training centre at Tala. Vulture conservation, conservation of aquatic species, visitor services-now that a resort is coming up, are some areas of training.
6. With the responsibility for vulture conservation and presence of aquatic species, tie ups with NGOs and scientific institutions for establishing skills, monitoring techniques and protocols are essential. The vulture population needs to be monitored with focus on nesting and demography. The work is best done during the period from October to May each time. While the long billed and the Egyptian vultures could be monitored along cliffs, the tall tree forests in the valleys need to be scoured to gather similar data on the tree nesting white rumped vultures. Only numbers are of little use (for all three species).
7. Population assessment of the larger terrestrial vertebrates need to be conducted at least during every alternate year using more than one established techniques for the purpose so that the results could be counterchecked.
8. Population assessment of crocodiles, otters, turtles etc. need to be undertaken annually, so also the assessment of waterfowl. A programme of bird ringing could be thought of in collaboration with BNHS.
9. Monitoring change in vegetation-woody, herbaceous, grasses, weeds needs to be undertaken with permanent established design and techniques on the ground. Population estimation of larger terrestrial vertebrates needs to be conducted during alternate years. There is considerable scope in exploring research projects likewise.

10. A larger survey of the watershed of the dam along with the irrigation department is needed to identify areas requiring the standard watershed management treatment. The funding needs to be provided by the irrigation department as it has the resources and such actions are of their primary interest which in turn would benefit the aquatic species and waterfowl. While the benefits of irrigation go to the society, there are other departments like the fisheries, agriculture, revenue which are through their mandates and schemes are connected with economies of people and their welfare. These departments also need to contribute to the management of the watershed inter alia the habitats.
11. The PA is very valuable and therefore appropriately designed information about the PA needs to be posted on the department's website. Once an outreach is established, development of other material could be planned.

Evaluators
Shri V.B. Sawarkar, Former Director, WII, Dehradun
Dr. Ashish David, Professor, IIFM, Bhopal
Dr. Nita Shah, Scientist, BNHS, Mumbai
Dr. Gautam Talukdar, Scientist, WII, Dehradun

Pilu Sitapara



10. Kheoni Wildlife Sanctuary, Madhya Pradesh

Management Strengths

1. It is easily approachable by road, located 125 km from Bhopal.
2. The River Jamner flows through the sanctuary, and there is water in pools throughout the year.
3. The water resources are adequate, and four or five new water holes have been created in the sanctuary. Tube wells have been dug and solar pumps installed to provide water in concrete saucers in the pinch period.
4. Seven eco-development committees (EDCs) have been created, and they are functioning well.
5. There is no village inside the sanctuary. Only one village was inside the boundary of the wildlife sanctuary, and this village was relocated outside, about 6-7 km away, last year (2016).
6. The number of vehicles available (one Bolero, one Bolero Camper, one Tata Xenon and one water tanker) is adequate. One Bolero has been taken on rent for patrolling purposes.
7. The Management Plan has been extended by the CWLW up to 2018, and a draft management plan has been prepared though it has not been written according to the WII guidelines.
8. The number of forest beats has been increased from 12 to 24. A total of 17 Forest Guards are working in the sanctuary.
9. Weapons are available in the sanctuary, but they have been deposited with the police.
10. Fair-weather roads are available in the sanctuary, and hence accessibility and patrolling inside the sanctuary are easy.
11. Four tigers (including two cubs) have been reported in the sanctuary in the recent past, indicating that the corridor connecting Kheoni Wildlife Sanctuary and Ratapani Wildlife Sanctuary are functioning. The sanctuary seems to be capable of supporting, in combination with the other protected areas connected to it, a small population of tigers.

Management Weaknesses

1. The wireless sets have not been operational for a few years. The staff depend on the mobile phone network, but some areas in the park may not receive mobile signals.
2. There are problems of illegal grazing and felling on account of the villages at the periphery of the sanctuary.
3. There is no system of stall feeding of cattle in the peripheral villages.
4. The staffing (one Superintendent, one RFO, one Dy RFO, two Foresters, 12 Forest Guards and five daily-wage employees) is not sufficient for the newly created beats.
5. Weapons have been deposited in the Thana since there was apprehension that they may be stolen.
6. There is very little infrastructure in the form of chowkies and nakas. Though new ones have been proposed, they have not yet been created.
7. The boundaries of the wildlife sanctuary are porous. There are no barriers to human movement into the sanctuary. While the eastern and western boundaries are connected to forests, and are essential for animal movements, human habitations abut the northern and southern boundaries.
8. There are 34 villages on the borders of the sanctuary, exerting a lot of anthropogenic pressure on it.
9. The budget is mainly from the MoEF&CC, and almost no funds are received from the state government. About Rs.40-45 lakhs is received annually. However, this year the sanctuary received Rs.57 lakhs under IWDP, Rs.33 lakhs in the State Plan and Rs.33.8 lakhs for ecotourism under the State Plan.

10. No funding is available from CAMPA. A proposal for Rs.21 lakhs has been sent to the PCCF, but the amount has not been sanctioned yet.
11. There is a building for an interpretation centre, but no infrastructure or exhibits are available. Tourists have no means of obtaining information about the sanctuary.
12. The tourist footfall is only about 5000-6000 per year, even though the sanctuary is located conveniently close to Bhopal as well as Indore.
13. An animal census has been conducted once in 2 years, not annually, and will be carried out next in 2018. The process by which enumeration of wildlife was done has not been documented.

Immediate Actionable Points

1. A boundary wall needs to be erected on the northern and southern sides of Kheoni Wildlife Sanctuary as the eastern and western sides are part of the corridor connecting Ratapani Wildlife Sanctuary and the abutting territorial forest range, respectively.
2. A Management Plan needs to be prepared at the earliest according to the WII guidelines after conducting consultations with stakeholders and obtaining approval from the CWLW.
3. Vacant posts need to be filled up as soon as possible.
4. The wireless sets need to be made functional and the forest staff mobile bills should be reimbursed under the CUG plan for effective protection.
5. The interpretation centre needs to be equipped fully (TV, DVD, signage, projector, etc) as it is practically non-functional at present.
6. Two watchtowers need to be built for wildlife watching and for detecting fires.
7. More families need to be given LPG connections subsidised under the Ujjawala Scheme of the Central government.
8. The administrative control of the sanctuary needs to be taken from the territorial wing and a separate wildlife wing created for better and efficient management of the sanctuary. Detailed modalities need to be worked out (though the CWLW was of the opinion that the status quo should be maintained).
9. The fair-weather road to Kheoni Forest Rest House needs to be repaired for better patrolling and protection.
10. Five more chowkies need to be created for effective protection and checking of trespassers.
11. Thirty-five or 40 fire watchers are employed from February to June (during the fire season) on daily wages. During the rest of the year they are employed as helpers in each beat/patrolling camp. Their number needs to be increased as needed.
12. More publicity is needed to attract tourists. Signage, pamphlets and brochures need to be prepared and disseminated at tourist sites, hotels, railway stations, bus stations, etc.
13. Ploughing the revenue from entry tickets back into the development of the sanctuary should be allowed.
14. The field staff, from the RFO downwards, need to be trained in modern census techniques and wildlife-related issues, and the system of data collection and recording used for wildlife enumeration needs to be strengthened.

Evaluators
Shri U.M. Sahai, Former CWLW, Rajasthan
Dr. Advait Edgoankar, Professor, IIFM, Bhopal
Ms. Seema Bhatt, Independent Consultant, New Delhi
Dr. S.P. Goyal, Former Scientist, WII, Dehradun

11. Narsingarh Wildlife Sanctuary, Madhya Pradesh

Management Strengths

1. The sanctuary is located on a highway (NH 12), and it is easily approachable from major cities.
2. The ungulate density is high-chital, nilgai and sambar are easily visible to tourists.
3. The road network within the sanctuary is well maintained with many fair weather roads. The total length is approximately 67 km.
4. The big lake (22 ha) inside the wildlife sanctuary is an attraction for tourists.
5. The water available in the sanctuary for the wildlife (18 water sources) is sufficient.
6. Twelve ecodevelopment committees are functioning. A total of 1000 LPG connections were distributed to the villagers after taking a Rs.500 deposit.
7. An ecosensitive zone meeting was conducted. The ecosensitive zone has been identified: it is mostly up to 2 km from the boundary but about 100 m near Narsinghgarh town.
8. There is almost no human-wildlife conflict. A very small number of complaints of wild pig and nilgai raiding crops have been registered.
9. Adequate funding (approximately Rs.100 lakhs) is available from diverse sources for management, including Vikas Nidhi from revenue earned from tiger reserves (Rs.22.5 lakhs), Central Fund under IWHD (Rs.57 lakhs), Ecotourism Board (Rs.25.5 lakhs), , State Plan (Rs.11.53 lakhs) and CAMPA funds (Rs.21 lakhs).
10. The number of vehicles available for patrolling and transport is sufficient. These include two Mahindra Boleros, two motorcycles and two electric auto-rickshaws (for tourist transport).
11. An interpretation centre is functioning, and wildlife movies are shown. A documentary on Narsinghgarh Wildlife Sanctuary is available.
12. Brochures and pamphlets of the sanctuary are also available for the public.
13. The mobile connectivity is good, and phone signals can be received from most parts of the wildlife sanctuary.
14. There are two nature trails on which trekking can be done. They are 6-7 km long each.

Management Weaknesses

1. Delayed release of central funds hampers timely completion of development works and utilisation of funds.
2. The forest corridor near Sehore, linking the sanctuary with other forest areas, has been wiped out, leading to isolation of the sanctuary in the broader landscape.
3. There are 48 villages within a 2 km radius, 54 villages within a 5 km radius and 71 villages within a 10 km radius, causing anthropogenic disturbances.
4. NH 12 passes through the sanctuary, causing disturbance and animal deaths due to collisions. A proposal for widening this highway to four lanes has been approved, further exacerbating this issue. In total there are three roads that are being used by the public.
5. An extent of 41.8 ha near the highway is private land, with pattas having been given. This is a source of anthropogenic disturbances.
6. None of the staff have been trained in wildlife-related issues. The sanctuary superintendent (ACF) reports to the DFO (territorial). The Range Forest Officer is in additional charge.
7. No rescue vehicle or staff veterinarian is available. When needed, a wildlife-trained veterinarian is called from Bhopal, which is 2 hours away.
8. The wireless sets are not operational.

Immediate Actionable Points

1. Village Chainpura needs to be shifted at the earliest. There are two other villages (Deogarh and Gandhigram) at the edge of the sanctuary, and these may be shifted later on.
2. Boating (with proper safety measures) may be promoted in the Chidikho Lake, and camping facilities can be provided later to improve the services available for tourists.
3. The entire staff of the sanctuary staff should be covered under CUG.
4. The informal zonation for tourism purposes should be formalised in the next management plan.
5. EDC guides can be trained as naturalists so that they can educate visitors on the trekking routes.
6. There is an ancient temple inside, and the historical values can be interpreted for tourists. It should be ensured that no extension of the temple takes place.
7. Brochures/pamphlets are available, but these need to be disseminated widely so that more tourists know about the sanctuary.

Evaluators
Shri U.M. Sahai, Former CWLW, Rajasthan
Dr. Advait Edgoankar, Professor, IIFM, Bhopal
Ms. Seema Bhatt, Independent Consultant, New Delhi
Dr. S.P. Goyal, Former Scientist, WII, Dehradun

Nasim Ahmad Ansari



12. National Chambal Wildlife Sanctuary, Madhya Pradesh

Management Strengths

1. There is a generic tri-state Management Plan in addition to the existing plan, which has been extended up to March 2018. The new management plan is being prepared. The staff strength is sufficient for patrolling. The 435 km long sanctuary has 46 ghats. Each one is manned by a Forest Guard.
2. Accessibility to the area is good, and it is a problem only when the water level is low.
3. The staff are dedicated to wildlife, and many of them have many years of experience of working in wildlife sanctuaries. WII doctoral students have been doing field work in this area, and they have been used for training field-level staff members.
4. Binoculars and GPS sets are available for every Forest Guard.
5. Eight Bolero vehicles are available for the DFO (one), ACFs (three), RFOs (three) and flying squad (one).
6. Three patrolling boats are available. All of them are functioning with adequate safety measures and trained boatmen.
7. Joint patrolling takes place along the roads with the police. A total of 200 vehicles have been confiscated, and 76 cases have been challaned in court.
8. Three awareness programmes and two Anubhuti programmes have been carried out in seven ranges in cooperation with the Eco Development Board.
9. Extension work on medicinal plants has been carried out with the help of a local NGO, Jagriti. Farmers have been encouraged to plant shatavari and guggul.
10. The captive breeding centre is carrying out good work for the gharial and endangered species of turtle, including Kachuga dhongoka. A total of 145 gharials have been marked and are ready for release. Twenty-five gharials have been sent to Punjab for release in the Beas River.
11. Eggs of eight species of turtle will be taken and the hatchlings reared and released in the river.
12. An eco-sensitive zone has been notified up to 2km from the middle of the river.
13. Annual censuses have been carried out for the gharial, turtles and dolphin for many years.
14. A rapid survey has been conducted by WII scholars, and one new fish species has been discovered.
15. WII is running a project to understand the nesting of migratory birds.
16. Chambal is one of the cleanest river. Water quality testing is performed twice a year.
17. The coordination with the other two DFOs Wildlife (Rajasthan and Uttar Pradesh) is good.

Management Weaknesses

1. Numerous projects have been proposed to supply water to urban areas. This diversion of water is beyond sustainable levels and is a serious threat to the sanctuary.
2. Pollution due to pesticides and fertilisers for agriculture is possible, and the present levels of this threat are unknown though the water quality is checked once before the monsoon and once after the monsoon.
3. There seems to be very little natural natality in the gharial. The population is being sustained only because of captive breeding.
4. Illegal sand mining is being carried out at a very large scale by an organised mafia.
5. Illegal fishing is also being carried out.
6. The flow of water is getting reduced every year due to a barrage and dam on the upstream side.
7. The budgetary amount is normally received late, and it is inadequate for protection and other development works.

8. The budget of the rearing centre at Deori is also insufficient.
9. No interpretation centre has been constructed yet.
10. The wireless system has been dysfunctional though it will be restarted soon.
11. Determination of rights has not been done.

Immediate Actionable Points

1. The three existing ranges need to be divided into six small and manageable ranges, and one research centre and one flying squad range need to be created at the earliest for better and effective management of the sanctuary.
2. A searchable database of the research carried out in the sanctuary needs to be prepared.
3. The forthcoming Management Plan should be prepared according to WII guidelines and the research findings need to be incorporated in it.
4. A veterinarian should be appointed especially for Chambal Wildlife Sanctuary.
5. Regular meetings can be conducted with local stakeholders for inputs to the Management Plan and for reducing conflicts.
6. All guards should be covered under the CUG so that mobile phone bills can be reimbursed.
7. Drones should be used for monitoring and for population estimation.
8. A long-range wireless system needs to be procured, installed and made operational at the earliest.
9. Efforts should be made to get the sanctuary declared a World Heritage Site.
10. Increased coordination between the police and forest department is needed to control sand mining. Joint patrols are needed.

