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A COMPREHENSIVE ANALYSIS OF PANNA TIGER RESERVE'S PHENOMENAL RECOVERY IN TIGER POPULATION AFTER 2009 FROM SECURITY VIEWPOINT

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ABSTRACT

Since the dawn of forestry; management and protection of forest had always been a tricky issue: wherein management of wildlife being the most challenging part of it. This study of scientific management of a Protected Area (PA) (primarily based on security perspective) had taken the example of Panna Tiger Reserve (PTR), Madhya Pradesh. Extensive issues of wild life protection and security issues are analyzed in past, present and future context over a time period of 5 years (viz. 2009 to 2014). The outcome of the study had revealed a case of astonishing achievement and resurrection viz. from the local extinction of Tigers in 2008 to the number of 25 in 2014 and still flourishing with present day number of 32. Strict monitoring, rapid action and fast fallow up of every registered offence taken by the then park authority have brought a revolutionary change in the protection front with a phenomenal incidence of not a single case of Tiger poaching over the timeframe worked upon. Such a stupendous success had established PTR as a pioneering model of holistic management and protection practiced in any PA.

Key words: Panna Tiger Reserve (PTR), Tiger, Protected Area (PA), Field Director (FD), National Tiger Conservation Authority (NTCA), Wild life Institute of India (WII)

Introduction

Since 2500 B.C., forests in India have been viewed as sources of limitless products that require few special regulatory and management measures. National parks, wildlife sanctuaries and general reserved forests are designated by the Indian Forest Service and administered by the state forestry agencies. Same areas are designated as biosphere reserves or as the nation's 41 reserves designated to provide habitat for tigers (*Panthera tigris*). Core areas, or sanctum sanctorum, are explicitly managed to exclude human habitation, development, or direct resource exploitation and are guarded day and night. Bordering core areas are buffer areas in which human use of resources was limited, allowed only through concessions (legal permits for use of the forest lands for a variety of purposes including fruit harvest and live stock grazing). Long-term conservation of India's forests and wildlife requires consideration of the demands of an increasing human population synchronized with proper protection measures.

Across the globe, human activities have caused declines in carnivore population levels and contraction of their geographic ranges (Woodroffe, 2000). Even where carnivores are not directly persecuted, they are often vulnerable to incidental declines owing to their large area and energy requirements and hence small population sizes (Gittleman, 1993).

Among all big carnivores, Tigers are behaviorally flexible and may adapt to a host of alterations in their l and scape (Sunquist and Karanth, 1999), from sea level to altitudes of 2000 m. Despite their ecological flexibility, tigers are critically endangered throughout their range (Seidensticker *et al.,* 1989) and three subspecies have been driven to extinction.

Also until recently, the major threat to wild tiger populations was declining habitat. But presently Tiger poaching had been a worldwide phenomenon, thus highlighting the need of protection. It was not until the late 1970s, when conservationists began to document the rapid rates of extinction in the tropics that the major focus of species conservation shifted from general behavioral and ecological research to specific questions of protection and security. (Soule, 1980; Franklin, 1980; Frankel and Soule, 1981). The problem was accentuated by the fact that the present tiger meta-population structure was characterized by populations that are either completely isolated or have a probability of genetic exchange considerably less than one individual per generation (Smith, 1983; Smith, 1987). Carnivore conservation was usually discussed in terms of problems that must be

To sustain the present appropriate and promising status of Panna Tiger Reserve security, overall landscape based approach need to be taken.

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overcome. In most instances, the most readily identifiable or proximal "problem" for threatened carnivores was habitat loss and over killing. Yet this problem was a function of myriad, site-specific human and ecological forces, ranging from market-driven resource extraction to poaching. Thus, it was necessary to map the carnivore conservation problem more completely rather than merely to identify symptoms whose origin and redress remain a mystery. Adequate problem definition must account for each of these through description, explanation and projection of trends.

