

Tiger Conservation in India

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Abstract

The primary focus of the paper is to analyse the Indian Tiger Conservation program – Project Tiger. The circumstances that lead to and the conditions under which the program was launched are discussed. National Parks in India lead to a situation where the natives of the forest are deprived of their homes and livelihoods as an externality of conservation. These ousted populations ('green oustees') often turn against the National Parks for their sustenance.

Project Tiger suffers from various problems – delayed and inadequate funds, poaching, grazing, encroachment and inadequacy of staff both in training and in numbers. Project Tiger Status Report 2001 acknowledges these issues. There are instances when Project Tiger National Parks receive funds at the end of the financial year due to the long bureaucratic process involved in sanctioning and transfer of funds. This results in the inability of Project Tiger National Parks to utilise all the funds that are allocated to them. The National Parks have inadequately trained and insufficient number of field staff.

Demographic trends of tiger populations in India had peaked around 1987 whereas Project Tiger National Parks have shown clear upward trend. This may be attributed to the increasing number of National Parks under the program. The method of census – the pugmark method, is far from reliable.

Recommendations for improving the process of sanction and delivery of funds to Project Tiger National Parks have been given. Alternate models of conservation- CAMPFIRE in Zimbabwe and ADMARE in Zambia have been discussed.

Keyword- tiger, conservation, Project Tiger, National Parks, Centrally Sponsored Schemes, demographic trends, flow of funds, staff, Annual Plan of Operation, Wildlife Protection Act, 1972

Table of Contents

Abstract	1
1. Tiger Trivia	3
2. The Role of the Tiger in the ecosystem	4
3. Project Tiger	5
3.1. <i>Circumstances</i>	5
3.2. <i>Launch of Project Tiger</i>	5
4. National Parks	6
4.1. <i>Legal Status of National Parks</i>	6
4.2. <i>Procedure for setting up a National Park</i>	6
4.3. <i>Consequences of the declaration of an area as a National park</i>	7
5. Project Tiger: The Money Trail	8
5.1. <i>Funds under the Five Year Plans (Plan Funds)</i>	8
5.2. <i>Annual Financing of National Parks</i>	8
6. Project Tiger	12
6.1. <i>Funds allocated to Project Tiger</i>	12
6.2. <i>Expenditure analysis for 2004-2005</i>	13
6.3. <i>Revenue</i>	16
6.4. <i>Performance of Project Tiger</i>	16
7. Tiger Demography	18
7.1. <i>Census technique used in India – The Pugmark (Jhala, Y.V and Q. Qureshi , 2005).</i>	18
7.2. <i>Demographic Trends</i>	19
8. Problems with Project Tiger	21
8.1. <i>Funds</i>	21
8.2. <i>Staff</i>	22
8.3. <i>Infrastructure</i>	23
8.4. <i>Other problems</i>	24
9. Recommendations	24
9.1. <i>Funds</i>	24
9.2. <i>Staff</i>	26
10. Models for Tiger Conservation	26
10.1. <i>Tiger Conservation in India</i>	26
10.2. <i>CAMPFIRE, Zimbabwe</i>	29
10.3. <i>Administrative Management and Design (ADMARE) in Blue Lagoon, Zambia</i>	30
11. Conclusion	31
Bibliography	33
Annexure I (Wildlife Protection Act, 1972)	37
Annexure II (Project Tiger National Parks accounts 2004-05)	41
Annexure III (India Eco-development accounts)	44
Annexure IV (Distinguishing features of a pugmark)	52
Annexure V (Problems of Project Tiger National Parks)	53
Annexure VI (Staff Problems faced by PT National Parks)	53
Annexure VII (Tiger census data)	57