Evaluators
Shri U.M. Sahai, Former CWLW, Rajasthan
Dr. Advait Edgoankar, Professor, IIFM, Bhopal
Ms. Seema Bhatt, Independent Consultant, New Delhi
Dr. S.P. Goyal, Former Scientist, WII, Dehradun

Nasim Ahmad Ansari



13. Orchha Wildlife Sanctuary, Madhya Pradesh

Management Strengths

1. The tourism footfall is about 14,000 visitors. About 10,000 foreign tourists visit each year.
2. The sanctuary can be made part of the tourist circuit since it is not very far from Khajuraho.
3. It is easy to approach, being only 20 km from the main railhead at Jhansi.
4. The forest is relatively undisturbed, mainly comprising Anogeissus pendula and teak.
5. It is a compact forest block of 44.9 km2 sandwiched between two perennial rivers, the Betwa on the west and the Jamni on the east.
6. Plenty of water is available for the wildlife to use.
7. The fair weather road network within the sanctuary is good, which makes patrolling and access for management purposes easy.
8. The sanctuary is managed under a territorial ACF, under whom an RFO, four Foresters, 12 Forest Guards and four daily wagers are working. This staff is quite adequate for a small sanctuary of this size. However, 23 Forest Guard posts have been sanctioned.
9. There is limited connectivity. On the east the sanctuary is connected to the Orchha territorial division and on the north it is connected to the Jhansi territorial division.
10. The current Management Plan is the first management plan of the sanctuary. It is valid up to 2023, and it has been approved by the CWLW. Before this, the sanctuary was being managed under the Working Plan of Tikamgarh Forest Division.
11. There is a well maintained nature trail for bicycle riders, with dust bins placed at various points.
12. The budgetary provision is adequate for management purposes. The funding for the year 2016-2017 was Rs.15.62 lakhs for ecotourism, Rs.33.71 lakhs from CSS and Rs.24.98 lakhs from the State Plan.
13. Mobile phones are available to all the staff, and the bills are reimbursed under the CUG system.
14. There are two functional EDCs.
15. One village, Lotna, was relocated last year though the houses have not been completely demolished and habitat restoration has not been done due to a paucity of funds.
16. There are no invasive species, and grazing has been controlled.
17. Weapons are available with the sanctuary (10 rifles and one revolver).

Management Weaknesses

1. The final notification of the sanctuary has not yet been issued.
2. There is no wireless network in the park; only mobile phones are used for communication.
3. The border with Uttar Pradesh is open. This can lead to problems with ingress of poachers and other forest offenders.
4. A state highway (SH 76) passes through the sanctuary, bifurcating it into two parts. This can lead to road kills and an increased risk of mortality of wildlife.
5. There are around 200 feral cattle inside the sanctuary, but about 125 have been removed. The remaining cattle are shy of humans and difficult to catch.
6. The available vehicle resources-one Bolero Camper and one motorcycle-are inadequate.
7. The funds are insufficient and they are released late, affecting the development works and other management actions.
8. There are 22 peripheral villages, which are exerting increasing biotic pressure on the sanctuary.

Immediate Actionable Points

1. Efforts should be made to issue final notification at the earliest.
2. Due to its proximity to Khajuraho, it can be made part of a tourist circuit.
3. Vacant posts should be filled up immediately so that the protection can be enhanced.
4. Works can be taken up under NREGA since this scheme has not been tapped.
5. The staff (at the level of Forest Guard and higher) need to be trained in issues related to wildlife.
6. An interpretation centre should be made functional, with the required equipment and information.
7. The staff feel a need for two more watchtowers. These can be constructed.
8. The sanctuary needs good brochures and checklists. These should be produced on a priority basis, and the brochures should be disseminated widely.
9. The facilities along the hiking/biking trail need to be improved (garbage bins, restroom, etc.) for the convenience of the tourists.
10. More signage needs to be put up inside the sanctuary.
11. Adequate budget, timely release of funds and improvement in the infrastructure should be the priority of the State Forest department.
12. Research should be encouraged in the sanctuary such that it is a management input. The infestation of termites on A. pendula trees can be an immediate topic.
13. MP Tourism hotels are present in Orchha, but the sanctuary is not mentioned in their brochures as an important place to visit. This should be taken up with MPTDC.

Evaluators
Shri U.M. Sahai, Former CWLW, Rajasthan
Dr. Advait Edgoankar, Professor, IIFM, Bhopal
Ms. Seema Bhatt, Independent Consultant, New Delhi
Dr. S.P. Goyal, Former Scientist, WII, Dehradun

Rakesh Ahlawat



14. Van Vihar National Park, Madhya Pradesh

Management Strengths

1. Excellent management plan that guides the future
2. Strong management regime and protection capability
3. Adequate resources
4. Excellent veterinary skills that are important for other PAs in their needs and inspiration to personnel practicing wildlife veterinary science
5. Important role in captive breeding and rehabilitation of critically endangered vultures
6. Skills in capturing and rehabilitation of wild animals including large numbers of snakes, the latter as extension work for Bhopal district that helps in trust building

Management Weaknesses

1. Although the state has excellent wildlife training centre at Tala, adjoining the Bandhavgarh national park catering to varied ranks, advantage has not been taken to train frontline personnel in phases. This is particularly important as the national park showcases the wildlife management discipline, however small it might be
2. Underutilization of an excellent opportunity for spreading awareness for natural ecosystems and wildlife
3. Lack of well-structured information about the park in public domain
4. Research and monitoring underutilized

Immediate Actionable Points

1. Depute in phases forest guards, foresters and rangers for training in wildlife management at the wildlife training centre at Tala. The RFOs could attend short thematic courses appropriate for the park
2. Appropriate NGOs could be engaged to create awareness about natural ecosystems, wildlife, captive animals, captive breeding programme for vultures etc. One of the senior managers could speak on two chosen days at pre-determined time with visitors about the park with visitors and answer their questions if any. An awareness and outreach centre could be part of the Vihar Vatika. A good documentary and a nature shop that could offer on sale attractive items-handicrafts, pictures and informative handouts, imaginative souvenirs etc. needs to be located here.
3. There are a few historical points, sacred places of the previous inhabitants, that could be highlighted in the field within the tourism zone
4. There could be some signage on information about the park, strategically placed in the visitor zone; nothing intricate but that which pithily expresses the function and role of the park. Brochures/pamphlets and well-structured information on the department's website would serve well.
5. The park is still struggling to find an effective technique for estimating and monitoring population of free ranging wildlife in the park. IIFM in the neighbourhood could help in this matter. More than one established technique could be used to test results. Opportunistic sightings of ungulates during vehicular trips could be added to test age and sex classes with qualification. Grassland diversity and change, likewise regeneration of woody species, including weeds could be assessed periodically to develop understanding and decide on intervention if needed. There could be other areas of research including periodic surveys about perceptions of visitors. There is a pool of retired forest officers and scientists in

Bhopal who have served wildlife management with distinction who also could be an excellent resource.

6. While the vulture breeding programme is well established under the guidance of BNHS, a firm exit plan is necessary for sites of vulture release and follow up strategies.
7. The zoological park is excellent. The first rate work being done and experience needs to be disseminated for the benefit of other captive wild animal facilities as well for the knowledge of the general public. Opportunities to mount research projects ought to be utilized. The zoological park has excellent veterinary care facilities including a modern surgical theatre that has witnessed some challenging surgical interventions concerning rescued wild animals, especially tigers, lions and sloth bears. The care centre can serve as a training facility for veterinarians and zoo keepers.
8. The wild pig population needs to be monitored. The national park is small and any rapid growth in pig population can be problematic.
9. Summers can be harsh in this area. There are a few waterholes. A realistic assessment of water points is necessary. As required some water points could be added without overdoing it. The scattered trees and clumps provide adequate shade.
10. Large numbers of snakes are captured for release in the wild. Record of poisonous and non-poisonous species and length in exceptional cases would create a good database. The points of release also need to be recorded
11. Regular disease surveillance and estimating parasitic load of free ranging animals needs to be undertaken.
12. Experiments on population control of nilgai through minimal surgical intervention on males is undertaken but past experience suggests that this is difficult to successfully apply in the field.

Evaluators
Shri V.B. Sawarkar, Former Director, WII, Dehradun
Dr. Ashish David, Professor, IIFM, Bhopal
Dr. Nita Shah, BNHS, Mumbai
Dr. Gautam Talukdar, Scientist, WII, Dehradun

15. Anerdam Wildlife Sanctuary, Maharashtra

Management Strengths

1. There is a possibility of a corridor upto Melghat, though some portions along the corridor are blocked.
2. This is the only sanctuary in Dhule and Nandurbar districts. Its flagship species is the chinkara.
3. It is easily approachable by NH 3.
4. The staff strength (one ACF, one RFO, two Foresters, seven guards and four daily-wage employees) is adequate to manage the sanctuary.
5. The number of vehicles available is adequate. These vehicles include a Bolero, a Sumo and Xenon.
6. Shyama Prasad Mukherjee Yojana, a convergence scheme, has been utilised to coordinate with other departments for the welfare of the people living around the sanctuary.

Management Weaknesses

1. The final notification of the sanctuary has not been issued.
2. One revenue village and six unauthorized settlements are situated inside the sanctuary, exerting severe anthropogenic pressures on the sanctuary.
3. The funds available for managing the sanctuary are insufficient.
4. There is a paucity of water inside the sanctuary during summer, and the dry forest has degraded due to biotic pressure.
5. Around 25% of the area (2239 ha) is under encroachment (by 839 families).
6. Grazing pressure is exerted by an estimated 1875 cattle.
7. Some funds are available for developing an informer network for gathering intelligence, but they are not fully utilized.

Immediate Actionable Points

1. Efforts should be made to expedite the finalization of rights of the people living in and around the sanctuary. Villages/settlements should be relocated outside the PA and rehabilitated. There is an area of 3 km2 with the Department and is not notified as sanctuary. This may be utilized for resettlement.
2. Illegal grazing needs to be controlled.
3. Ecotourism activities such as boating and camping need to be increased.
4. Gap planting of indigenous species may be taken up through natural and artificial regeneration.
5. Training in wildlife-related issues should be imparted to the field staff.
6. Water holes may be created and filled up with water during the lean period.
7. An interpretation center needs to be established soon.
8. The intelligence gathering system should be strengthened,.
9. A provision for a midterm review should be incorporated in the Management Plan.

Evaluators
Shri U.M. Sahai, Former CWLW, Rajasthan
Dr. Advait Edgoankar, Professor, IIFM, Bhopal
Ms. Seema Bhatt, Independent Consultant, New Delhi
Dr. S.P. Goyal, Former Scientist, WII, Dehradun

16. Bhamragarh Wildlife Sanctuary, Maharashtra

Management Strengths

1 There are no permanent inhabitants inside the PA except one village, Korparshi, located on the periphery of the sanctuary. The Village is inhabited by an aboriginal tribe- Bada Madiya. The other two tribes that inhabit the area are 'the Gonds' and 'Chhota Mandiya'.

2 There is a Management Plan (2016-2017 to 2024-2025) for the PA, and it has been approved by the CWLW.

3 The floral diversity of the sanctuary is very rich, and the sanctuary is connected to Indr?vati Tiger Reserve on the north, which enables a population of around 20 wild buffaloes to traverse into the sanctuary.

4 Giant squirrels and leopards are also found in the sanctuary.

5 The forest staff (one RFO and three Forest Guards) are adequate for the 104 km2 area though no one stays inside the sanctuary.

6 The sanctuary has a great aesthetic value as it is surrounded by picturesque hillocks of lush green forests.

Management Weaknesses

1. Bhamragarh Sanctuary is infested with Naxalites. The sanctuary and nearby areas are facing a severe law and order problem due to the prevailing Naxalite activities. For regular patrolling is not being carried out by the Forest Guards. Government vehicles are the targets and it is unsafe to go inside the sanctuary. Therefore, forest personnel cannot visit the sanctuary for protection or development works.
2. There are only six pairs of binoculars, three camera traps and six GPS available in the sanctuary.
3. The area is very remote and has very poor means of transportation and communication.
4. The economic development of the people is also very poor.
5. There are almost no management interventions in the sanctuary.
6. There is no tourism in the sanctuary due to Naxalism. and till Naxalism is removed/eradicated, there will be no tourist visits.
7. Demarcation of the sanctuary has not been done.
8. A few times a year, the Madia Gonds, the indigenous primitive tribe, go hunting in groups inside the sanctuary. This cannot be stopped due to the prevailing conditions.

Immediate Actionable Points

1. The Naxalite problem/issue needs to be addressed on priority at the highest level. Only then can meaningful management actions be undertaken inside the sanctuary.
2. Demarcation of the boundary of the sanctuary, creation of water holes, strengthening of the road network, etc. can be taken up once the situation is safe and favourable for working.
3. An awareness programme may be taken up in Bhamragarh town, which is 25 km away, to bring them into the mainstream.
4. Employment opportunities for the people living close to the sanctuary may be investigated so that their attitude towards the sanctuary becomes favourable.
5. Using drones as a tool for wildlife monitoring may be considered since on-the-ground monitoring is impossible.
6. The possibility of collaboration with the Lok Biradari Prakalp, an NGO, for conservation activities may be explored though they are primarily concerned with the health sector.
7. The Management Plan should have a section on climate change and a provision for a midterm review/updating on the basis of emerging needs or changing scenarios.

Evaluators
Shri U.M. Sahai, Former CWLW, Rajasthan
Dr. Advait Edgoankar, Professor, IIFM, Bhopal
Ms. Seema Bhatt, Independent Consultant, New Delhi
Dr. S.P. Goyal, Former Scientist, WII, Dehradun

17. Deolgaon Rehekuri Wildlife Sanctuary, Maharashtra

Management Strengths

1. The area has a flat terrain, with high visibility and easy accessibility for patrolling on foot. The area is, therefore, very easy to protect.
2. The sanctuary is an ideal habitat for the blackbuck and wolf, in a matrix of grasslands and habitations.
3. There are seven villages on the periphery and one household enclaved inside the sanctuary, but the disturbance due to them is negligible. There is no disturbance in the core area.
4. The sanctuary is easily accessible by road from Pune and Ahmednagar.
5. There is a very good and functional nature interpretation centre. It has interactive displays and wildlife movies in Marathi. It caters to school children and local tourists.
6. The staff have made four watchtowers, eight water holes and three observation hides in the sanctuary.
7. Watchmen are deployed on all the watchtowers, while regular foot patrolling is done along footpaths.

Management Weaknesses

1. This is a drought-prone area, and so paucity of water can impact the growth of grasses and other vegetation, reducing the carrying capacity of the sanctuary with respect to the blackbuck. There are no perennial water holes. The water holes dry up by late summer.
2. Because of the dry nature of the vegetation, there is a threat of fire in the dry season.
3. There is a problem of stray dogs getting into the sanctuary to hunt black buck fawns.
4. Some undesirable tree species were planted previously. These need to be removed gradually so as to avoid conversion of grassland into dry deciduous forest.
5. A state highway passes through the sanctuary, bisecting it into two halves and leading to fragmentation of habitat.

