THE KANHA APPROACH TO TIGER CONSERVATION

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Introduction

The Tiger (*Panthera tigris* L.) is now regarded as a highly endangered species in the world. The populations of the remaining five sub-species (McDougal, 1977) are precariously restricted to only a few tiger range-countries, India being one of them. Deeply embedded in the human psyche as a living symbol of power, grandeur, ferocity, and magnificence, and central to innumerable myths of the divine and nature, no species of wildlife has captured the imagination and sentiments of international community in the history of conservation as spontaneously as the tiger, evoking successfully a tremendous response from the concerned quarters. Though the world community of wildlife conservationists/professionals has focused its attention on the mobilization of international support to bring the species back to a safer status, the satisfactory reversal of its decline has yet to be ensured.

As far as the Indian sub-species (*Pathera tigris tigris* L.) is concerned, barring only a few representative wildlife ecosystems, tigerconservation is still fraught with immense uncertainties and upsets. Fortunately, the causes of the above decline and problems of tiger conservation in the country with its intrinsic drawbacks are now well identified, thoroughly researched and impressively debated. Yet, unfortunately, the simultaneous interplay of various ecological socio-economic, demographic and political factors involved in conservation have compounded and magnified the issue to such an extent as to evade a satisfatory and dependable success. Against this bleak backdrop, Kanha Tiger Reseve, one of the finest wildlife protected areas in the South-East Asia supports a viable and steadily increasing population of the tiger (Table 1).

The Study Area

Nestled in the Maikal range of the Satpuras and situated in the Mandla and Balaghat districts of Madhya Pradesh, Kanha Tiger Reserve is internationally renowned for its typical Central Indian floral and faunal attributes. Apart from harbouring a viable population of the Tiger, the National Park has also distinguished itself in saving the highly endangered Hard ground barasingha (*Cervus duvauceli branderi,* Pocock) from extinction and has the unique distinction of conserving the last world population of this deer species (Gopal, 1995).

The Tiger Reserve harbours flat hilltops, varying degree of slopes and rolling grassy expanses/meadows in the valley, which offer unique settings and ecotones for creating diverse types of wildlife habitat forming ideal niches for various species of animals and plants. Apart from over 600 species of flowering

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Table 1

Tiger Population in Kanha National Park & Calculated "r"

Year	Nos.	In	t	In x t	t^2
1976	48	3.871201	1	3.871201	1
1977	48	3.871201	2	7.742402	4
1978	56	4.025352	3	12.076055	9
1979	62	4.127134	4	16.508538	16
1980	62	4.127134	5	20.635672	25
1981	71	4.262680	6	25.576079	36
1982	71	4.262680	7	29.838759	49
1983	76	4.337330	8	34.645867	64
1984	85	4.442651	9	39.983861	81
1985	85	4.442651	10	44.426513	100
1986	94	4.543295	11	49.976243	121
1987	94	4.543295	12	54.519537	144
1988	97	4.574711	13	59.471243	169
1989	97	4.574711	14	64.045954	196
1990	101	4.615121	15	69.226808	225
1991	101	4.615121	16	73.841928	256
1992	101	4.615121	17	78.457049	289
1993	100	4.605170	18	82.893063	324
1994	100	4.605170	19	87.498234	361
1995	97	4.574711	20	91.494220	400
1996	97	4.574711	21	96.068931	441
1997	105	4.653960	22	102.387130	484
1998	106	4.663439	23	107.259100	529
1999	112	4.718499	24	113.243970	576
2000	112	4.718499	25	117.962470	625
2001	115	4.744932	26	123.368240	676
2002	111	4.709530	27	127.157310	729
		115.703900	378	1734.176300	6930
(Instrinsic rate of increase)		r=0.029541			

plants (Lal *et al.*, 1986), there are around 260 species of birds and 43 of mammals. Besides, several species of reptiles, arthropod and termite are also found in the

Reserve. Though 3 distinct forest types have been identified (Champion and Seth, 1968), the working classification in the Tiger Reserve suggests that the forests are mainly of two types : Sal and mixed deciduous.

The Tiger Reserve (1,949 km^2) is comprised of two divisions, namely the Core (National Park of 940 km^2) and the Buffer (a Multiple Use Area of 1,009 km^2).