*"The Indian tiger (Panthera tigris tigris Linn. 1758) has been the centre of attraction in the Indian jungles, as a big fame, during the last two centuries. Apart from Maharajas and Nawabs who had interest in hunting of tigers, the British officers, soldiers and civil officers were all keen on bagging at least one tiger before they retired. A few of them attempted to score a century of tiger heads and succeeded. Some even repeated the performance as many as 10 times, thus massacring over a thousand tigers in their life times. Hunting tigers was a free style sport. Some of the States had launched tiger eradication campaigns and pushed the tiger to the wall. But nothing had been so serious as the large scale destruction of the tiger habitat due to urbanisation, industrialisation and population pressure, as well as the market in tiger skins for export. The extraordinary high price of the pelt attracted poachers and the tiger started losing ground and losing it fast. The cumulative result of all these adverse factors is that the tiger is now in danger of extinction, and the latest census has revealed less than 1,900 of these magnificent animals in the entire country."*¹

1. Tiger Trivia

The geographical distribution of tigers spans large parts of Asia, although it has greatly reduced in the last 50 years. Tigers are still found in a wide variety of forests, including dry-deciduous, moist-deciduous, evergreen, riverine, and mangrove.

Tigers are fast and early breeders. The gestation period in tigers is as short as 103² days under favourable conditions. Demographic parameters show that females start breeding at a mean age of 3.4 years and the litter size is usually three³. Further, the inter-birth interval could be as short as 20 months⁴. This reflects favourable reproductive attributes of the tiger. The survival rate among the cubs is also high if litters are large. With an intact habitat and prey population, tigers can easily recover from loss of population and this has been the key to the success of the tiger conservation programmes around the world.

Tigers unlike lions do not live in families. They are largely individualistic and usually move around on their own. Although not much is known of their dispersal capabilities, it has been found that males disperse three times farther than females⁵. While the males disperse over 33km⁶, females have an average dispersal of less than 10 km⁷. Indeed, male tigers control stretches ranging from 200km in thick forests to nearly five times in dry and arid regions.

Dispersal is male-biased among mammals and they usually have a higher mortality. Although, the females are integral to reproductive success, the sex that is more vulnerable to extinction

¹ Task Force, Indian Board for Wild Life. 1972. *Project Tiger: A Proposal for Preservation of the Tiger (Panthera tigris tigris Linn.) in India*. New Delhi:, Ministry of Agriculture, Government of India. p 4.

² Sunquist, Mel, K. Ullas Karanth and Fiona Sunquist. 1999. *Ecology, behaviour and resilience of the Tiger and its conservation needs*. In *Riding the tiger: tiger conservation in human dominated landscapes* edited by J. Seidensnicker, , S. Christie, and P. Jackson, Page 7. Cambridge, UK: Cambridge University Press.

³ With a mean of 2.98. Sunquist, Mel, K. Ullas Karanth and Fiona Sunquist. 1999. *Ecology, behaviour and resilience of the Tiger and its conservation needs*. In *Riding the tiger: tiger conservation in human dominated landscapes* edited by J. Seidensnicker, , S. Christie, and P. Jackson, Page 7. Cambridge, UK: Cambridge University Press.

⁴ Ibid

⁵ Which are usually philopatric (settling next to their mothers).

⁶ The longest dispersal for males in the study was 65km.

⁷ The longest dispersal for females in the study was 33km.

determines the probability of extinction of the species in a given subpopulation. The male tiger is more susceptible to dying before reaching breeding age than the female tiger⁸.

An average adult tiger must kill about 45 to 50 deer sized prey animals every year to survive. A tigress raising three cubs requires as many as 60 to 70 animals a year. Thus, the survival of a tiger population requires a large ungulate population that mainly consists of herbivores such as deer, sambar, muntjac, wild boar, etc.

2. The Role of the Tiger in the ecosystem

Tiger, being at the apex of the food chain, can be considered as the indicator of the stability of the eco-system. For a viable tiger population, a habitat should possess a good prey base, which in turn will depend on undisturbed forest vegetation. Thus, 'Project Tiger', is basically the conservation of the entire eco-system and apart from tigers, all other wild animals also have increased in number in the project areas⁹.

The tiger is a very important member of the ecosystems that it inhabits. It shares a symbiotic relation with the jungles that harbour it. The tiger needs a minimum density of herbivorous ungulates to sustain it. The herbivores in turn need vegetation to sustain their population. There is a limited area of forest, and hence foliage, available. This means that there is limited food for the herbivores to feed on. This in turn implies that a given forest area can sustain only a certain maximum number of tigers. Thus, conserving the tiger is not just about the number of tigers. It is a much broader concept that required the conservation of the entire eco-system.