Immediate Actionable Points

1. A preservation plot should be established and monitored as given in the Management Plan.
2. The sanctuary has been divided into two zones-a core zone and a tourism zone, the extent of the core being 167.31 ha and that of the tourism zone being 58.49 ha. The tourism zone should be clearly delineated within the sanctuary, and the map should be revised accordingly.
3. Efforts should be made to remove the enclave (8 ha) within the sanctuary.
4. A participatory process should be incorporated into the next Management Plan, and there should also be a provision of a midterm review every 3 years.
5. The Management Plan should consider the threat posed by the four-laning of the state highway that is presently bisecting the sanctuary.
6. The next Management Plan should have a detailed blackbuck habitat restoration plan.
7. Extent of work to be undertaken should be specified in the Management Plan in the text, to match with the budget figures given in the financial annexures.
8. The sanctuary has been notified twice. Rehekuri Wildlife Sanctuary should be merged with GIB Sanctuary, or its area should be taken out of GIB Sanctuary.
9. Three more guards are needed for the wildlife sanctuary: one for tourism, one for area management and one for special duties such as ticketing and the information centre.
10. PTZ cameras may be installed for surveillance purposes, and two electric cars/golf carts may be purchased for tourists to visit the sanctuary.

11. Guides from the local community should be trained, and it should be compulsory for tourists to be accompanied by a trained guide. Local youths should be trained through the VDC for the interpretation centre and the board and lodging facilities.
12. The brochure for the sanctuary should be shared on relevant websites so as to promote tourism here.
13. Tourist feedback should be solicited using a feedback form on the retaining stub of the entry ticket.
14. An explicit inventory and maintenance schedule should be provided in a separate chapter in the next Management Plan.
15. A standard methodology should be adopted for counting blackbuck so that the trend over the years can be studied easily.

Evaluators
Shri U.M. Sahai, Former CWLW, Rajasthan
Dr. Advait Edgoankar, Professor, IIFM, Bhopal
Ms. Seema Bhatt, Independent Consultant, New Delhi
Dr. S.P. Goyal, Former Scientist, WII, Dehradun

18. Gautala Autramghat Wildlife Sanctuary, Maharashtra

Management Strengths

1. A Management Plan for the period from 2015-2016 to 2024-2025 is in place.
2. The biodiversity of the wildlife sanctuary is very rich, and it has ecological, mythological, archaeological, aesthetic, historical, recreational and religious values.
3. There is no human habitation inside the sanctuary, and the forest of natural teak and other mixed forests are intact.
4. Ecodevelopment committees are in place for 12 villages, and they are functional.
5. The levels of grazing of livestock, illicit fuelwood collection, human-wildlife conflicts and poaching are quite low.
6. The people's dependence on forest produce and livestock are reduced on account of distribution of subsidised gas connections and high-yield livestock, respectively.
7. Research work is encouraged through local universities.
8. An interpretation centre exists, and it is functional.
9. There is a dedicated website of the sanctuary, and it is linked with the website of the state's forest department.
10. A statewide toll-free number (1926) is available to the general public to learn about the sanctuary and to provide information about any illegal activities taking place in the sanctuary.
11. Weapons are available with the staff for self-defence.
12. Fire watchers are deployed from March to June, and the fire alert system of the Survey of India is used to detect incidences of fire at an early stage.
13. Soil and moisture conservation measures are adopted to increase the availability of water in the sanctuary.
14. Adequate funds are made available to the sanctuary, and they are released in a timely manner.

Management Weaknesses

1. The equipment available are not adequate considering the strength of the staff deployed in the sanctuary. Only six pairs of binoculars, three camera traps and six GPS are available in the sanctuary
2. There is scarcity of water during summer.
3. There is no flying squad.
4. One national highway and two state highways pass through the sanctuary, causing a lot of disturbance to the wildlife.
5. The large number of pilgrims (more than 2 lakhs) visiting the temples located inside the sanctuary, is also a source of disturbance.
6. The revenue generated through entry tickets is not ploughed back for the development of the sanctuary.
7. Dustbins are provided, but there is no proper garbage disposal system.
8. Adequate drinking water is not provided at the identified tourist viewpoints.
9. There are infestations of weeds such as Lantana camara, Parthenium and Prosopis juliflora at some places in the sanctuary.
10. The staff are not trained in wildlife-related issues.

Immediate Actionable Points

1. The system of managing the Informer Secret Fund should be made simple so that information may be obtained efficiently.
2. Ecotourism training may be given to the members of the ecodevelopment committees, and the Wildlife Institute of India may be requested to organise a training programme at the sanctuary.
3. Though sanctuary has an interpretation centre that is quite well maintained and functional, the staff of the interpretation centre need some training in wildlife-related issues.
4. Very famous tourist attractions of both historical and religious importance are located near the sanctuary. Therefore, a tourist circuit may be developed in collaboration with the state tourism department.
5. Fire lines need to be maintained. Accumulation of inflammable biomass may be estimated across the sanctuary by establishing permanent monitoring plots with the support of universities engaged in wildlife research.
6. Park officials informed the committee that there is a decline in the vulture population in the sanctuary. The Bombay Natural History Society may be approached to undertake a survey of vultures and establish baseline data.
7. Artificial water holes are managed during summer to ensure an adequate supply of water in the sanctuary for the wildlife. Because the area is a semi-arid region, water holes that are efficient in conserving water by minimising evapotranspiration losses need to be constructed, and the staff may opt for the model followed in Desert National Park, Rajasthan.
8. A water hole census is being undertaken in the sanctuary, and only one team of two persons is deployed to monitor animals over 24 hours, which is not practical. So at least two teams may be deployed (for 12 hours each) at each water hole during a water hole count.
9. The state animal husbandry department may be contacted for improving livestock husbandry practices and vaccinating livestock of the villages within 2 km of the sanctuary boundary.
10. University departments of different disciplines may be requested to undertake research work in the sanctuary.

11. Sanctuary staff members of different levels should be trained in wildlife-related issues by utilising state as well as Central training centres.
12. Forest Guards should be sent to other states to observe and acquire best practices followed in managing wildlife.
13. Though habitat improvement is mentioned in the Management Plan, those areas that require attention need to be mapped. The support of local researchers and universities may be taken. Gap planting of fodder and fruit plant species may be carried out in degraded areas.
14. Mapping of weed-infested areas should be done, and a year-wise eradication programme should be undertaken. The areas involved should be monitored for the effectiveness of the effort.
15. More camera traps, GPS and binoculars need to be procured for the staff.
16. Approval of the proposal to use revenue generated through entry tickets for park development may be obtained from the state government.
17. EDC members must be deployed to manage the guest houses and tourist viewpoints of the sanctuary.
18. The subsidised gas connections may be provided in more villages so that the dependence on forests is reduced.
19. Buffer areas may be marked where the sanctuary boundary touches human habitations.
20. A chapter titled Mid-term Review needs to be included for systematic updating of the Management Plan.
21. The speed of vehicles may be controlled by placing speed breakers (as per norms) on all three highways passing through the sanctuary.
22. In addition to water hole counts, populations of wild species may be assessed using the line transect and camera trap methods.
23. A feedback form may be designed in the form of a detachable sheet attached to the ticket. The form can be dropped in the drop box at the ticket counter.
24. Nature and biodiversity conservation training programmes may be organised for the guides at Ajanta and Ellora so that they inform the tourists visiting these places about the forests, wildlife and nature.
25. A film should be made on the benefits the sanctuary provides local communities, and this should be shown regularly during public awareness programmes.
26. A chapter on climate change may be included in the Management Plan.

Evaluators
Shri U.M. Sahai, Former CWLW, Rajasthan
Dr. Advait Edgoankar, Professor, IIFM, Bhopal
Ms. Seema Bhatt, Independent Consultant, New Delhi
Dr. S.P. Goyal, Former Scientist, WII, Dehradun

Nasim Ahmad Ansari



19. Jaikwadi Bird Sanctuary, Maharashtra

Management Strengths

1. The biodiversity of Jaikwadi Bird Sanctuary is rich. The sanctuary has 251 bird species (80 migratory species; the rest are resident species) and a number of amphibians and reptiles.
2. It is an IBA, and critically endangered and threatened bird species have been recorded in it. The sanctuary is listed in the "Wetlands of India".
3. It is identified as a unique wetland ecosystem.
4. There are 30 islands, having babool trees, inside the sanctuary. This helps the water birds make nests on these trees.
5. The Management Plan of the sanctuary has described the significant values of this area for the society, which range from ecological values to biological, educational, scientific, recreational, religious, tourism, ecological service and economic values.
6. The sanctuary falls in the Central Asian Flyway.
7. The sanctuary was proposed as a Ramsar site in 2013, and it is being included.

Management Weaknesses

1. The Management Plan of the sanctuary has not been approved.
2. The boundary of the sanctuary has not been demarcated.
3. The rights of the people living inside the sanctuary have not been settled.
4. The human and financial resources are inadequate for a sanctuary of area 339.79 km2 with people dependent on it for their livelihoods. There are only two Foresters, seven Forest Guards and three work-charged employees.

Immediate Actionable Points

1. Necessary steps should be taken for the earliest approval of the Management Plan, settlement of rights and final notification.
2. The sanctuary is not marked with boundary pillars. Immediate action should be taken to assess the number of boundary pillars needed, map their locations and estimate the expenditure. Efforts should be made to complete the work within 3 years.
3. Since the Management Plan has not yet been approved, stakeholders' meetings should be organised, and the following chapters may be included in the Management Plan before final approval is accorded:

(i) A chapter titled "Creation and Maintenance of Different Infrastructure/Assets"

(ii) A chapter titled "Impacts of Climate Change on Jaikwadi Bird Sanctuary and Actions Required to Mitigate Their adverse Effects on the Sanctuary"

(iii) A chapter titled "Annual Assessment and Monitoring of Biodiversity of Jaikwadi Bird Sanctuary" describing appropriate and detailed methodology

4. Census data of key species should be analysed regularly for determining population trends. The support of the Wildlife Institute of India, Dehradun, the Sálim Ali Centre for Ornithology and Natural History and other organisations may be taken.
5. Only a few staff and nature guides are trained in birdwatching and wetland management. Therefore, a 3-5 day training programme on wetland management may be organised for the staff with the support of the Wildlife Institute of India, Dehradun, the Sálim Ali Centre for Ornithology and Natural History (SACON) and other organisations.
6. Movement registers (roznamchas) need to be maintained at nakas.
7. There are four watchtowers in the sanctuary, which are used by tourists, whereas there is only one spotting scope for birdwatching. Therefore, three more spotting scopes and three pairs of binoculars may be procured to have at least one at each watchtower.



Nasim Ahmad Ansari

8. A comprehensive ecotourism plan may be prepared that includes all the dedicated equipment required and the approaches to meet the objectives.
9. Illegal fishing in the sanctuary needs to be checked/ stopped. The fishery department may be approached to assess the fish population.
10. The scope of the ongoing study should be enhanced to identify and map (i) all islands in Jaikwadi Bird Sanctuary and (ii) to find out new sites for establishing additional islands.
11. As mentioned in the Management Plan, the water quality should be monitored each year.
12. At least two additional motor boats need to be procured immediately as the existing one is not adequate for patrolling the vast area of the sanctuary as well as for tourism. The possibility of converting the existing paddle-boats into motor boats may be explored so that these can also be used for patrolling.
13. The human and financial resources are inadequate for a sanctuary of area 339.79 km2 with many people dependent on it for their livelihoods. Therefore, two additional ranges may be created and the necessary staff recruited for effective management of the sanctuary. Three dedicated and trained motor boat men may also be sanctioned for the sanctuary.
14. Ecodevelopment Committees need to be constituted and public awareness programmes about the significant values of Jaikwadi Bird Sanctuary may be conducted in the adjoining villages.
15. All necessary efforts should be made to enhance the tourism activities in consultation with the tourism department of the state. A homestay system should be tried for tourists at some places around the sanctuary.
16. A study tour to important wetlands of India such as Keoladeo National Park, Bharatpur, Rajasthan may be conducted for the sarpanchs and communities of the adjoining villages to understand the values of wetlands and how a bird sanctuary may be managed through participatory approaches involving local communities.
17. More meetings may be organised with the adjoining villagers of the sanctuary to determine what alternate livelihoods may be adopted by the villagers so as to reduce their dependence on the sanctuary. Accordingly, a necessary provision should be made in the Management Plan.
18. The viewing points should be improved by providing railing. Toilets and other public facilities should be provided. Brochures may be prepared in English, Hindi and the vernacular language and distributed on a large scale. Feedback forms may be kept at the watchtowers or entry gate, and feedback may be analysed systematically and regularly.

Evaluators
Shri U.M. Sahai, Former CWLW, Rajasthan
Dr. Advait Edgoankar, Professor, IIFM, Bhopal
Ms. Seema Bhatt, Independent Consultant, New Delhi
Dr. S.P. Goyal, Former Scientist, WII, Dehradun

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20. Kalsubai Harishchandragadh Wildlife Sanctuary, Maharashtra

Management Strengths

1. The sanctuary is easily approachable, with three access points: Pune, Thane and Nashik.
2. The biodiversity of the sanctuary is rich as it is part of the Western Ghats. A total of 117 families, 405 genera and 681 species have been identified in the flora.
3. The terrain is rugged and includes many of the tallest peaks in the Sahyadri Range (Kalsubai, Alang, Kulang, Malang, etc.). These attract many adventurous tourists and rock climbers every year.
4. Boating facilities are available for visitors, and Wilson Dam provides water for wildlife throughout the year.
5. Kalsubai Harishchandragad Sanctuary receives very heavy rainfall, about 4000 mm, every year during the monsoon. There are numerous waterfalls during this season, which attract visitors, especially in the weekends.
6. A large number of tourists, approximately 41,000 visitors last year, come to the sanctuary, generating a revenue of about Rs.29 lakhs.
7. Sandhan Valley is claimed to be the second deepest gorge in Asia. Harishchandragad is an ancient fort, and Konkan Kada is a steep cliff with a view towards the plains. These are unique features of the sanctuary.
8. VEDCs have been formed in 24 villages in the sanctuary, and eco-development work has been taken up. This work includes constructing small guest cottages, which augments the income of the villagers and provides livelihood opportunities to many.
9. An interpretation centre has been built, but it needs to be refurbished and activated.
10. Thirteen sacred groves, where trees are completely protected, are present in the sanctuary.

Management Weaknesses

1. While the initial notification was issued in 1986, the final notification has not yet been issued.
2. There are 24 villages inside the sanctuary, which are causing anthropogenic disturbances.
3. There is a large population of cattle inside the sanctuary. The grazing pressure is high, and the cattle are from villages inside the sanctuary as well as from outside.
4. The heavy rainfall and cultivation of paddy and ragi expose the soil. Erosion is a major problem in the sanctuary.
5. There is shifting cultivation and rab burning in the hilly tracts. Forest fires are a common problem in summer.
6. There are problems in communication on account of the hilly area and rugged terrain. The mobile signals do not reach everywhere inside the sanctuary, and there is no wireless network.
7. The plains areas have been encroached on by local villagers, resulting in honeycombing of the forest areas with private areas, giving rise to conflicts between the forest department and the villagers.
8. The density of wild ungulates is low because of insufficient fodder.
9. The number of giant squirrels is decreasing due to local disturbances.
10. The number of staff members available for protection duties in the wildlife sanctuary is small.