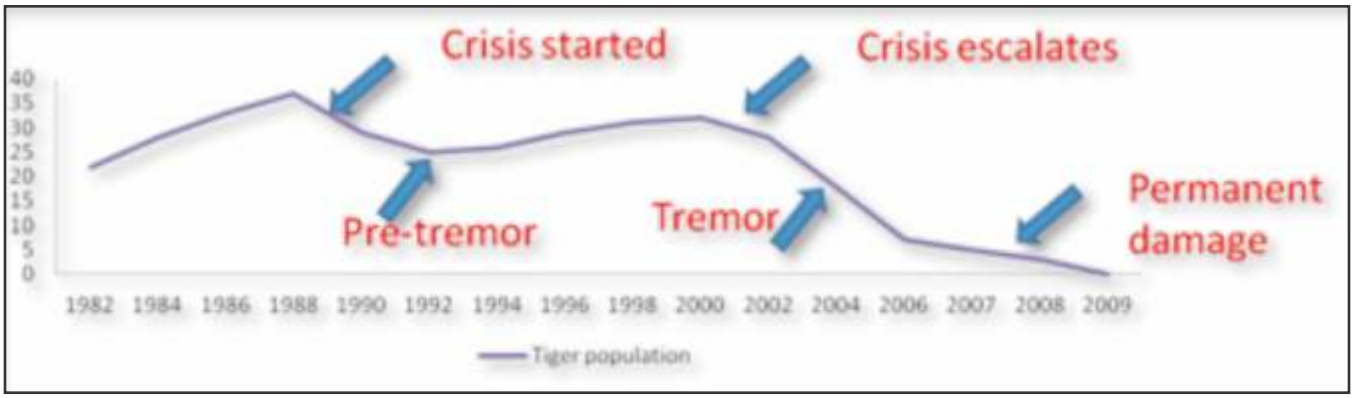
Thus it can be easily said that enforcement – monitoring adherence to rules and agreements and punishing infractions when they are detected – was an essential part of successful conservation and natural resource management (NRM) (Ostrom, 1990; Gezelius, 2004; Walsh *et al*., 2003; Rowcliffe *et al.*, 2004; Gibson *et al.*, 2005). Punishments may take various forms, from fines and prison terms to social sanctioning, depending on the enforcement system. Several studies of illegal hunting have shown that reducing the effort devoted to enforcement (e.g. lowering investment in equipment and training, or patrolling less frequently) increasesthe number of poaching incidents and can harm wildlife populations (Arcese *et al.*, 1995).

Thereby as discussed above, this present study had also undertaken the effect of security measures in long term protection efforts because saying had always been easier than actively performing. This statement can be variedly justified by showing the relatively recent debacle of Sariska and PTR, India. Both the incidents highlighted the emerging importance of protection and security related issues in management of any PA. In this particular study about Panna, it was found that the protection was not up to the mark till 2009 when the authority involved in this study came into action. But after then the trend had been changed under the excellent management steps taken by the then Field Director (FD). PTRs history of loss before this present study of success can be reviewed in brief in this regard.

Original Panna National Park was created from dissected Gangoi sanctuary and Chhatarpur division, Madhya Pradesh, India. Starting from 1982 to 2005 little progress was visible in name of conservation. In 1995 with proper co-ordination with the then park authority research started on the presence of Tiger in dry deciduous forest (constituting 60% of tiger habitat in India), and Radio collar was put to the tigers, thus making monitoring and security easy. From 1995-2002 co-operations was healthy between the park authority and the scientist community, the result being better management and monitoring of the wildlife as a whole. Alongside, the Tiger population earlier reported 22 in the year 1982 (Dwivedi, 2003) remained largely between 25 and 30 over the years until 2002. In 2002 the park authority changed, along with it the relation and perception of priority became reverse for manager and researcher. Both the team started working separately. In 2002 one radio collared tiger died, but the departmental monitoring team was unable to pick up the signal immediately. But the researchers did and the report went up to NTCA (National Tiger Conservation Authority), while the animal was found 7 days post mortality. This event caused more discourse between the FD and the researchers. SIT (Special Investigation Team) report by NTCA came at that time with finding of poaching as reason of loss. Also all India tiger census came based on NTCA protocol at that time. At that time it was said that "Panna was showing signs of Sariska". Camera trapping was also done then in the park and only 7 tiger was captured, along with 1 non captured female with her cub, who later died due to poisoning, but this loss of female tiger was not realized by either park management or scientific community. Thus PTR had no female tiger from 2006 onward. WII (Wildlife Institute of India) did camera trapping and gave report for 24 tigers (combined data for PTR and adjoining areas in Chattarpur and Panna territorial Forest Divisions) (Jhala *et al*., 2008), thus reporting "healthy Panna": Also NTCA gave report of 16-34 tiger in Panna, thus the number 34 got sanctity. By the then park director G. Krishnamurthy had sent proposal for female tiger reintroduction in 2008. But in an anticlimax, by the time clearance came in 2009, all males dispersed out of the park, the last tiger moved in Jan 2009, with reporting in June 2009; thus confirming the fact of complete loss of Tigers in Panna (Pic.1).