The Project Tiger Task Force recognises this in its report that states

"...it is necessary to increase the tiger population to optimum levels by the improvement of the biotope and the stimulation of its diversity, according to sound principles of conservation...Under no circumstances, however, shall these operations involve holding the tiger population at artificially high levels by such means as large scale, uncontrolled modification of the habitat, artificial feeding of the tiger or its prey, or the introduction of exotic species, which can only cause imbalance in the natural ecosystems and can have disastrous results for the habitat and its dependent fauna."¹⁰

⁸ 4 out of 4 females successfully established home ranges while only 4 out of ten tigers survived up to breeding age.

⁹ Project Tiger. 2005. *Past, Present and Future*. [webpage on Project Tiger Website]. New Delhi: Project Tiger, Ministry of Environment and Forests, Government of India. Last accessed on 7 July 2005. Available at <http://projecttiger.nic.in/past.htm>.

¹⁰ Task Force 1972. *Project Tiger: A Proposal for Preservation of the Tiger (Panthera tigris tigris Linn.) in India*. New Delhi: Indian Board for Wild Life, Government of India, Ministry of Agriculture, Government of India. p. 6

3. Project Tiger

3.1. Circumstances

There were an estimated 40,000 tigers in India at the beginning of the twentieth century. This number had continually decline with the hunting of tigers in the absence of any legal restraint. The gravity of the situation was realised when the first all-India tiger census in 1972 revealed only 1827¹¹ tigers in India. It was then when the government of India realised the gravity of the situation.

The Government reacted to the situation by imposing a ban in 1970 on the killing of tigers. Hitherto, there existed only the Indian Forest Act of 1927. It brought forests and wildlife under the concurrent list in 1976. The Government further enacted the Wildlife Protection Act of 1972. A 'Task Force' was also formed to solve the problem of the declining tiger population.

3.2. Launch of Project Tiger

The Project had been drawn to cover a six-year period from April 1, 1973 to March 31, 1979, thus covering the last year of the Fourth Plan and the entire Fifth Five Year Plan¹². The total projected fund requirement was Rs 58 million. The Central Government was responsible for planning, coordination and part financing¹³ while the State Government was responsible for only execution and financing a part of the recurring cost of the project.¹⁴

The various reasons¹⁵ that were responsible for the fall in tiger population in India were:

- Shrinkage of tiger land
- Excessive disturbance in tiger habitat
- Destruction of prey animals
- Poaching of tigers
- Poisoning for protection of cattle

The Task Force (1972) laid out guidelines for the formulation of management plans for various tiger reserves.

Project Tiger was launched in 1973 with 9 tiger reserves- Bandipur, Corbett, Kanha, Manas, Melghat, Palamau, Ranthambore, Similipal, and Sunderbans. The basic philosophy was to not interfere with nature. The survival of the tiger was looked at from the logic of it being at the apex of the food chain and hence it followed that the natural habitat was to be

¹¹ (Task Force, Indian Board for Wild Life, Government of India), 1972. *Project Tiger: A Proposal for Preservation of the Tiger (Panthera tigris tigris Linn.) in India*. New Delhi:, Ministry of Agriculture, Government of India. pg 10.

¹² (Task Force, Indian Board for Wild Life, Government of India), 1972. *Project Tiger: A Proposal for Preservation of the Tiger (Panthera tigris tigris Linn.) in India*. New Delhi:, Ministry of Agriculture, Government of India.

Foreword.

¹³ Refer to Section 5 of this paper for details

¹⁴ Ibid

¹⁵ As mentioned in (Task Force, Indian Board for Wild Life, Government of India, Ministry of Agriculture) 1972. *Project Tiger: A Proposal for Preservation of the Tiger (Panthera tigris tigris Linn.) in India*. New Delhi: Government of India. p. 11.

sustained. A 'core-buffer' model was followed. The core areas were freed from all sorts of human activities and the buffer areas were subjected to 'conservation oriented land use'.¹⁶

Each tiger reserve had management plans in accordance with the following principles¹⁷:

- 1. Elimination of all forms of human exploitation and biotic disturbance from the core area and rationalization of activities in the buffer zone.*
- 2. Restricting the habitat management only to repair the damages done to the eco-system by human and other interferences, so as to facilitate recovery of the eco-system to its natural state.*
3. Monitoring the faunal and floral changes over time and carrying out research about wildlife.