Immediate Actionable Points

1. Soil and moisture conservation works need to be taken up to prevent soil erosion in the hilly tracts.
2. People should be educated through the VDCs to reduce shifting cultivation and rab burning.
3. Alternate livelihood and skill development programmes should be taken up under the Dr. Shyama Prasad Mukherjee Yojana in villages.
4. A wireless network should be developed within the sanctuary for effective communication.
5. Plantation of fruit-bearing trees and grasses should be undertaken in some forest patches.
6. Relocation of the villages located inside the sanctuary should be taken up on priority.
7. Surveying and demarcation of the sanctuary boundary should be taken up immediately and completed at the earliest.
8. The strength of the sanctioned staff should be increased for effective protection. Nine Forest Guards and two Foresters more are needed.
9. Tranquilisation equipment, a rescue van and a veterinarian are needed for wildlife rescues.
10. A feedback form should be incorporated into the ticket stub so that immediate feedback can be obtained as the tourists leave the sanctuary.

Evaluators
Shri U.M. Sahai, Former CWLW, Rajasthan
Dr. Advait Edgoankar, Professor, IIFM, Bhopal
Ms. Seema Bhatt, Independent Consultant, New Delhi
Dr. S.P. Goyal, Former Scientist, WII, Dehradun

Nasim Ahmad Ansari



21. Karanja-Sohal Blackbuck Sanctuary, Maharashtra

Management Strengths

1. The floral and faunal diversity of the Protected Area is rich. The mixture of open grassy patches and wooded countryside provides natural habitats for varied wild animals. The main mammalian species of the area are the blackbuck and hyena.
2. There are wetlands in the Protected Area that are visited by a variety of birds. Aadan reservoir is a perennial source of water.
3. The area has good potential for ecotourism due to its rich biodiversity and Aadan reservoir, which contributes to the scenic beauty of the area.
4. The local population extends support to the park officials.

Management Weaknesses

1. No importance is given to ecotourism and research activities.
2. The grassland management is not up to the mark and needs improvement.
3. The field staff strength is not sufficient. Additional manpower is needed to implement the prescriptions of the management plan.

Immediate Actionable Points

1. The Protected Area is well managed. However, there is scope for improvement in areas such as research, ecotourism and publicity.
2. The Protected Area is centrally located and is surrounded by many places of tourist interest. More efforts are needed to promote ecotourism
3. Research is almost negligible though there is ample scope for research on ecological aspects, impacts of climate change on the flora and fauna and on migratory birds, the status of exotic species and their impacts, etc.
4. In some parts of the park the grass has grown very high and dense due to the protection. This has resulted in blackbuck not using the area. Blackbuck, being a species of open areas, requires a mosaic of grasslands and open meadows. Inputs can be sought from experts or relevant organizations to improve the grassland management.

Evaluators
Dr. Alok Saxena, Former PCCF, Andaman & Nicobar Islands
Dr. Jayant Kulkarni, Independent Scientist, Pune
Shri Ajay Desai, Independent Biologist, Belgaum
Dr. Suresh Kumar, Scientist, WII, Dehradun

22. Katepurna Wildlife Sanctuary, Maharashtra

Management Strengths

1. The area is rich in fodder species and grasses, and thus it is ideal for herbivores.
2. Both floral and faunal biodiversity are rich.
3. There are two large water bodies, Mahan and Pur. The River Katepurna flows through the Protected Area. There are natural and manmade water holes. The rich biodiversity and natural beauty of the area make it ideal for promoting ecotourism.
4. Good coordination with other government departments and with village Eco-development Committees (EDC).

5. This area is connected with Melghat Tiger Reserve, and so it can support dispersing tigers with proper and effective management.

Management Weaknesses

1. High rate of soil erosion, leading to habitat degradations.
2. Biotic pressures from villages in and around the Protected Area. These include grazing and illicit cutting.
3. Low-key tourism: tourists mostly local.
4. The area is fire prone.

Immediate Actionable Points

1. Habitat improvement programmes need to be augmented.
2. More ecotourism facilities need to be developed.
3. Support of local villagers to be sought through NGOs.
4. Research work needs to be given priority.
5. Publicity to be improved through park-specific website, printing of brochures, handouts, etc. and erection of signage/cement concrete boards.
6. The Protected Area should have its own website that provides all important information.
7. At present there is only one EDC, but more EDCs need to be created, and they should be involved in the management of the park.

Evaluators
Dr. Alok Saxena, Former PCCF, Andaman & Nicobar Islands
Dr. Jayant Kulkarni, Independent Scientist, Pune
Shri Ajay Desai, Independent Biologist, Belgaum
Dr. Suresh Kumar, Scientist, WII, Dehradun

23. Lonar Wildlife Sanctuary, Maharashtra

Management Strengths

1. The area is unique as Lonar Lake is the third largest crater in the world, formed by the impact of a meteor. The water of the lake is saline, and it has a pH of 10.5. Because of its geological uniqueness there is potential for developing it into a major tourist attraction.
2. There are many temples and monuments of archaeological importance around the area. These structures make the area a place of interest to many tourists.
3. A local citizen volunteer group has been working actively with the Department to clean the area and manage tourism.

Management Weaknesses

1. The area used to be a Reserve Forest until 2000, and then it was declared as a Wildlife Sanctuary. The biodiversity of this area has no particular attraction. Probably the area was declared a Protected Area to provide protection to its unique feature, the lake, which is the third biggest basalt structure in the world formed by the impact of a meteor.
2. Since the area used to be a reserved forest till 2000, the locals have been given certain rights such as grazing of cattle and collection of firewood and NTFPs. The process of settlement of rights and concessions is in progress, but the illegal activities continue.
3. The large, expanding settlement of Lonar town on the rim of the crater, which is along the



Subharanjan Sen

boundary of the park, was observed to have no proper drainage system. The sewage is entering the natural streams flowing into the Crater Lake, and this is likely affecting the unique salinity profile of the lake.

4. The area has not been given due publicity and the attention; it needs to be made an important place of tourist interest.
5. There are no Eco-development Committees (EDC) although there is a scope for these. Present involvement of the local people is limited.

Immediate Actionable Points

1. The Forest Department should take up the matter with the appropriate authority to get the area declared an important Natural Heritage Site and make efforts to give it more publicity. Currently, this Protected Area is relatively unknown.
2. The Department may consider developing a tourist circuit integrating this site with other areas of tourist interest nearby and give wide publicity through different means.
3. The Department should make efforts to constitute EDCs and involve the locals in the planning process and other management activities.

Evaluators
Dr. Alok Saxena, Former PCCF, Andaman & Nicobar Islands
Dr. Jayant Kulkarni, Independent Scientist, Pune
Shri Ajay Desai, Independent Biologist, Belgaum
Dr. Suresh Kumar, Scientist, WII, Dehradun

24. Malvan Marine Sanctuary, Maharashtra

Management Strengths/Weaknesses

1 No strength was observed. It is difficult to understand why such an area was declared a protected area. In the preliminary notification issued in April 1987, the objective of declaring this area is not specifically mentioned. The preliminary notification had been drafted erroneously. It categorizes the area into 'Core' and 'Buffer' zones. This categorization should have been part of the Management Plan. The core area encompasses Sindhudurg Fort and is managed by the Archeology Department. Such an intervention is totally against the concept of a core zone, which should be an area free of all anthropogenic pressures. The protected area is freely visited by the local fishermen and tourist operators using motorized boats that cause significant marine pollution. So far no process of settlement of rights and concessions appears to have been carried out.

2 While having discussions with UNDP project personnel, the committee was informed that along this coast there are many coral- and marine diversity-rich areas that are better than this site and that also have minimum human interference. Such areas should have been considered for better conservation measures or for declaration as protected areas.

Immediate Actionable Points

1 The area does not appear to be suitable for a protected area. It is suggested that the boundaries of the PA should be rationalized by excluding areas of human intervention (like area encompassing the famous Sindhudurg Fort and fishing area) and including adjoining areas rich in marine biodiversity (as per study of the UNDP Project). Thereafter, the process of settlement of rights and concessions should be carried out without delay. Fishing routes within PA area should be delineated to safeguard the occupational interests of the local fishermen. A full-time manager with the required manpower and infrastructure should manage the area.

2 The Mangrove Cell of Maharashtra State should be renamed the Marine Biodiversity Cell to justify its control of marine biodiversity-rich areas.

Evaluators
Dr. Alok Saxena, Former PCCF, Andaman & Nicobar Islands
Dr. Jayant Kulkarni, Independent Scientist, Pune
Shri Ajay Desai, Independent Biologist, Belgaum
Dr. Suresh Kumar, Scientist, WII, Dehradun

Nasim Ahmad Ansari



25. Bandh Baretha Wildlife Sanctuary, Rajasthan

Management Strengths

1. The biodiversity of the area, both the flora and fauna, is rich. The Sanctuary is home to more than 200 native and migratory birds. The Protected Area is an ideal site for birdwatchers.
2. The Protected Area has favourable ecological conditions for abundant vegetation on account of the availability of water throughout the year.
3. The area is linked to Kesarbagh Wildlife Sanctuary and Kevla Devi Wildlife Sanctuary, thus providing corridors for the movements of wildlife. This forms a satellite wetland of Bharatpur Bird Sanctuary.
4. It can be developed into an important tourist destination.

Management Weaknesses

1. The area is surrounded by 58 revenue villages, as a result of which there is enormous biotic pressure caused by local communities' dependence on forest resources.
2. Illegal mining is rampant.
3. Limited manpower, poor infrastructure, limited mobility, etc. are other weaknesses.
4. No thrust on research activities.
5. No initiatives to promote tourism and generate awareness.

Immediate Actionable Points

1. The main problem of the area is illegal mining, which needs to be curtailed. The help of local inhabitants is needed to achieve this. This help can be obtained through continuous dialogues with other departments (revenue, mining, police), local people, organising awareness-generation programmes, involving reputed NGOs, providing alternate livelihood options (such as being tourist guides), etc.
2. Regulated ecotourism can be developed by including the area in a tourist circuit and organising nature education camps, providing camping sites, identifying trekking routes for birdwatching, etc.
3. Recruiting trained manpower of sufficient strength and infrastructure development should be the priority of the Forest Department.
4. Scientific organisations, researchers and NGOs should be involved in research activities. Experts should be invited to organise proper censuses of birds and evaluate habitat dynamics of the Sanctuary.
5. The Protected Area should have its own website that should highlight its biodiversity and tourism potential. Publicity materials should also be made available to visitors. Hoardings enlisting biodiversity significance of the Sanctuary should be displayed in the adjacent areas of WLS.

Evaluators
Dr. Alok Saxena, Former PCCF, Andaman & Nicobar Islands
Dr. Jayant Kulkarni, Independent Scientist, Pune
Shri Ajay Desai, Independent Biologist, Belgaum
Dr. Suresh Kumar, Scientist, WII, Dehradun

26. Bassi Wildlife Sanctuary, Rajasthan

Management Strengths

1. The biodiversity of the area is rich, and the area is being managed quite well.
2. Sanctuary staff are trained in using modern technologies, particularly web-based applications for patrolling, sighting and recording important species, camera trapping, etc. They are being trained regularly to use of apps during the discharge of their duties.
3. There has been no incident of human-wildlife conflict in the last three years.
4. The Protected Area is surrounded by forests of Chittorgarh Division from three sides and therefore provides corridors for the movements of wild animals.
5. Water is available throughout the year due to the presence of reservoirs and a few perennial streams.
6. All the sanctioned posts have been filled.
7. The Divisional Officer in-charge and the ACF posted have extensive experience in wildlife management.
8. According to the officials of the Protected Area, the available funds are sufficient.

Management Weaknesses

1. There are 12 villages located inside the Wildlife Sanctuary and 43 in the periphery. As a result, there is biotic pressure on the Sanctuary. However, the pressure has been substantially controlled by the efforts of the Department.
2. Lack of adequate infrastructure and amenities for the frontline staff.
3. The area is fire prone. However, no incidence of fire has been reported in the last three years.
4. The prey base is low. The DCF in-charge has proposed the introduction of chital (Axis axis) in some parts of the Protected Area. The ecological aspects in terms of habitat and forage availability, carrying capacity etc. need to be considered before taking such measures.
5. Tourism is currently limited in the Sanctuary.

Immediate Actionable Points

1. The Sanctuary area is quite large. Mobility of the frontline staff should be improved for the patrolling to be effective.
2. Other infrastructure and basic amenities (buildings, field equipment, etc.) needs to be provided.
3. Training programmes should be organised regularly to build the capacity of the frontline staff in Protected Area management.
4. Research activities should be promoted through collaborations with renowned institutes, universities or NGOs.

Evaluators
Dr. Alok Saxena, Former PCCF, Andaman & Nicobar Islands
Dr. Jayant Kulkarni, Independent Scientist, Pune
Shri Ajay Desai, Independent Biologist, Belgaum
Dr. Suresh Kumar, Scientist, WII, Dehradun

27.

Jaisamand Wildlife Sanctuary, Rajasthan

Management Strengths

1. The biodiversity of the area is very rich supporting a variety of floral and faunal species, and therefore this is an ideal site for nature lovers.
2. Natural beauty of the Sanctuary and its surrounding landscape, the lake, the temples and the forts inside the sanctuary are the main attractions for tourists and nature lovers.
3. The Protected Area is surrounded by natural forests of Udaipur Forest Division in the north and east and therefore provides corridors for the movements of wild animals.
4. There are no encroachments or villages inside the Sanctuary.

Management Weaknesses

1. The area is fire-prone, and appropriate measures need to be taken to control forest fires.
2. High biotic pressures from grazing and illicit felling by people of the villages on the periphery of the Protected Area.
3. Poor infrastructure and basic amenities for frontline staff.
4. Staff members posted in the Sanctuary are not trained in wildlife management/Protected Area management.
5. Scarcity of drinking water inside the Protected Area.
6. Low prey base.

Immediate Actionable Points

1. The infrastructure and basic facilities available to the officials of the Protected Area including the frontline personnel should improve.
2. Additional facilities should be provided for visitors, particularly those coming for camping, trekking or birdwatching.
3. Watch towers, additional trekking routes and camping sites can be planned under the supervision of Forest Department to attract more nature lovers.
4. The Protected Area should have its own website that describes its historical, cultural, religious and biodiversity values. Publicity materials should also be made available to visitors. Hoardings enlisting biodiversity significance of the Sanctuary should be displayed in the adjacent areas of WLS.
5. Additional efforts need to be made to involve stakeholders in the planning and management processes.
6. Research activities should be promoted. The Department can seek collaborations with renowned institutes, universities or NGOs.

Evaluators
Dr. Alok Saxena, Former PCCF, Andaman & Nicobar Islands
Dr. Jayant Kulkarni, Independent Scientist, Pune
Shri Ajay Desai, Independent Biologist, Belgaum
Dr. Suresh Kumar, Scientist, WII, Dehradun

28. Jamwa Ramgarh Wildlife Sanctuary, Rajasthan

Management Strengths

1. The biodiversity of the area is rich, both in terms of flora and fauna.
2. The area has many places of historical and religious interest. There are three dams and one fort (Ramgarh Fort). Overall, it is a place that can attract visitors.
3. It provides important corridors with adjoining forest areas for the movements of wildlife. One range of the Sanctuary forms the buffer area of Sariska Tiger Reserve, and with proper management, dispersing tigers could effectively use the area.