Poaching was established as main reason of the loss as subsequently study report by NTCA (without involving state forest department). State government took upon another individual study in turn and gave report saying biological (absence of female Tiger) managerial (administration in providing timely input) and security reason (vulnerability of the area outside park boundary) for Tiger loss. The major problem during this whole period was that both FD and the scientific community kept on arguing, instead of working together for saving the Tiger.

The concerned FD (at time of this study) assumed the charge in 2009 January. The first problem posed before him was tackling the issue of zero tiger population. After month long discussion and investigation many facts came into light, but the trade part of Tiger dissemination from PTR if any could never be unearthed. But under the concerned park administration after 2009 many positive



Pic. 1: Rise & Fall over decades (Source: PTR & Ramesh K, 2009).

and novel approaches had been taken for better protection and security. The result was the visible gain in Tiger population. From the 5 re-introduced Tiger in 2009, in 5 years the total population was 25. At present the number was 32 with all hope of more rapid rise in future.

This number of present Tigers in Panna thus signifies the importance of proper protection, safe breeding and appropriate monitoring in management of any TR.

With this background of study, the objective of this paper can be highlighted as

i. To predict the future trend in protection and security based on the analysis of the present day protection and security scenario

ii. To discuss any shortcoming of the current protection measures and suggest suitable remedies

Material and Methods

The study had been carried off keeping in mind the double objective of predicting the future trend in protection and security based on the analysis of the present day scenario as well as discussing any still shortcoming of the current protection measures with suitable remedies. For this purpose the methodology applied consist of a broad understanding of the geographical l and scape, secondary data collection, brain storming sessions with the field staff coupled with exhaustive field survey to assess the general protection status.

The Study Area: PTR was located in the Vindhyan ranges that extend from south west to north east in the civil districts of Panna, Chattarpur and Damoh in north-central Madhya Pradesh (Map 1).

The total area of PTR was 576+1002.42

Km^2 = 1578.56 km^2 (left out Gangau Sanctuary).

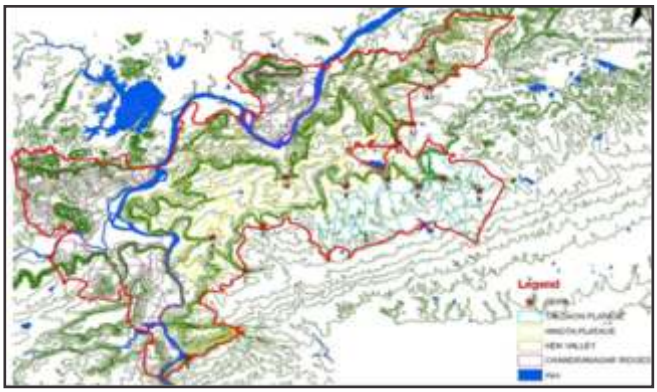
The total area of the Core Zone was 576.13 km^2,

Map 1: Administrative map of PTR.

being part of the entire PTR and part of Gangau sanctuary notified as such by the MP State Govt. in 1980 and 2009. The core area consists of, relocated village sites, remaining four villages and 5 habitations in Gangau Dam area of Uttar Pradesh Irrigation Department with two sub-divisions and seven forest ranges.

The area of the Buffer Zone Division was 1002.42 km^2 and it consists of forest land (Reserved Forest, Protected forest), revenue land and private holdings. Except for some of the eastern part, the buffer almost completely surrounds the core zone. Administratively, there are two sub-divisions and five forest ranges in this zone. The land scape of PTR was configured by a step-like topography consisting of upper Talgaon Plateau (Panna Range), middle Hinauta Plateau (Hinauta Range) and lower Ken River Valley (Madla and Ch and ranagar Ranges), separated by steep and rocky escarpments of varying height upto 80m (Map 2).