Tiger Conservation Practices

Located far from the mega-cities, quite off the tourists' normal itinerary, and surrounded by simple and innocent Aboriginal communities, these wilds still remain a precious gift of Mother Nature.

Some parts of the present Core division possessing the sanctuary status since the mid-1930s, and a National Park and Tiger Reserve since 1955 and 1973-1974 respectively, Kanha has over the years, developed into on excellent institution. It also takes pride in having a succession of efficient officers and dedicated staff gifted with a clear vision for the protected area.

Wildlife conservation in the Tiger Reserve has also been a great learning process. Each managerial success and failure is put in proper perspective for deciding further course of action. The interaction of the Park Management with the visiting wildlife ecologists and scientists has greatly added to its receptivity and innovative approaches. Apart from external seminars and symposia, which acquaint the Park Management with the latest developments/ trends in wildlife conservation, frequent in-house workshops and field exercises are also origanised for skill development and help field practicalities permeate down to the frontline staff in the simplest possible manner. The restoration of the endemic Central Indian barasingha population is a striking example of sustained and goal oriented efforts.

The experiences gained and lessons learnt through all these years have also reinforced the conviction of the Park Management that as far as Tiger conservation in the Tiger Reserve is concerned only an all-round strategy against all threats/risk factors can ensure a viable population of the tiger. The following Tiger conservaiton practices are carried out in Kanha.

Relocation of Forest Villages

This has proved to be a very unpleasant and cumbersome task, requiring, on the one hand, a lot of patience and sympathy towards the target villages, and on the other, sheer tactfulness, persuasion, and many confidence building measures. The park management has successfully relocated as many as 27 forest villages outside the National Park between 1974 and 1998. Though the relocated deserve full sympathy and utmost care, it is difficult to visualise the present National Park with all these villages still inside and steadily undergoing the typical dynamics of Indian demography and animal husbandry.

The entire relocation was phased in, with the desired/appropriate inputs such as site clearance, house construction, ploughing of fields, approach roads and drinking water facilities etc. provided at the relocate sites (Gopal, 1993).

Though, as stated earlier, relocation is always unpleasant even at the best of times, and evokes in the relocated and life long animosity towards and grudge against the Park Management, and though there may even be convincing arguments in favour of a humanized National Park, the old village sites are undoubtedly the finest habitats of herbivores - the main prey base of tigers in Kanha.

Protection

Protection has always been assigned the topmost priority among all the conservation practices in Kanha. The Tiger Reserve is know to have adopted a protectionistic attitude since long, with its reliable communication system and time tested multifarious protection strategy that incorporates the following (Gopal and Shukla, 2001).

- *Patrolling Camps* : There are 118 strategically located patrolling camps in the National Park for intensive patrolling and round the clock alertness to deal with any eventuality. Each camp is manned by a Forest Guard and his 2-3 camp watchers. They intensively patrol their respective well-demarcated forest area of around 6-8 km^2 daily and take appropriate action. There are 42 patrolling camps in the Buffer Zone Division, ensuring protection on the same lines.

- *Monsoon Patrolling* : This special protection strategy is adopted during the rainy season when most of the Tiger Reserve's area is rendered inaccessible for regular patrolling by vehicles. The poachers and intruders of the surrounding villages take advantage of the above situation, and the probability of intrusion/ pilferage increases manifold. The monsoon patrolling includes sensitivity mapping, deployment of elephant squads, temporary patrolling camps, foot patrolling and foot-path/ track surveillance.

- *Routine Foot Patrolling* : The Park Management has realized the importance of regular foot patrolling by officers in the Tiger Reserve in the light of the ever-increasing biotic pressure. Besides inspiring the patrolling staff, this also lends a psychological restraint over the surrounding villages. Therefore, Forest Guards apart, monthly foot patrolling has been prescribed for all ranks of officers down to the Range Assistant. These prescriptions are strictly adhered to and reviewed.

- *Elephant Patrolling* : Patrolling by elephants has also proved very effective in difficult terrain and otherwise inaccessible areas. The entire area is divided into several elephant patrolling units, and each elephant squad is comprised of at least 2 Forest Guards and Game Watchers equipped with wireless handsets. Daily progress of patrolling is monitored by the Park Management.