Management Weaknesses

1. There are 86 villages and 6,629 ha of revenue land inside the Sanctuary area. Presence of these large numbers of villages exerts heavy biotic pressure, primarily in the form of extensive livestock grazing, on the Protected Area.
2. People have settled in most of the valleys in the park which are also prime habitats for mammalian prey species. Very little water is available for wildlife. Scarcity of water is a major problem during the dry seasons.
3. There is a scarcity of frontline staff. Even the officers at senior levels such as DFOs and Range Officers are not regular but are on additional charge.
4. Poor infrastructure and limited mobility are serious constrains in effectively managing this Protected Area.
5. No NGO is involved.
6. The Forest Department has made no effort to build the capacity of the frontline staff in wildlife management and conservation.

Immediate Actionable Points

1. The water requirements of Jaipur city are met by this area, and as a result it forms a crucial watershed. Therefore, a stronger focus on managing this area is required.
2. Forest Department should expedite the settlement of rights and concessions and issue the final notification of the Sanctuary.
3. The department should engage NGOs to involve locals in the planning and management of the Sanctuary. There is considerable scope for doing this as there are as many as 86 villages inside the Sanctuary. Involving people and arranging alternate livelihood options for them will certainly help reduce the biotic pressure on the biodiversity of the area.
4. The Protected Area appears to be neglected in terms of management and staff recruitment. No full-time officials have been posted in charge of the Protected Area. The frontline staff are not trained in Protected Area or wildlife management. The Department should take measures to ensure that sufficient manpower is made available and that regular training programmes are being organised for the frontline staff.
5. Basic staff amenities, infrastructure and allocation of financial resources need to be enhanced considering the conservation significance of the Sanctuary.
6. Limited tourist facilities are available. These should be improved, and awareness generation programmes should be organised for the stakeholders regularly.
7. The Protected Area should have a specific website highlighting its rich biodiversity and places of historical, cultural and religious values.

Evaluators
Dr. Alok Saxena, Former PCCF, Andaman & Nicobar Islands
Dr. Jayant Kulkarni, Independent Scientist, Pune
Shri Ajay Desai, Independent Biologist, Belgaum
Dr. Suresh Kumar, Scientist, WII, Dehradun

29. Kesarbagh Wildlife Sanctuary, Rajasthan

Management Strengths and Weaknesses

1 Except for its rich biodiversity and its proximity to National Chambal Sanctuary, the Protected Area does not have any strength. It is probably one of the most neglected Protected Areas of Rajasthan. It has very limited manpower. There is a Defense School establishment within the Protected Area. The State Forest Department's representatives accompanying the MEE team could not produce any notification (either preliminary or final) for declaration of the area as a PA. The Management Plan and the other documents shown by the Department mention that the final notification of this Protected Area was issued in 1981 (23 November, 1981), but on scrutiny it was found that the said notification is for declaration of the area as a protected forest (not Protected Area).

2 However, recently only copy of a notification (issued vide Miscellaneous No. F. 39(2) For./55 dated 7th November 1955) was mailed. This notification includes Kesarbagh among other areas which were notified as Reserved Areas under Rajasthan Wild Animals and Bird Protection Act, 1951. Such areas may deem to be considered as Protected Areas. However, the PA officials are unaware of this earlier notification.

Immediate Actionable Points

1. The Department may consider issuing a proper notification referring to 1955 notification and stating clearly about the legal status of the area.
2. Once the issue of final notification of the Protected Area is settled, the issues related to manpower, infrastructure, mobility, etc. should be addressed properly.

Evaluators
Dr. Alok Saxena, Former PCCF, Andaman & Nicobar Islands
Dr. Jayant Kulkarni, Independent Scientist, Pune
Shri Ajay Desai, Independent Biologist, Belgaum
Dr. Suresh Kumar, Scientist, WII, Dehradun

Nasim Ahmad Ansari



30. Phulwari Ki Nal Wildlife Sanctuary, Rajasthan

Management Strengths

1. The biodiversity of this area is rich, and the area supports large tracts of pristine natural forests of the Aravallis.
2. This area forms an important watershed for several rivers including the River Sabarmati. Water is available in the area even during summer.
3. The site is surrounded by the territorial division on three sides and provides corridors to many wild animals.
4. There is very good scope for ecotourism in the area.
5. Good scope for eco-development activities.

Management Weaknesses

1. There are 134 villages inside the Protected Area and 24 villages along the periphery. Therefore, the biotic pressure is excessive. The threats to the area include forest fires, illicit felling and grazing.
2. There is a road passing through the sanctuary. This not only fragments the area but also increases the biotic pressure by providing better access.
3. Limited manpower, non-availability of sufficient weapons and modern equipment, limited mobility, poor infrastructure, etc. have been identified as some of the major constraints for management of the Sanctuary.
4. Limited manpower and resource constraints (financial and other) affect the management of the Protected Area adversely.

Immediate Actionable Points

1. The Protected Area is suffering from a lack of sufficient manpower, an adequate budget and other resources. The state government should pay attention to this Sanctuary, which has been neglected till now.
2. The Forest Department should plan some regulated ecotourism in this area with a view to creating awareness.
3. There are 24 Eco-development committees. These committees can play a significant role in promoting Eco-development activities and try to address livelihood issues of the villagers so as to seek their cooperation and participation in biodiversity conservation.
4. The Protected Area should have its own website to highlight the significance of this area and aspects of tourist interest.
5. The scope for research into the biodiversity of this Protected Area is vast. The officials of the Protected Area should promote research activities here in collaboration with relevant institutes and NGOs of national and international reputes.

Evaluators
Dr. Alok Saxena, Former PCCF, Andaman & Nicobar Islands
Dr. Jayant Kulkarni, Independent Scientist, Pune
Shri Ajay Desai, Independent Biologist, Belgaum
Dr. Suresh Kumar, Scientist, WII, Dehradun

31. Ramgarh Vishdhari Wildlife Sanctuary, Rajasthan

Management Strengths

1. The Sanctuary supports rich biodiversity (both flora and fauna).
2. It forms an important corridor with Ranthambhore Tiger Reserve in the south. The Committee was informed that one tiger from Ranthambhore Tiger Reserve was seen in this Protected Area, and camera-trap images of the tiger were shown.
3. Surrounded by forests of Bundi Division on the north and west, forming important corridors for the movements of wildlife.
4. High potential for ecotourism.

Management Weaknesses

1. Hostile behaviour of some villagers towards park officials and staff due to one incident of custodial death of an offender in the past. However, with the efforts of the Forest Department the situation is improving.
2. Insufficient manpower.
3. Poor infrastructure.
4. Heavy biotic pressures from villages in and around the Protected Area.
5. The area is fire-prone though no incidences of fire have been reported in the past.

Immediate Actionable Points

1. Frontline staff should be trained with wildlife management and Protected Area management.
2. Infrastructural improvements needed.
3. Efforts to promote regulated ecotourism to be augmented with creation of appropriate facilities.
4. NGOs should be involved in improving the relations between the local people and the Forest Department.
5. The Protected Area should have its own website that gives all relevant information.
6. Efforts should be made to promote research activities through collaboration with renowned institutes, universities and NGOs.

Evaluators
Dr. Alok Saxena, Former PCCF, Andaman & Nicobar Islands
Dr. Jayant Kulkarni, Independent Scientist, Pune
Shri Ajay Desai, Independent Biologist, Belgaum
Dr. Suresh Kumar, Scientist, WII, Dehradun

Nasim Ahmad Ansari



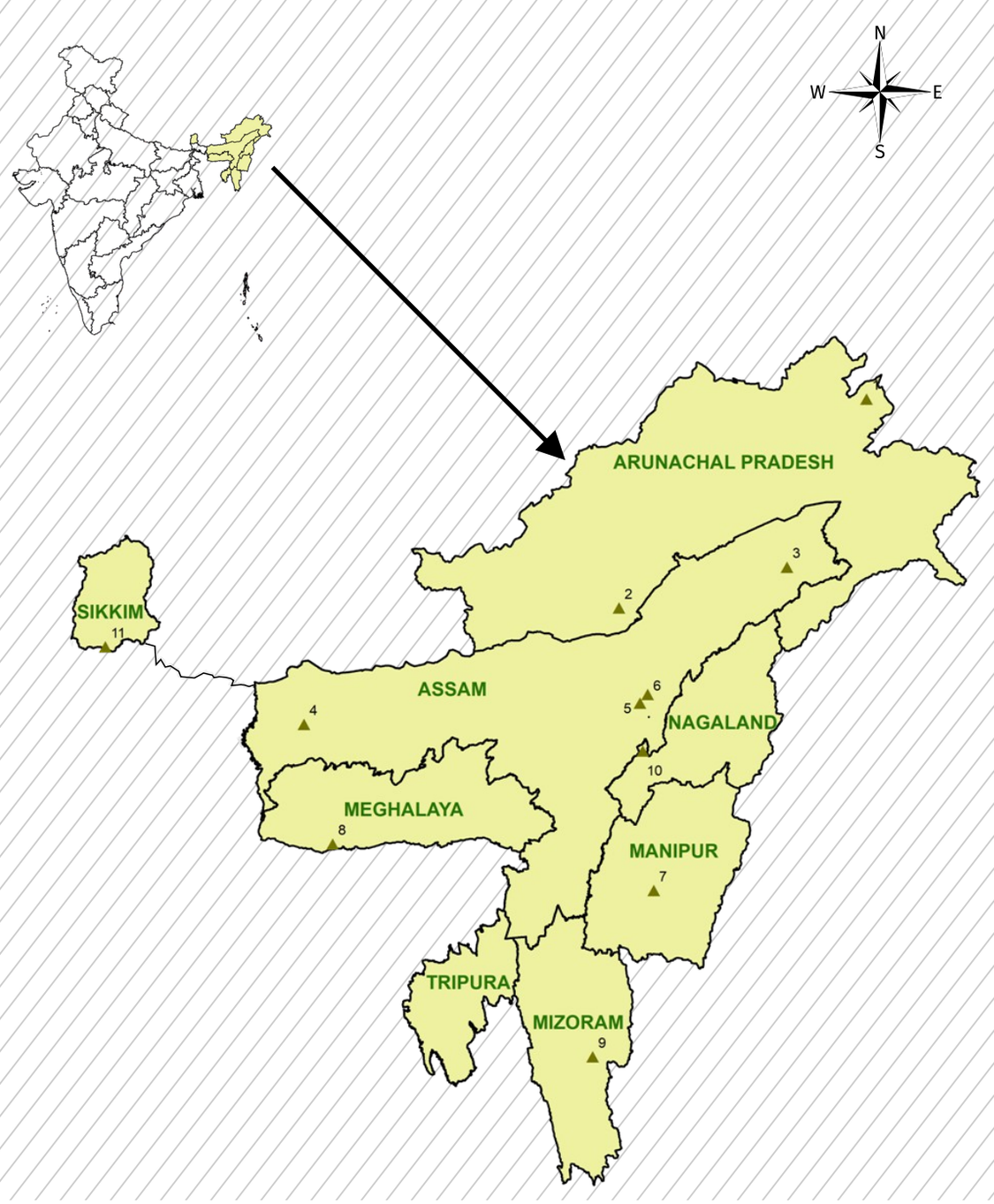
NORTH-EASTERN REGION

3.5

S. No.	Protected Area	State
1.	Dibang WLS	Arunachal Pradesh
2.	Itanagar WLS	Arunachal Pradesh
3.	Bherjan-Borajan-Padumoni WLS	Assam
4.	Chakrasila WLS	Assam
5.	East Karbi Anglong WLS	Assam
6.	Garampani WLS	Assam
7.	Khongjaingamba Ching WLS	Manipur
8.	Baghmara Pitcher Plant WLS	Meghalaya
9.	Khawnglung WLS	Mizoram
10.	Rangapahar WLS	Nagaland
11.	Kitam Bird WLS	Sikkim

Nasim Ahmad Ansari





S. No.	Protected Area	State
1.	Dibang WLS	Arunachal Pradesh
2.	Itanagar WLS	Arunachal Pradesh
3.	Bherjan-Borajan-Padumoni WLS	Assam
4.	Chakrasila WLS	Assam
5.	East Karbi Anglong WLS	Assam
6.	Garampani WLS	Assam
7.	Khongjaingamba Ching WLS	Manipur
8.	Baghmara Pitcher Plant WLS	Meghalaya
9.	Khawnglung WLS	Mizoram
10.	Rangapahar WLS	Nagaland
11.	Kitam Bird WLS	Sikkim

1. Dibang Wildlife Sanctuary, Arunachal Pradesh

Management Strengths

1. The Sanctuary is very large in size. It is situated in a large landscape with an area of 4,149 km2.
2. Such a large landscape is suitable for establishing the home ranges of large mammals.
3. The Sanctuary is home to as many as 156 species of mammals, 137 species of birds and a gene bank of various medicinal plants including Taxus baccata, Mishmi teeta and Aconitum spp. Occurrence of 156 mammalian species alone demonstrates the ecological value and richness of the Sanctuary.
4. Inaccessibility is also seen as a strength of the sanctuary as it prevents encroachment into the Sanctuary.
5. Absence of human habitation inside the Sanctuary makes it completely inviolate and immune to biotic interference and disturbance.
6. There is no livestock grazing inside the Sanctuary area. Thus any transfer of disease from domestic animals to wild animals is eliminated.
7. The local community in the fringe areas of the sanctuary does not foster any hostility toward the Protected Area management.

Management Weaknesses

1. The strengths of both the mid-level staff and the frontline staff are inadequate. The Wildlife Sanctuary does not have any ACF or Range Forest Officer. There is also a paucity of forest guards in the sanctuary.
2. The Sanctuary suffers from a shortage of funds and from the release of funds not being timely to execute any major conservation initiative.
3. No wildlife estimation has been carried out since the inception of the Wildlife Sanctuary, and hence no information is available regarding the status and distribution of wildlife species found in the area.
4. There is no systematic wildlife monitoring protocol in place.
5. Manpower trained in wildlife management is lacking.
6. The Wildlife Sanctuary is managed by the social forestry staff. The sanctuary is managed by a DFO Social Forestry as an additional charge.
7. Terrain is one of the major constraints in the Sanctuary.

Nasim Ahmad Ansari



Immediate Actionable Points

1. A full-time wildlife DFO should be posted in the area.
2. Adequate numbers of field staff should be filled up in the Sanctuary.
3. Forest Department needs to carry out wildlife estimates and evaluate habitat within the Sanctuary on a regular basis. Assistance of relevant universities, institutes, NGOs should be taken, if required.
4. The staff need to be provided with specialised high-altitude equipment for patrolling and for monitoring wildlife in the sanctuary to overcome the terrain-related constraints.
5. The Sanctuary staff of all levels need to be trained in wildlife and Protected Area management to enable them to understand the conservation related issues.
6. Adequate funds must be released in time for effective management and implementation of various conservation programmes.
7. Local communities must be involved in protection and conservation initiatives, especially in the peripheral areas.