Data collection: Secondary data (Registers and data from range offices) are collected from the range offices. Interaction was done with the Panna team (from FD to ground staff), the legal advisor to PTR. Also actual field visit and extensive night patrolling was undertaken to see different camps, boundary and general protection status.



Map 2: Contour & Topography map of Panna Tiger Reserve.

Analysis: The data collected was then analyzed for general poaching trend, status of legal proceedings, basic protection measures and vulnerability assessment of total TR.

Prediction: Based on the findings in analysis, future trend was predicted and suitable strategies are suggested wherever requirement felt.

The data are collected for 5 years only (2009-14), and analysis made accordingly.

Results

Present protection status: After the change in park authority in 2009, there had been a major reform in protection status of the park. The main strategy adopted the measures of double strengthening of "Security cell" and "Legal proceedings". Under the security cell the monitoring and protection had been visibly enhanced and under the legal cell number of successful case registration had happened in Panna.

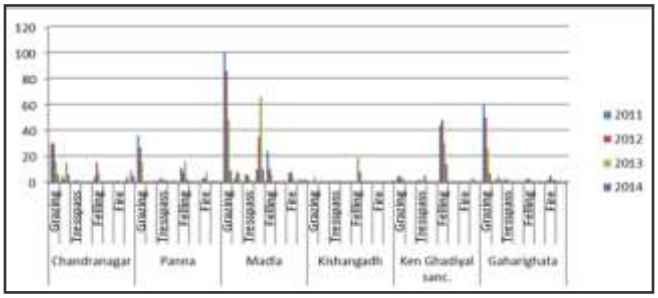


Fig. 1: Comparative offenceanalysis in selective ranges.

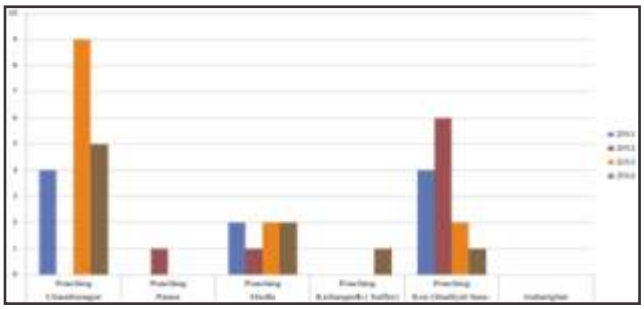


Fig. 2: Comparative poaching trend in selective ranges.

Other approaches include establishment of a number of patrolling camp along with wireless station for field and river camp alongside the Ken River for better surveillance, regular patrolling by day team and night flying squad and lastly 24* 7* 365 monitoring of all the radio collared tigers.

General offence trend: As far the general offence was concerned; the main issue was illegal grazing and timber felling, rather than poaching, in the 5 study years. Occurrence was high in Ch and ranagar range (with bordering villages and porous boundary), Madla and Panna range (with road connectivity) and Ken Ghariyal Sanctuary. There are few cases of trespass and fire also. But overall the security status as seen from the data can be said to be improved in last few years and offences are becoming fewer.

Poaching trend in past years: Thus it can be seen that poaching had been a regular occurrence in PTR for the past 30–35 years. The reason can be management ineffectiveness, sluggish protection measure and follow up, low staff motivation, or a combination of all the factors. Especially the case of unsuccessful follow up of the trade circle case of 1997–2005 had been a major drawback in terms of Tiger sustenance of Panna. On the other hand there was surprisingly not a single case of Tiger poaching in the then park management system (during the study period), combined with proper registration of all sort of offences.

Another visible result was the finding of the ranges Chandranagar, Madlaand KGS as the more vulnerable

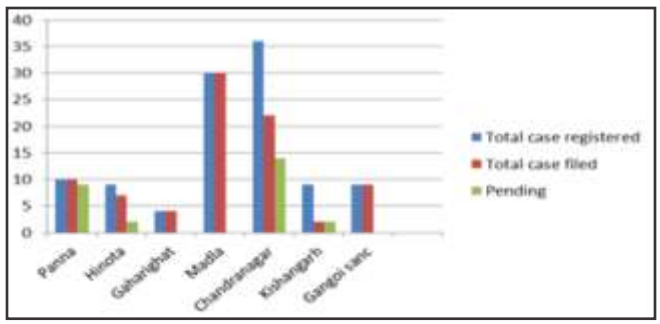


Fig. 3: Comparative analysis of status of legal proceedings in selective ranges.