- *Strike Forces* : There are two strike forces with vehicular mobility in the Tiger Reserve. These well-staffed and well-squipped strike forces look after their respective areas and have been provided with necessary route-chart and other logistics. Apart from building up an effective intelligence

network to monitor, prevent and pre-empt illegal activities, they also raid and seize illegal wildlife products, and do market checking and general surveillance.

- *Tiger Cell* : Along the basic guidelines of the State Tiger Cell, the Kanha Tiger Cell has been entrusted with the responsibility of gathering information on offenders, establishing an intelligence network and monitoring the progress of pending court cases. The Cell also collaborates with the local NGO, the Police and informers.

Build-up of Prey-base

The Tiger Reserve harbours a unique heterogeneity of habitats for herbivores the prey base of the tiger. The Park Management is empirically convinced that there is a positive correlation between Tigers and densities of the prey in the Tiger Reserve. For instance the central meadows of the Kanha range hold large numbers of herbivores and other wild animals (Tables 2A and 2B). This high prey density area is encompassed on three sides by ridges of the Deccan trap, leaving the only gap in the North. Likewise, the ridges extending along the eastern boundary of the reserve impede animal movement between the eastern and western portions of the park. Such topographical attributes foster pockets of high and low prey density areas within the Protected Area, resulting in unequal concentrations of tigers and co-predators in different parts of the habitat. In view of the above, the park management strives to ensure that important habitat types are managed properly to suit the requirements of respective wildlife species population. The famous Kanha meadows are assiduously and methodically maintained by restocking and exercising rotational grazing and aradicating the obnoxious weeds such as *Cassia tora* and *Lantana camara*, thus reducing the competition with palatable grass species fed upon by herbivores. These anthropogenic grasslands, the sites of relocated villages, represent an "arrested" stage of ecological succession, which now under favourable conditions favour the succession further towards a climax community. This results in the infestation by woody species such as *Butea monosperma, Lagerstroemia parviflora* and *Diospyros melanoxylon* and if the same is not eradicated in time it would lead to the gradual disappearance of grasslands so beneficial to the herbivores.

Table 2A

Predator Biomass for Kanha National Park
(Based on the 2001 Population Estimation)

Animal Species	Average Weight (kg)	Estimate Number	Calculated Biomass (kg)	Biomass (kg/km^2)
Tiger	182.5	115	20987.5	22.33
Panther	59.0	71	4189.0	4.46
Wild dog	17.5	374	6545.0	6.96
Total			31721.50	33.75

Table 2B

Prey Biomass for Kanha National Park
(Based on the 2001 Population Estimation)

Animal	No.	Assumed Body Wt. (Panwar, 1990)	Biomass
Gaur	1196	300.0	358800
Sambar	3629	150.0	544350
Barking deer	1171	20.0	23420
Blackbuck	2	15.0	30
Barasingha	343	80.0	27440
Chousingha	97	15.0	1455
Chital	20628	50.0	1031400
Langur	6081	12.5	76012.5
Wild pig	8243	80.0	659440
Nilgai	78	100.0	7800
Total			2730148

*Gopal and Shukla (2001)

The development of water resources is also a key aspect in the conservation of habitats for water dependent species. This is also used as a tool to build up population and regulate animal use of habitats and thus manipulate the condition of habitat.

Fire is regarded as a very effective management tool for grasslands. All the grasslands of the Reserve are under the prescription of a burning regime which is exercised accordingly to either avoid the repeated burning of a particular grassland, or of grasslands already subjected to heavy grazing pressure, thereby preventing degradation and stimulating fresh palatable grasses for a wide range of herbivore species in the Reserve.