Evaluators
Shri T.T.C. Marak, Former CWLW, Meghalaya
Dr. B.K. Mishra, Former Scientist, WII, Dehradun
Dr. Yogesh Dubey, Professor, IIFM, Bhopal
Dr. Abhijit Das, Scientist, WII, Dehradun

2. Itanagar Wildlife Sanctuary, Arunachal Pradesh

Management Strengths

1. The Wildlife Sanctuary is in the vicinity of the capital city of Arunachal Pradesh, Itanagar.
2. There exists a well-designed biological park inside the Sanctuary that can be used as a means of spreading awareness and educating the residents of Itanagar city.
3. The biological park is running a captive breeding programme for the hoolock gibbon, one of the threatened primate species of North-east India, with the support of the Central Zoo Authority.
4. The biological diversity of the area is rich, and the area acts as a movement corridor for wild elephants.
5. The local communities are extremely supportive towards the management of the Protected Area and participate in the conservation initiatives of Forest Department.
6. The sanctuary is connected well to other Protected Areas such as Pakke Tiger Reserve and the greater forested landscape.

Management Weaknesses

1. There is a significant overlap in the areas of the capital city project and the Wildlife Sanctuary. Approximately 70% of the capital city project area overlaps the Sanctuary. This situation makes for a conflict of interest in terms of land use.
2. The proposal for rationalisation of the boundary is pending for a long time. This is resulting into encroachment of the sanctuary by the local residents.
3. No population estimation/census has been carried out in the Sanctuary since its inception. Hence the status of the populations of the wildlife species present in the area is not known.
4. The strength of the staff at the frontline level is inadequate.

5. The staff of the Sanctuary have not been trained in Protected Area and wildlife management.
7. The Sanctuary is facing a shortage of funds to execute any major conservation initiative.
8. There is no systematic wildlife monitoring protocol in place.
9. No zonation has been carried out in the Sanctuary, and there are no site-specific zonation plans for the Sanctuary. The core and buffer zones have not yet been identified.
10. The Sanctuary has seven villages inside it, and it is surrounded by a large number of human habitations in the peripheral areas exerting a lot of biotic pressures.

Immediate Actionable Points

1. Rationalisation of the wildlife sanctuary vis-à-vis the capital city project is needed immediately. This alone can improve the conservation situation in the Wildlife Sanctuary substantially.
2. The area of the Wildlife Sanctuary that would be lost during the process of rationalisation needs to be appropriately compensated by acquiring additional forest areas which are rich in biological diversity and have no human habitations as per an earlier decision of the State Wildlife Board.
3. Forest Department needs to carry out wildlife estimates and evaluate habitat within the Sanctuary on a regular basis. Assistance of relevant universities, institutes, NGOs should be taken, if required.
4. Ecological monitoring needs to be done on a regular basis to gather real-time scientific data on the conservation status of the Sanctuary.
5. The staff of the Wildlife Sanctuary at all levels need to be trained in Protected Area and wildlife management to enable them to understand the conservation related issues.
6. Adequate funds need to be released in time so that the required management strategies can be implemented in time. The new Public Financial Management System needs to be relooked as this is delaying release of funds.
7. The encroachment into the Sanctuary needs to be controlled.

Evaluators
Shri T.T.C. Marak, Former CWLW, Meghalaya
Dr. B.K. Mishra, Former Scientist, W**II**, Dehradun
Dr. Yogesh Dubey, Professor, **II**FM, Bhopal
Dr. Abhijit Das, Scientist, W**II**, Dehradun

Rakesh Ahlawat



3. Bherjan Borajan Padumoni Wildlife Sanctuary, Assam

Management Strengths

1. The biodiversity of the area is rich, with 115 species of trees, 37 species of shrubs, 8 species of climbers, 24 species of mammals and 200 species of birds. The sanctuary is home to six species of primates, including the endangered hoolock gibbon and slow loris.
2. The smallness, compactness and easy accessibility of the area make for better management and protection of the Sanctuary.
3. The local communities are extremely supportive of the management of the Protected Area and participate in conservation initiatives.

Management Weaknesses

1. Both the middle-level staff and the frontline staff are inadequate. The Sanctuary does not have any ACF or Range Forest Officer.
2. The Sanctuary is experiencing a shortage of funds for executing any major conservation initiative.
3. Regular census of important wildlife species of the Sanctuary not carried out
4. No systematic wildlife monitoring protocol in place
5. Lack of trained man power for wildlife management
6. The Sanctuary comprises three isolated patches surrounded by tea gardens and human habitations.

Immediate Actionable Points

1. The vacancies at the levels of ACF and RFOs need to be filled up at the earliest to help the Park Director with the better management.
2. The Wildlife Sanctuary needs to carry out regular census/estimate exercises for the major wildlife species of the area.
3. Population monitoring of major mammalian species needs to be done using transect surveys and other methods as mentioned in the Management Plan.
4. The staff of the Sanctuary at all levels needs to be trained in wildlife and Protected Area management to enable them to understand the conservation related issues.
5. Adequate funds to be released on time for effective management and implementation of various conservation programmes.
6. Since the Sanctuary comprises three isolated patches surrounded by tea estates and villages, it is important to fence the Sanctuary boundary at strategic locations to prevent any further encroachment.
7. Local communities to be involved in ecotourism and their capacity built up to enhance the livelihood options for them.

Evaluators
Shri T.T.C. Marak, Former CWLW, Meghalaya
Dr. B.K. Mishra, Former Scientist, WII, Dehradun
Dr. Yogesh Dubey, Professor, IIFM, Bhopal
Dr. Abhijit Das, Scientist, WII, Dehradun

4. Chakrasila Wildlife Sanctuary, Assam

Management Strengths

1. The Wildlife Sanctuary has been specifically created for the conservation of the golden langur.
2. Population of golden langur has shown a steady and healthy growth.
3. The Protected Area has full-time veterinary support from the Wildlife Trust of India (WTI) to take care of health- and rescue-related issues.
4. The extent of 45.8 km2 of the Protected Area is reasonable for its effective management.
5. The area is appropriately positioned in a large landscape that provides opportunities for the survival of golden langur populations in the future.
6. Most of the frontline staff are young, and they work proactively for the protection of the Sanctuary.
8. There is a continuity of management plans so as to avoid any gap in management interventions.
9. The Sanctuary enjoys the support of the local communities and several NGOs.

Management Weaknesses

1. Absence of middle-level management staff. No ACFs and RFOs.
2. The entire staff is untrained on issues related to wildlife management and Eco-development.
3. Inadequate funds, equipment and infrastructure. The DFO operates from the office of the territorial DFO.
4. Delay in approval of the second management plan.
5. Lack of coordination with other departments.
6. Lack of information about the Protected Area in the public domain and lack of publicity.
7. Inadequate research inputs and for improving the management of the Protected Area.

Nasim Ahmad Ansari



Immediate Actionable Points

1. Staff vacancies at the level of ACFs and Range Officers should be filled immediately.
2. A driver needs to be appointed immediately as the DFO does not have one.
3. Majority of staff have no formal training on wildlife conservation and Protected Area management. Training and capacity building need to be done for them immediately.
4. The current draft management plan (2016-2017 to 2020-2021) needs to be approved immediately.
5. The Sanctuary requires immediate attention in terms of building infrastructure such as an office and improved residential facilities for the staff.
6. Adequate funds must be made available on time to meet the expenses of the Protected Area.
8. Protected Area management needs to effectively build alliances with other line departments for implementation of common government schemes especially pertaining to livelihood issues and improving ecotourism in the area.
9. The management of the Protected Area must encourage relevant research, especially on species of conservation significance, and include the findings in the management planning process.
10. The scope of extending the Protected Area into a wider network also needs to be reflected in the adjoining territorial Working Plan.

Evaluators
Shri T.T.C. Marak, Former CWLW, Meghalaya
Dr. B.K. Mishra, Former Scientist, WII, Dehradun
Dr. Yogesh Dubey, Professor, IIFM, Bhopal
Dr. Abhijit Das, Scientist, WII, Dehradun

5. East Karbi Anglong Wildlife Sanctuary, Assam

Management Strengths

1. Ecological contiguity of the Sanctuary with Kaziranga National Park within the Kaziranga-Karbi Anglong Landscape.
2. Negligible anthropogenic pressure considering the vastness of the landscape and biotic interferences.
3. Local communities are supportive of the management of the Protected Area.
4. The Sanctuary, being surrounded by a mosaic of proposed Reserved Forests and Unclassed State Forests, provides a buffer for the park.
5. The diversity of habitats (extensive lentic and lotic waterbodies and semi-evergreen forest) indicates great biological diversity, much of which are yet to be evaluated.
6. Some charismatic endangered species, such as the Himalayan black bear, gaur, hoolock gibbon and slow loris, are found in the area, and these can become the focal points of conservation in the area.
7. The Protected Area provides the much-needed connectivity for elephants and is also part of the Kaziranga Karbi Anglong elephant reserve.

Management Weaknesses

1. The territorial division has been given the charge of managing the sanctuary, which appears to be just an addition to the normal duties of the territorial division.
2. None of the staff members have been exposed to wildlife management and training.
3. The Protected Area lacks the infrastructure and resources needed to manage the Sanctuary.
4. The Protected Area has not conducted any proper census to get estimates of the wildlife population.
5. The Protected Area does not have any dedicated field staff for day-to-day management of the Wildlife Sanctuary.
6. The Protected Area has not been divided into any zonation and mapped properly.
8. Lack of information about the Protected Area in the public domain and lack of publicity.

Immediate Actionable Points

1. A proper wildlife division is to be created in the area to address the wildlife-related issues.
2. The field staff need to be formally trained in wildlife management.
3. Proper zonation and boundary demarcation need to be done as quickly as possible.
4. A census and survey should be carried out to gather data on wildlife populations in the area.

Evaluators
Shri T.T.C. Marak, Former CWLW, Meghalaya
Dr. B.K. Mishra, Former Scientist, WII, Dehradun
Dr. Yogesh Dubey, Professor, IIFM, Bhopal
Dr. Abhijit Das, Scientist, WII, Dehradun

6. Garampani Wildlife Sanctuary, Assam

Management Strengths

1. A well-known Wildlife Sanctuary and a popular tourist destination.
2. A small Sanctuary that is nested within a larger contiguously forested landscape.
3. The Protected Area acts as an important corridor for wild elephants in the Kaziranga-Karbi Anglong Landscape.
4. A unique geological setting that includes a number of Sulphur hot springs gives a distinct signature to the Protected Area.
5. Rich biodiversity notable for plants (especially orchids) and birdlife.
6. Biotic interference within sanctuary found to be insignificant.

Management Weaknesses

1. Busy national highway likely to have direct and indirect negative impacts on the Protected Area.
2. An increase in the number of human settlements in the fringe areas may have an adverse impact on the Protected Area.
3. The Sanctuary is currently managed by the territorial staff, who have undergone no formal training in wildlife management.
4. The Protected Area lacks the infrastructure and resources needed for managing the Sanctuary.

5. The limited staff have to look after the large wildlife area, which falls in two wildlife sanctuaries and one Reserve Forest.
7. No proper mapping of forest and consolidation of boundaries. These are likely to hinder the management of the Protected Area.

Immediate Actionable Points

1. Ecological studies need to be conducted on the biodiversity assessment and the threats faced by it.
2. The ecological integrity of this small Sanctuary should be maintained by emphasizing connectivity with adjoining Protected Areas and forested landscapes.
3. The Sanctuary should be brought under the administrative control of a separate Wildlife Division.
4. The staff should be trained in wildlife monitoring and Protected Area management.
5. A periodic estimation of the wildlife population may be conducted to understand population trends.
6. The tourism zone of the Protected Area may be used for interpreting wildlife and nature for tourists and spreading awareness amongst them. Special attention needs to be given to the natural Sulphur springs and their protection.
8. Presently entry to the Sulphur springs is free. Some entry fee needs to be levied for regulation, and unruly behaviour/creation of worship areas in the area should not be allowed.
9. Research needs to be conducted on the hot springs and distribution of wildlife to gain a better understanding of these unique ecological settings.

Evaluators
Shri T.T.C. Marak, Former CWLW, Meghalaya
Dr. B.K. Mishra, Former Scientist, WII, Dehradun
Dr. Yogesh Dubey, Professor, IIFM, Bhopal
Dr. Abhijit Das, Scientist, WII, Dehradun

Subharanjan Sen



7. Khongjaingamba Ching Wildlife Sanctuary, Manipur

Management Strengths

1. The area was notified as a Protected Area only very recently in May, 2016. Therefore, it is too early to conduct a MEE and to assess its "management strengths".
2. The area is even now managed as part of the Bishnupur territorial forest division like any other forest under the jurisdiction of this division.
3. As of now, there is no apparent strength of the management to list. But strength of the protected area as such is its proximity to the famous Keibul Lamjo National Park; home to endangered Sangai (Manipur brow antlered deer). So whatever its drawbacks and shortcomings might be, its locational advantage makes it eminently suitable for being merged with the National Park after relocation of the inhabitants and demolishing of all permanent structures.

Management Weaknesses

1. Although the area has been declared a Wildlife Sanctuary, the forest department is yet to formulate a clear-cut future plan for the Protected Area. In fact, during the interaction with the different levels of the management, no one was in a position to explain the very purpose of declaring the area as a Wildlife Sanctuary. Though the notification of the Protected Area is very eloquent about its virtues, the ground realities do not support the claim.
2. The area of the sanctuary is only 0.412 km2. Even for a biodiversity-rich area, such a size is not an ecologically sustainable one. In the case of Khongjain Gamba Ching, an isolated, sparsely vegetated area subjected to severe biotic pressure, it is not feasible to increase or even sustain its present biodiversity.
3. The management of the Protected Area is still with the territorial wing of the Forest Department. Hence it is currently being managed in the conventional style of management suitable for a territorial forest area.

Immediate Actionable Points

1. Because the area is adjacent to the Kaibul Lamjao National Park, it is practical and prudent to bring it under the administrative control of the Dy. Conservator of Forests looking after the National Park. Doing this will help synchronize the activities of the two Protected Areas.
2. There is an urgent need to formulate a long-term strategy for the management of the Sanctuary. The strategy could be to integrate the sanctuary with the adjacent National Park by converting the area also into an extension of the National Park or to managing it as a Sanctuary itself and at the same time physically integrate it with the national park. In both the options, the present inhabitants staying inside the Sanctuary area will have to be relocated, and all the encroachers will need to be evicted. Only a well prepared Management Plan can address all these issues. Hence this is one step the state Forest Department needs to take immediately.

Evaluators
Shri V. Gopinath, Former HoFF, Kerala
Dr. P.C. Bhattacharya, Former Professor, University of Guwahati
Dr. Goutam Narayan, Independent Scientist, Guwahati
Dr. B.S. Adhikari Scientist, WII, Dehradun

8. Baghmara Pitcher Plant Wildlife Sanctuary, Meghalaya

Management Strengths

1. The management is well aware of the threats to the integrity of the Protected Area. As the Sanctuary is a small area with easy access for the staff, it is well protected.
2. The unique nature of the plant species protected in the Sanctuary resonates well in the minds of both the general public and scientists, and hence it will always receive conservation attentions.