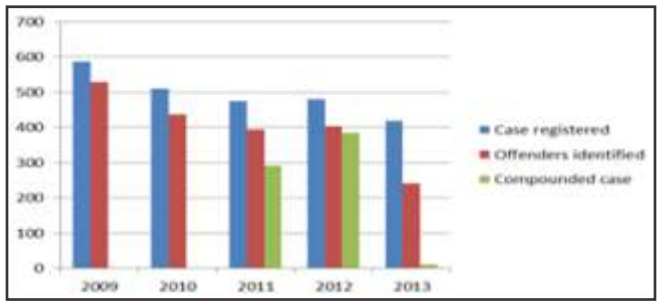


Fig. 4: Comparative analysis of registered & compounded cases.

areas, with the highest number of poaching in this area only.

Status of legal proceedings: In the last five years, the trend of proper filing of registered cases was also increasing in PTR. The analysis revealed an 80-85% filing of cases yearly of all the registered offences of that year. Few of the cases are however still pending due to the reason of offender being unknown and still the investigation was going on. But overall the status was improving in terms of applying proper legal framework to the protection front. A legal advisor had also been appointed since 2012, for careful scrutiny of case files before filing, so that any legal loopholes can be bypassed successfully.

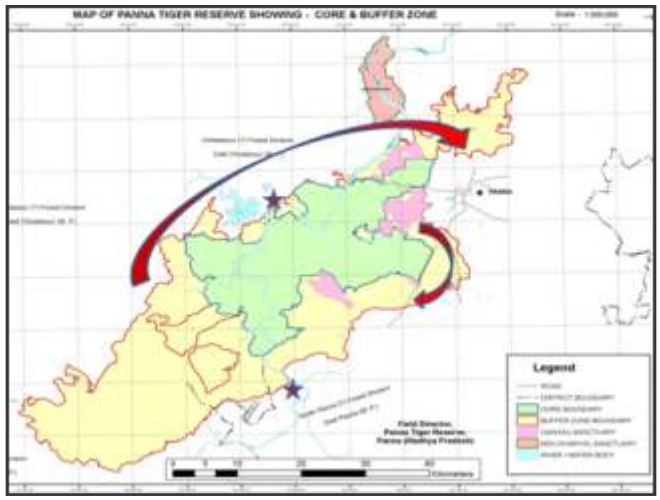
Registered and compounded cases: The result also showed decreasing trend of compounding and reverse trend of case registration in PTR. This was a visible factor of healthy monitoring system and overall management functioning for better protection. Simultaneously offenders have been identified in 90% cases, thus signifying proper system functioning again.

Discussion: From the overall analysis result it was clear that since 2009, poaching was now not a major threat to PTR. This change of scenario can be successfully attributed to the present park authority and management team. But still other offences are going on, which can be used for vulnerability mapping of PTR. A matrix had been prepared for this purpose, from the matrix it can be seen that in spite of all very effective protection and security measures taken by the park authority, still most of the PTR falls under high to medium risk category. This phenomenon can be explained in term of more adoption of Tiger centric security measures and as a result lowered importance of general protection measures for overall park resources and subsequent offences.

For e.g. though Chandranagar was known to be a high offence vulnerable area, the number of patrolling and wireless camps are less in that area. Thus for sustaining the security of PTR in future, more general protection needs had to be taken care of in co-ordination with tiger centric approach as well. For these purpose, some suggestive measures that can be adopted are like

Protection status matrix

	Poaching	Patrolling	Patrolling camps	Wireless camp	River camp	Protection	Village	Highway	Vulnerability
Panna	M	H	6	3		H	N	Y	H
Hinota	L	H	8	2		H	N		L
Krishangadh	M	H	6	1	1	H	N		M
Chandranagar	H	L	1	2	4	L	Y	Y	H
Madla	H	H	7	2	1	L	N	Y	H
Gaharighat	L	H	6	1		M	N		H
Gangau sanc.	M	L	1	2		M	N	Y	M
KGN. Khajuraho	H	H	6	3		M	N		M