Park-People Cooperation

The Kanha management has had to tread very carefully in confidence building measures, as the unpleasant memories of the relocated villages are still fresh in people's mind, and they tend to take a skeptic view of the proposed eco-development. However, the management has been successful in putting the commitments of the socio-economic upliftment across to the stakeholders. The managerial efforts have reflected in spontaneous response to the formation of around 112 Eco-Development Committees (EDCs) in the Core as well as in the Buffer for Joint Forest Management and the implementation of eco-development projects in the villages. These EDCs with sufficient cash deposit serve as microdemocratic institution with elected executive bodies and officer bearers, and represent many villages of the impact zone of the Tiger Reserve. The EDCs enjoy the responsibility of translating the required eco-development inputs into Microplans for each target village and later achieving physical targets under the technical guidance of the Management. The park-people cooperation approach has resulted in a positive change in the majority of people's attitude towards conservation of the Reserve and will definitely go a long way in tiger conservation.

Lessons from Kanha

The above analysis of the pragmatic approach to tiger conservation also offers some general implications for effective and successful Tiger conservation in other Tiger Reserves of the country :

- Protection should be assigned the topmost priority among all conservation practices in Tiger Reserves. There is absolutely no scope for conventional protection methods, which should involve aggressive and proactive dynamism, including a reliable network of intelligence in and around the impact zones.

- In the long run, it is almost impossible to conserve wildlife in general and the tiger and partcular in humanized Tiger Reserves, especially in core zones. In such cases, habitations and wildlife would have to survive at the expense of each other, and eventually wildlife would perish.

- As the survival of tigers is directly correlated with the availability of the prey base, habitat improvement practices should constitute an important ongoing programme in wildlife protected areas

- With the ever increasing biotic pressure around wildlife protected areas and the intrinsic demographic and economic problems, no conservation project in India can succeed without the cooperation from and amicable relationship with the stakeholders who have been exercising their rights over forests for generations.

SUMMARY

The tiger is regarded as a highly endangered species in all the tiger range countries of the world. The conservation of the magnificent species has evoked a tremendous response from all over the world. The situation in India is still far from satisfactory. There are only a few wildlife protected areas, which inspire confidence for the reversal of the tiger population to a safer status. Kanha Tiger Reserve is one such, harbouring the typical floral and faunal attributes of Central Indian Highlands and a viable population of the tiger, Kanha, with a long conservation history and a succession of dedicated officers and staff, has developed into an excellent institution for conservation of wildlife in general and tiger in particular. Tiger conservation in Kanha Tiger Reserve involves an allround strategy, comprising relocation efforts, protection, build-up of prey base, and the park-people co-operation. The lessons learnt from Kanha also offer general implications for effective tiger conservation for other Tiger Reserves of the country.

बाघ संरक्षण हेतु कान्हा का मार्ग

राकेश शुक्ला

सारांश

बाघ विश्व के समस्त बाघ-क्षेत्र देशों में एक अत्यंत संकटग्रस्त वन्यप्राणी हो गया है । इस भव्य प्रजाति के संरक्षण हेतु सम्पूर्ण विश्व से अत्यधिक सहयोग प्राप्त हुआ है । इसके संरक्षण की भारत में अभी भी स्थिति संतोषप्रद नहीं है । यहाँ बहुत कम ऐसे वन्यप्राणी संरक्षित क्षेत्र है जिन पर कि बाघ की वर्तमान संख्या को एक सुरक्षित दर्जे तक पहुंचाने हेतु विश्वास किया जा सके । कान्हा टायगर रिज़र्व इनमें से एक हैं जिसमें कि मध्य भारत पर्वतों के प्रारूपिक वनस्पति एवं जीव-जन्तु के अलावा बाघ की एक अच्छी संख्या भी है । कान्हा का एक संरक्षण इतिहास रहा है एवं यहाँ लगातार उत्कृष्ट अधिकारियों के रहने से यह वन्यप्राणियों एवं विशेषत: बाघ के एक बहुत अच्छे संस्थान के रूप में विकसित हुआ है । कान्हा टायगर रिज़र्व में बाघ संरक्षण हेतु एक बहुआयामी रणनीति के अंतर्गत मानव विस्थापन प्रयास, सुरक्षा, अच्छा भक्ष्य आधार एवं राष्ट्रीय उद्यान-जनता के मध्य सहयोग आदि संरक्षण उपाय हैं । कान्हा से सीखे गये पाठ देश के अन्य बाघ संरक्षित क्षेत्रों में प्रभावकारी बाघ संरक्षण हेतु सामान्य आशय भी प्रस्तुत करते हैं ।

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