Management Weaknesses

1. Presently very little is understood about the ecology of Nepenthes khasiana. Unless it is adequately studied and understood, the park management will not be able to formulate proper management practices effectively for ensuring the long-term survival of the plant.
2. The total extent of the area is extremely small to ensure the long-term survival of the plant species that the park strives to protect. Because of the small size, it is also impossible to manage the Sanctuary using conventionally prescribed zonation approaches.
3. The Protected Area is an isolated patch of a Reserve Forest located on a precipitous slope right inside Baghmara town without proper access for visitors. Also, the remoteness of the area rules out any substantial increase in the tourist traffic any time in the near future.

Immediate Actionable Points

1. Notify additional areas as Pitcher Plant Sanctuary. The Pitcher Plant Wildlife Sanctuary was carved out of Baghmara Reserve Forest. Presently the remaining area of the Reserve Forest with the Forest Department is 44.29 km2. It has many sub-beats, and with proper silvicultural practices and adequate protection these could be made to support viable populations of Nepenthes khasiana. In fact, the evaluation team during field visit could see good patches of pitcher plants near the International boundary in Bhobanipur sub-beat. The extent of this beat of the reserve forest is understood to be 8.43 ha. This patch seems to be a better site for pitcher plants compared to the present Protected Area. It is also accessible to visitors, and this will boost the tourism potential of the locality. Hence the Meghalaya Forest Department should consider declaring this beat also as a Protected Area. As the proposal will not involve any additional financial commitment, it could be easily accepted by the State Government.
2. Artificial propagation. Since the population of Nepenthes khasiana is reported to have been depleted by over 40% over the last 30 years, there is an urgent need for artificial propagation of the species in suitable locations in Baghmara Reserve Forest by developing suitable nurseries and planting techniques. The park management should sponsor research programmes to facilitate the same by sourcing funds from the Government of India and/or the state government.

Evaluators
Shri V. Gopinath, Former HoFF, Kerala
Dr. P.C. Bhattacharya, Former Professor, University of Guwahati
Dr. Goutam Narayan, Independent Scientist, Guwahati
Dr. B.S. Adhikari Scientist, WII, Dehradun

9. Khawnglung Wildlife Sanctuary, Mizoram

Management Strengths

1. The Sanctuary, with its varied flora and fauna, is well ahead of most other Protected Areas of the country in species diversity. Hence its protection and sustenance are of national importance. If properly marketed, it will be a huge attraction to the visitors to the Protected Area.
2. Being relatively close to the main road, the area is easily accessible with a four-wheel-drive vehicle, making the protection of the Sanctuary a comparatively easy task.

Management Weaknesses

1. The current staffing pattern of the Sanctuary is very poor. There are only three permanent staff members for administering the Protected Area. They are neither qualified nor sufficiently oriented to fulfil the task assigned to them. Most of the jobs are done through 16 muster-roll wildlife guards. This is not a desirable arrangement.
2. Shifting cultivation is still practiced in the peripheral community forests. All these areas are good habitats for the wild animals. So the damage being caused by jhum is immense and far reaching. Similarly, it is understood that there is widespread poaching of animals in the adjacent villages. Hence the task is cut out for the forest department to wean away the villagers from these practices by some innovative extension works.

Immediate Actionable Points

1. A Protected Area like Khawnglung needs young dynamic officers to implement innovative ideas. Hence the suggestion is to post young officers who are trained in wildlife-related issues to manage the Protected Area.
2. The future of the Protected Area depends on developing good ecotourism models so as to generate jobs as guides, homestay operators, taxi drivers, cooks, etc. Hence innovative measures are to be put in place to attract more visitors to the Protected Area.
3. The present Sanctuary area is too small to support viable populations of different species on a long-term basis. The forest department has to find a way to increase the size of the Protected Area either by giving good compensation to the local villagers or by agreeing to share benefits liberally with them. This may not happen today or tomorrow. But it is better to float the idea and initiate discussions on the topic now itself.

Evaluators
Shri V. Gopinath, Former HoFF, Kerala
Dr. P.C. Bhattacharya, Former Professor, University of Guwahati
Dr. Goutam Narayan, Independent Scientist, Guwahati
Dr. B.S. Adhikari Scientist, WII, Dehradun

10. Rangapahar Wildlife Sanctuary, Nagaland

1. No MEE could be carried out by the Regional Expert Committee in this sanctuary, as the Rangapahar WLS does not exist in the field. But for an area of 176 ha which was converted to set up the Nagaland Zoological Park in 2008, all the remaining area of the 470 ha notified as the PA in 1986 has been encroached and developed into a thriving township. Rangapahar with 6816 acres in area was declared as a Reserve Forest in 1916. The extent was increased to 21,768 acres by a notification in 1924.
2. It is understood that though the entire area of the PA has now been either encroached or brought under the zoological park, it has not been formally denotified. The Nagaland Forest Department functionaries could not convincingly explain how the zoological park could be setup in a notified wildlife sanctuary. It is also not known how the Central Zoo Authority could approve a zoo to be set up in a notified PA area.

In purview of the above, the committee has made following recommendations:

- The protection of the remaining wilderness and wildlife of the country can be assured only by taking the general public into confidence in tandem with the co-ordinated efforts by all arms of the state and judiciary.
- Delay in adjudicating the court cases ultimately helps the encroachers making it difficult for the state machinery to evict them on later dates.
- Accepting the fait accompli take measures to urgently denotify the wildlife sanctuary and remove it from the records.
- MoEF & CC and WII may take measures to ensure their centralised data systems to be more dynamic so as to reflect field realities of the day.

Khurshid Alam Khan



11. Kitam Bird Sanctuary, Sikkim

Management Strengths

1. The state of Sikkim has well-established systems and practices for protecting its forests and environment. Great strides were made in this direction at the beginning of the 20th century. Hence the prevailing social ethos makes the task of protecting and developing a Protected Area much easier compared with many other states of the country.
2. The task of managing the Sanctuary is with a team of young and enthusiastic officers and staff. Hence, as of now they will be able to tackle all challenges and make the habitat of the Protected Area much more conducive to bird diversity.
3. Since all-weather roads are running through the Sanctuary, it is easily accessible to visitors. With proper planning and initiative, the Protected Area can easily attract a large number of visitors. This in turn could create income-generating ecotourism activities for the local population.

Management Weaknesses

1. National Highway 710 and the Namchi-Nayabazar road crisscross the Protected Area, creating dust and sound pollution. The tranquillity of the Protected Area is disturbed continuously, and this is not good for the wildlife. It also makes the task of regulating the visitors to the Protected Area virtually impossible unless innovative visitor facilities are newly created in the Protected Area.
2. With a size of only 6 km2, the Sanctuary is likely to face increased incidents of human-wildlife conflict in the future. This could be more so in the case of the peafowl as with their population increasing, they are likely to fly out to the nearby farmlands, causing extensive damages to the crops.
3. The existing visitor facilities in the Sanctuary are grossly inadequate. The present visitor satisfaction level is well below the desirable level. There is a scope for developing new trails, camping facilities, interactive display areas, extension counters, etc. both in the Protected Area and in the tourist centres nearby at Namchi.

Immediate Actionable Points

1. Kitam may not be an ideal Bird Sanctuary. But with it having been notified as one, the primary thing to do is to provide excellent visitor facilities to increase the visitor footfall with an aim of generating robust ecotourism activities. This will in turn open up more income-generating activities for the local population. This is all the more relevant in the context of the few individual initiatives in the homestay sector in the locality.
2. Large numbers of visitors come to this centre, which is located near Namchi. This is an ideal place for sending out the messages of wildlife protection and nature conservation to the general public and for attracting visitors to Kitam Bird Sanctuary. It is understood that the Forest Department has sufficient land in its possession in the nearby area. A well-conceived Nature Interpretation Centre in a suitable area will pay rich dividends in the future.
3. It is understood that many individuals who are fed up with the crop damage caused by the wild animals are ready to part with their land adjoining to the Protected Area. Though this may not solve the human-wildlife conflict, the suggestion deserves favourable consideration by the Forest Department.

Evaluators
Shri V. Gopinath, Former HoFF, Kerala
Dr. P.C. Bhattacharya, Former Professor, University of Guwahati
Dr. Goutam Narayan, Independent Scientist, Guwahati
Dr. B.S. Adhikari Scientist, WII, Dehradun

04

THE WAY FORWARD



K. Sivakumar



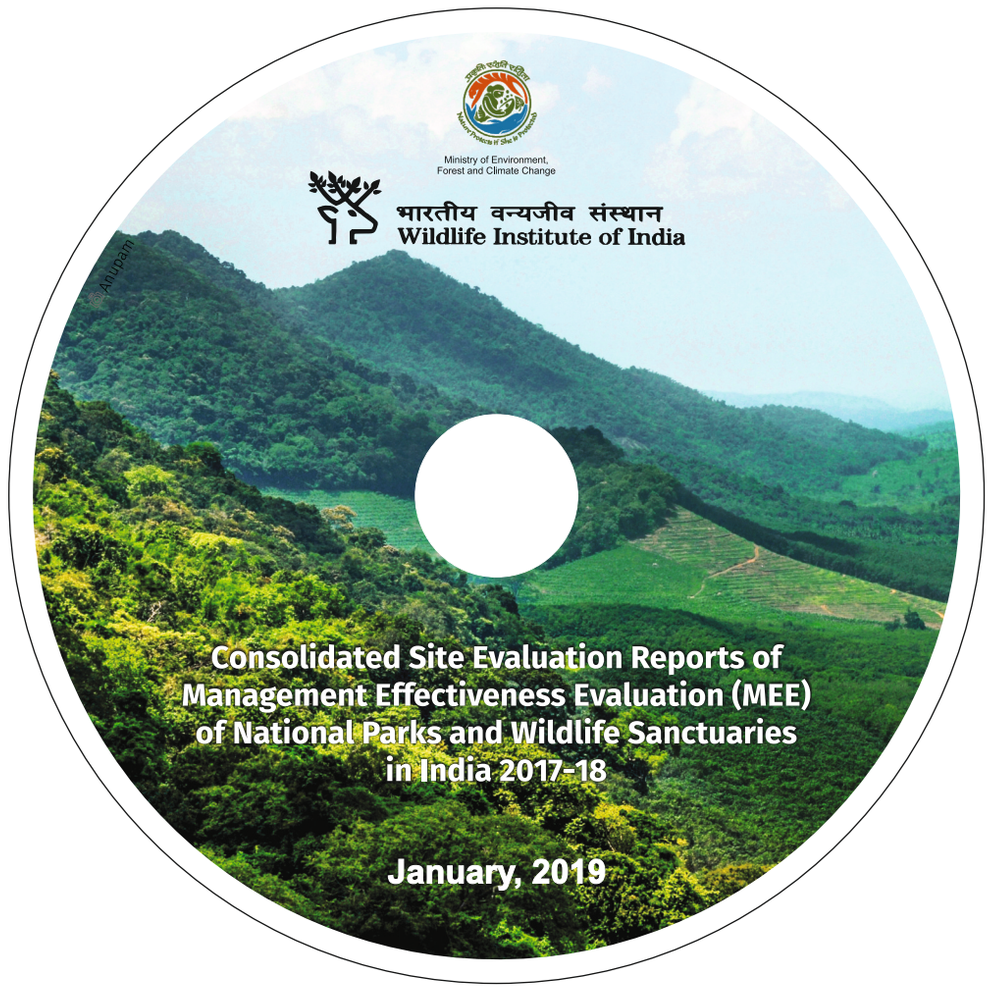
04

The present MEE process has provided valuable insights into the management processes and practices. The strengths, weaknesses and immediate actionable points have been described in respect of all 125 PAs included in this report. It has been observed that PAs have to maintain these Strengths and address their Weaknesses in a systematic manner. Efforts should be made to implement the immediate actions indicated for each PA. It is critical that each PA has a good science based Management Plan formulated through a participatory process. Till such time the Management Plans are prepared/ revised/ updated the Annual Plan of Operation (APOs) should take into account actions required for implementing the results of the evaluation. The MoEFCC must ensure that adequate funds are provided and a system of compliance monitoring is put in place. The 6 PA which were not evaluated by the MEE Committees, the specific recommendation are given. The Government of India should incorporate these recommendations to overcome these issues discussed by the MEE Committee on urgent basis for Protected Area Management.

Khurshid Alam Khan



Filled in questionnaires in respect of all 125 Protected Areas evaluated during 2017 to 2018



ANNEXURE- I

Landscape regions, sites, teams for MEE of Protected Areas (NP+WLS) in India 2017-2018

Region	Chairman	Member	WII Faculty	State/ UT	Name of the PA to be evaluated
NORTHERN REGION	Shri B.S. Bonal Former ADG (PT) & MS, NTCA Email: bonalbishan@gmail.com Ph: 09868100169	Dr. S.P.S. Kushwaha Former Scientist, IIRS, Dehradun Email: spskushwaha@gmail.com Dr. Justus Joshua Scientist, Green Peace Foundation, Gujarat Ph: 09829307827, 09414120414 Email: justmonk60@gmail.com	Dr. S. Sathyakumar, Scientist, Wildlife Institute of India Dehradun Mob.: 9412901529 Email: ssk@wii.gov.in	Chandigarh Himachal Pradesh Himachal Pradesh Himachal Pradesh Himachal Pradesh Himachal Pradesh Himachal Pradesh Himachal Pradesh Himachal Pradesh Himachal Pradesh Himachal Pradesh	City Bird WLS Inderkilla NP Khirganga NP Bandli WLS Chail WLS Chandratal WLS Churdhar WLS Daranghati WLS Dhauladhar WLS Kanawar WLS Khokhan WLS Kais WLS
	Dr. V.K. Melkani Former CWLW Government of Tamil Nadu Email: melkanivk@gmail.com Ph: 09751982438	Dr. Vibhu Prakash Scientist, Vulture Breeding Centre, Chandigarh Email: vibhuprakashmathur@gmail.com Ph: 9416044924 Dr. Jeet Ram Professor, Kumaun University, Nainital Ph: 9456590863, 9412084571 Email: Jeetram2001@ yahoo.com	Dr. K. Sivakumar Scientist, Wildlife Institute of India Dehradun Mob.: 9412058129 Email: ksivakumar@wii.gov.in	Haryana Himachal Pradesh Himachal Pradesh Jammu & Kashmir Jammu & Kashmir Jammu & Kashmir Jammu & Kashmir Jammu & Kashmir Jammu & Kashmir Punjab Punjab	Abubshehar WLS Gamgul Siyabehi WLS Kalatop-Khajjiar WLS City Forest (Salim Ali) NP Baltal-Thajwas WLS Hirapora WLS Hokersar WLS Jasrota WLS Lachipora WLS Limber WLS Bir Aishvan WLS Bir Bunerheri WLS
	Shri S.S. Srivastva Former PCCF & HoFF, Govt. of Odisha Tel.: 943702245683 27756480 Email: sheo1957@yahoo.co.in, Sheo1957@gmail.com	Dr. D.S. Shrivastava Former Professor, Patna University, Patna Ph: 09431138638 Email: dssrivastava@hotmail.com, drdssrivastava1@gmail.com Dr. Afifullah Khan Professor, Aligarh Muslim University, Aligarh Ph: 09411862686 Email: afifkhan@rediffmail.com	Dr. V.P. Uniyal Scientist, Wildlife Institute of India Dehradun Mob.: 9412992869 Email: uniyalvp@wii.gov.in	Punjab Punjab Punjab Uttar Pradesh Uttar Pradesh Uttar Pradesh Uttar Pradesh Uttar Pradesh Uttar Pradesh Uttar Pradesh Uttarakhand Uttarakhand	Bir Dosanjh WLS Bir Gurdialpura WLS Bir Mehaswala WLS Bakhira WLS Dr. Bhimrao Ambedkar Bird WLS Lakh Bahosi Bird WLS Mahavir Swami WLS Nawabganj Bird WLS Parvati Aranga WLS Patna WLS Valley of Flowers NP Mussoorie WLS