Map 3: Vunerability area map of PTR.

keeping updated crime dossiers-on par with the police, outsourcing the investigation to Police/ CBI and general regular monitoring of Gangs and Wandering communities with help of Police department. For the river front protection, to stop access to PTR in waterway more surveillance was needed for Ken River along Gaharighat and Karnawati area. Some general up-gradation of present security can be done by regular surveillance of Hat Bazaars, keeping Village Crime Registers, to involve some NGO as interlocutor for the management and villages to be or being relocated. But overall the main problem of PTR was, was and will be general public apathy towards the FD. The reason can be multiple, like traditional fears and dislikes, tradition of killing predators combined with improved killing technology, and revengeful mentality due to loss of traditional right on forest and resources. To resolve this issue understanding of public mindset and generating public goodwill was becoming more and more necessary for future protection. To understand this basic issues categorization of factors and their proper valuation can be done in form of a logical framework. This will help to analyze the goal, the objectives and the outputs in a proper logistic framework.

Conclusion

In brief it can be said that the present status of PTR's security was very appropriate and promising, but to sustain this status, overall landscape based approach need to be taken, as the Tiger dispersal had already been started and the involvement of adjoining divisions had become imperative to Panna's management. Also the managerial perspective had to consider the public front more, as they are one of the main stake holders for the future of Panna. Thus with proper institutionalized management the future can be secured for the Panna Tigers and a role model can be established for overall Tiger conservation plan of whole Nation.

Acknowledgement

All the crucial information and secondary data, used for the study was by permission of Mr. R. Sreenivasa Murthy, IFS, then field director of Panna Tiger Reserve. The outstanding success of Panna attributes to his individual efforts and leadership, which was recently being acknowledged by conferring him Madhya Pradesh Gaurav Samman by Madhya Pradesh state government.

सुरक्षा दृष्टिकोण से 2009 के बाद बाघ आबादी में पन्ना बाघ रिजर्व की असाधारण प्रति प्राप्ति का एक गहन विश्लेषण

मोनाली सेन और नरेश जमातिया

सारांश

वानिकी के प्रारम्भ से वनों का प्रबंधन एवं सुरक्षा का कार्य हमेशा एक पेचीदा विषय रहा है, जिसमें वन्यजीव का प्रबंधन सबसे चुनौती भरा भाग रहा है। संरक्षित क्षेत्र के वैज्ञानिक प्रबंध (मुख्यत: सुरक्षा संदर्भ पर आधारित) के इस अध्ययन में पन्ना बाघ रिजर्व, मध्य प्रदेश का उदाहरण लिया गया। 5 साल की अवधि (यथा–2009 से 2014 तक) में पूर्व, वर्तमान एवं भावी संदर्भ में वन्यजीव संरक्षण के गहन विषयों और सुरक्षा विषयों का विश्लेषण किया गया। अध्ययन के परिणामों ने आश्चर्यजनक उपलब्धि और पुनर्जीवन का एक मामला उजागर किया, उदाहरणार्थ– 2008 में बाघों के स्थानीय विलोपन से 2014 में 25 की संख्या तक और अभी भी 32 की वर्तमान संख्या के साथ फलफूल रहे हैं। सख्त अनुवीक्षण, त्वरित कार्रवाई और तत्कालीन पार्क प्रशासन द्वारा दर्ज सभी अपराधों के विषय में की गई त्वरित अनुवर्ती कार्रवाई ने सुरक्षा के क्षेत्र में एक क्रान्तिकारी परिवर्तन किया हैं, जिसके फलस्वरूप इस समय सीमा के भीतर बाघ शिकार के एक भी मामले की घटना नहीं हुई है। इस प्रकार की आश्चर्यजनक सफलता ने पन्ना बाघ रिजर्व को किसी भी संरक्षित क्षेत्र में किए जा रहे वास्तविक प्रबंधन एवं संरक्षण के एक पथप्रदर्शक मॉडल के तौर पर स्थापित किया है।

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