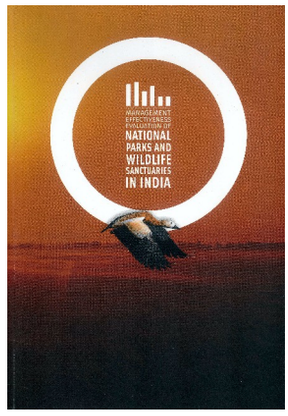
Region	Chairman	Member	WII Faculty	State/ UT	Name of the PA to be evaluated
SOUTHERN REGION	Dr. S.K. Khanduri Former IG (WL), MoEFCC, New Delhi Email: skhanduri57@gmail.com Ph: 09871800409	Dr. Madhusudan Scientist, NCF, Mysore Email: mdm@ncf-india.org Ph: 09449010490 Dr. Arun Mani Dixit Independent Scientist Ph./Fax: +91 79 26401571 (O), 26766729 (R) 096017 00735; 09374337471 (M). Email: arunmdixit@cesc-india.org, arunmdixit@rediffmail.com	Dr. Parag Nigam Scientist, Wildlife Institute of India Dehradun Mob.: 9412974486 Email: nigamp@wii.gov.in	Karnataka Karnataka Karnataka Kerala Kerala Kerala Kerala Kerala Kerala Tamil Nadu Tamil Nadu Tamil Nadu	Gudekote Sloth Bear WLS Malai Mahadeshwara WLS Melkote Temple WLS Anamudi Shola NP Pambadum Shola NP Aralam WLS Chimmony WLS Chinnar WLS Chulannur Peafowl WLS Guindy NP Cauvery North WLS Chitrangudi Bird WLS
	Shri Hari Kumar Former CWLW Government of Kerala Mobile: 9447979015 Email: gharikumarifs@gmail.com	Dr. Rajah Jayapal Scientist, SACON, Coimbatore Email: rajah.jp@gmail.com Ph: 08098845940 Dr. P.K. Mathur Former Dean-FWS, Wildlife Institute of India Dehradun Mob.: 7088781781, 9412075384 Email: Mathurpk1955@gmail.com	Dr. Bitapi Sinha Scientist, Wildlife Institute of India Dehradun Mob.: 9412059432 Email: bcs@wii.gov.in	Andhra Pradesh Andhra Pradesh Andhra Pradesh Goa Karnataka Karnataka Karnataka Karnataka Karnataka Karnataka	Rajiv Gandhi (Rameswaram) NP Kambalakonda WLS Koundinya WLS Pulicat Lake WLS Dr. Salim Ali Bird (Chorao) WLS Adichunchunagiri Peacock WLS Arabithittu WLS Attiveri Bird WLS Brahmagiri WLS Chincholi WLS Daroji Bear WLS Ghataprabha Bird WLS
	Shri P. Anur Reddy Former PCCF Government of Karnataka Email: pamanur1957@gmail.com Ph: 09448076543	Dr. S. Narendra Prasad Scientist, OSGS, IIIT, Hyderabad Email: snarendra.prasad@gmail.com Ph: 09440602754 Shri B.C. Choudhury Former Scientist, Wildlife Institute of India, Dehradun Ph: 09412992631 Email: bcchoudhury77@gmail.com	Dr. C. Ramesh Scientist, Wildlife Institute of India Dehradun Mob.: 09442151719 Email: rameshc@wii.gov.in	Tamil Nadu Tamil Nadu Tamil Nadu Tamil Nadu Tamil Nadu Telangana Telangana Telangana Telangana Telangana Telangana	Gangaikondam Spotted Deer WLS Kanjirankulam Bird WLS Karaivetti Bird WLS Karikilli Birds WLS Kodaikanal WLS Koonthankulam-Kadankulam WLS Megamalai WLS Melaselvanoor-Keelaselvanoor WLS Kasu Brahmananda Reddy NP Mrugavani NP Eturnagaram WLS Kinnersani WLS

Region	Chairman	Member	WII Faculty	State/ UT	Name of the PA to be evaluated
EASTERN REGION	Shri Azam Zaidi Former CWLW Government of West Bengal Email: azamzaidi375@gmail.com Mobile: 9830337556	Dr. Bibhav Talukdar Scientist, AARANYAK, Guwahati Ph: 9435113139 Email: bibhab@aaranyak.org Dr. Diwakar Sharma Director, Programme Management, M&E WWF-India, 172-B Lodi Estate, New Delhi - 110 003 Tel: 91-11-4150 4832; Ph: 09868878774 Email: dsharma@wwfindia.net, diwakarsharma09@gmail.com	Dr. Bilal Habib Scientist, Wildlife Institute of India Dehradun Mob.: 9410992233 Email: bh@wii.gov.in	Odisha Odisha West Bengal West Bengal West Bengal	Balukhand Konark WLS Karlapat WLS Bethuadahari WLS Bibhuti Bhusan WLS Chintamani Kar Bird WLS
	Dr. Pradeep Vyas Former CWLW Government of West Bengal Email: Pradeepvyas19@gmail.com Ph: 09830175198	Dr. R.S. Rawal Director, GBPHIED, Almora Ph: 9410392114 Email: ranbeerrawal4@gmail.com Dr. Jamal A. Khan Professor, Aligarh Muslim University, Aligarh Ph: 7895931767 secretarywsi@gmail.com	Dr. Bivash Pandav Scientist, Wildlife Institute of India Dehradun Mob.: 9412057152 Email: bivash.pandav@wii.gov.in	Bihar Bihar Bihar Jharkhand Jharkhand Odisha	Barela Jheel Salim Ali Bird WLS Bhimbandh WLS Nagi Dam WLS Gautam Budha Lawalong WLS Badrama WLS

Region	Chairman	Member	WII Faculty	State/ UT	Name of the PA to be evaluated
WESTERN REGION	**Shri V.B. Sawarkar** Former Director, Wildlife Institute of India Email: woodowl464 @yahoo.co.in Ph: 09890045692	**Dr. Ashish David** Scientist, IIFM, Bhopal Email: adavid @iifm.ac.in Ph: 09755538822 **Dr. Nita Shah** BNHS, Mumbai Ph: 09033091064 Email: nitashah. india @gmail.com	**Dr. Gautam Talukdar** Scientist, Wildlife Institute of India Dehradun Mob.: 9456178697 Email: gautam @wii.gov.in	Gujarat Gujarat Gujarat Gujarat Gujarat Gujarat Madhya Pradesh Madhya Pradesh Madhya Pradesh	Gaga (Great Indian Bustard) WLS Hingolgadh WLS Jambughoda WLS Jessore Sloth Bear WLS Kachchh (Lala) Great Indian Bustard WLS Kachchh Desert WLS Mitiyala WLS Fossil NP Van Vihar NP Gandhi Sagar WLS
	Dr. Alok Saxena Former PCCF Andaman & Nicobar Islands Mobile:+ 919412053119; Email: dr.aloksaxena @gmail.com	**Dr. Jayant Kulkarni** Independent Scientist, Pune Email: kulkarni. jayant@gmail.com **Shri Ajay Desai** Independent Biologist, Belgaum Email: ajayadesai.1 @gmail.com Ph: 09448744193	**Dr. Suresh Kumar** Scientist, Wildlife Institute of India Dehradun Mob.: 9359433837 Email: suresh @wii.gov.in	Maharashtra Maharashtra Maharashtra Maharashtra Rajasthan Rajasthan Rajasthan Rajasthan Rajasthan Rajasthan Rajasthan	Karanja Sohal Blackbuck WLS Katepurna WLS Lonar WLS Malvan Marine WLS Bandh Baratha WLS Bassi WLS Jaisamand WLS Jamwa Ramgarh WLS Kesarbagh WLS Phulwari Ki Nal WLS Ramgarh Vishdhari WLS
	Shri U.M. Sahai Former CWLW Government of Rajasthan umsahai@ gmail.com, umsahai@ rediffmail.com Ph: 09414134421	**Dr. Advait Edgoankar** Scientist, IIFM, Bhopal Email: advaite @iifm.ac.in Ph: 07828566626 **Ms. Seema Bhatt** Independent Scientist New Delhi Ph: 09810827212 Email: seemabhatt 60@gmail.com	**Dr. S.P. Goyal** Former Scientist, Wildlife Institute of India Dehradun Mob.: 9410186496 Email: goyalsp2007 @gmail.com, goyalsp@wii.gov.in	Madhya Pradesh Madhya Pradesh Madhya Pradesh Madhya Pradesh Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra	Kheoni WLS Narsinghgarh WLS National Chambal WLS Orcha WLS Aner Dam WLS Bhamragarh WLS Deulgaon-Rehekuri WLS Gautala-Autramghat WLS Jaikwadi WLS Kalsubai Harishchandragad WLS

Region	Chairman	Member	WII Faculty	State/ UT	Name of the PA to be evaluated
NORTH-EASTERN REGION	Shri V. Gopinath Former HoFF & CWLW, Govt. of Kerala Mobile No. 9495002100 Email: vallilgopinath @hotmail.com	Dr. P.C. Bhattacharya Former Professor, University of Guwahati Email: bhattapc @gmail.com, bhattapc @sify.com Ph: 09435148702 Dr. Goutam Narayan Independent Scientist, Guwahati Ph: 09435016247 Email: Goutam. narayan@gmail.com	Dr. B.S. Adhikari Scientist, Wildlife Institute of India Dehradun Mob.: 9412056031 Email: adhikaribs @wii.gov.in	Manipur Meghalaya Mizoram Nagaland Sikkim	Khongjaingamba Ching WLS Baghmara Pitcher Plant WLS Khawnglung WLS Rangapahar WLS Kitam Bird WLS
	Shri T.T.C. Marak Former CWLW Government of Meghalaya Ph: 09436104513 Email: ttcmarak @gmail.com	Dr. B.K. Mishra Former Scientist, Wildlife Institute of India, Dehradun Ph: 09411101689 Email: bidyutmishra @yahoo.com Dr. Yogesh Dubey Scientist, IIFM, Bhopal Ph: 09407528313 Email: ydubey @iifm.ac.in	Dr. Abhijit Das Scientist, Wildlife Institute of India Dehradun Mob.: 9435149576 Email: abhijit @wii.gov.in	Arunachal Pradesh Arunachal Pradesh Assam Assam Assam Assam	Dibang WLS Itanagar WLS Bherjan-Borajan-Padumoni WLS Chakrasila WLS East Karbi Anglong WLS Garampani WLS

OTHER MEE RESOURCES



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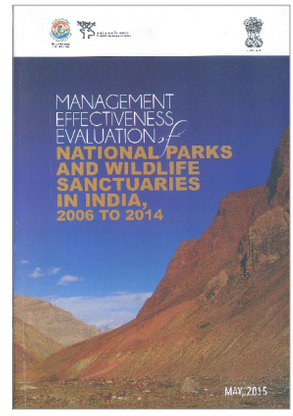

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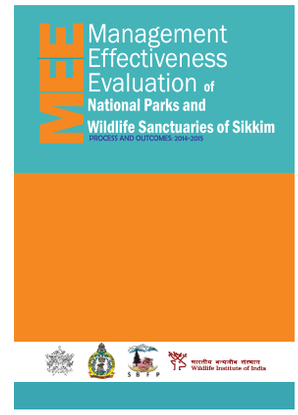

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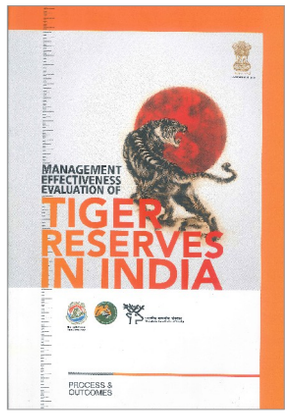

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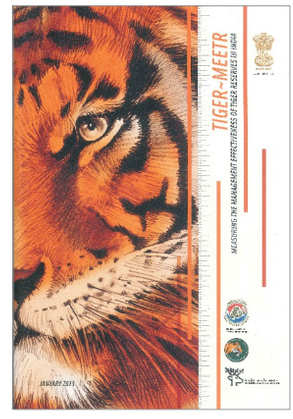

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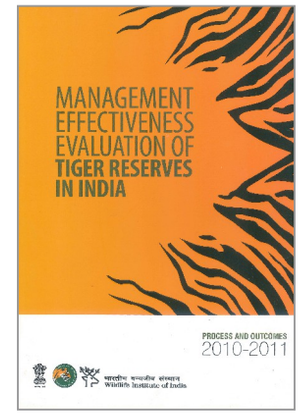

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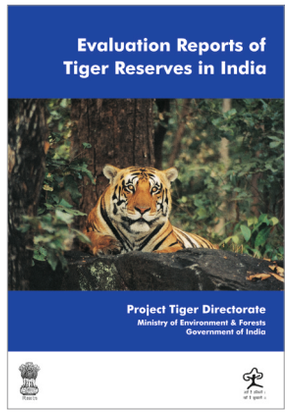

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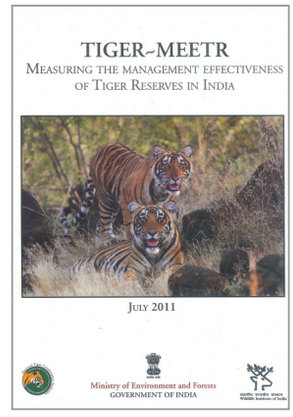
https://projecttiger.nic.in/WriteReadData/userfiles/file/Report-2_EvaluationReportsofTRinIndia.pdf



Tiger MEETR 2010:
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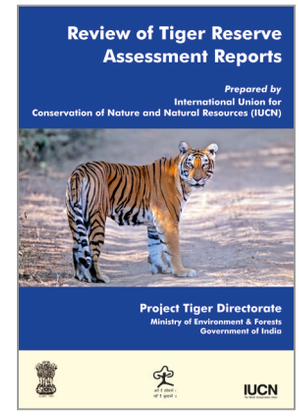

IUCN Review of MEE TR 2006:
http://cmsdata.iucn.org/downloads/report_1_reviewoftrassessmentreport.pdf



Ministry of Environment,
Forest & Climate Change

Indira Paryavaran Bhavan,
Jorbagh Road
New Delhi - 110 003, INDIA

भारतीय वन्यजीव संस्थान
Wildlife Institute of India

P.O. Box # 18, Chandrabani
Dehradun - 248 001 (Uttarakhand)
t. (0135) 2640111-115; **f.** 0135-2640117
w. www.wii.gov.in; **e.** wii@wii.gov.in