4. National Parks

4.1. Legal Status of National Parks

Areas having significant biodiversity value are declared national parks or sanctuaries under the Wild Life (Protection) Act of 1972, as amended in 1991. Before this act, National Parks and sanctuaries were being set up but under various state or area specific acts. With the coming of this act, all areas notified under any other act became parks or sanctuaries notified under this act.

Under the Wild Life (Protection) Act of 1972, national parks are given a higher level of protection and no human use activity is permitted within them: The act specifies that:

*"No person shall destroy, exploit or remove any wild life from a National Park or destroy or damage the habitat of any wild animal or deprive any wild animal of its habitat within such National Park except Project Tiger under and in accordance with a permit granted by the Chief Wild Life Warden and no such permit shall be granted unless the State Government, being satisfied that such destruction, exploitation or removal of wild life from the National Park is necessary for the improvement and better management of wild life therein, authorizes the issue of such permit. "*¹⁸

Once an area has been notified as a National Park, there can be no acquisition of property rights within the park. The area becomes off-limits to human intervention.

4.2. Procedure for setting up a National Park

The procedure¹⁹ for setting up of National Parks is rather long and a number of Parks had not completed the procedure even by 1998-1999.

¹⁶ Project Tiger. 2005. *Introduction*. [webpage on Project Tiger Website]. New Delhi: Project Tiger, Ministry of Environment and Forests, Government of India. Last accessed on 7 July 2005. Available at <http://projecttiger.nic.in/introduction.htm>.

¹⁷ Project Tiger. 2005. *Past, Present and Future*. [webpage on Project Tiger Website]. New Delhi: Project Tiger, Ministry of Environment and Forests, Government of India. Last accessed on 7 July 2005. Available at <http://projecttiger.nic.in/past.htm>

¹⁸ *Wild Life (Protection) Act*. 1972. India. Section 35(6).

¹⁹ Source: Section 35 of the Wildlife Protection Act of 1972 (given in Annexure I of this paper).

The Government first declares its intention of declaring an area a national park via a notification. The notification specifies the area and boundaries of the proposed National Park.

Accrual of new rights in the area mentioned in the notification is immediately barred. The District Collector²⁰ is responsible for determination and settlement of all rights pertaining to the notified area. He is required to issue a proclamation²¹ in every town/village in and around the area that is mentioned in the notification. The proclamation invites the local people to present their claims²² and demand compensation²³. The District Collector then enquires²⁴ into the authenticity/missibility of the rights and/or claims filed and the compensation demanded. If the rights and/or claims cannot be settled, the area under dispute must be excluded from the proposed national park. On the settlement of all such rights and claims, the government issues a final notification to the effect of declaring the area as a national park.

4.3. Consequences of the declaration of an area as a National park

There are two areas in every National Park- the core and the buffer. The core area is supposed to be absolutely devoid of any human population or intervention. The use of the buffer area for conservation-oriented activities is allowed. Once an area is declared as a National Park, all inhabitants must be removed from within the national park. More often than not, there are human habitations within intended parks. It is required by law to relocate these settlements. Removing them from their ancestral land puts them through great hardship and deprives them from their means of livelihood. Such displaced²⁵ people may be called '**green oustees**'. Their displacement leads to inadvertent conflicts between the interests of humans and wildlife in these regions.

²⁰ Or any other official to whom the State Government has delegated the powers (of the Collector) for the purpose of determination and settlement of rights.

²¹ The proclamation must be in the regional language.

²² The District Collector accepts claims for a period of two months from the date of the proclamation.

²³ In exchange for settlement of claims.

²⁴ The District Collector has the same powers as a civil court for the purpose of this enquiry.

²⁵ Displaced from their ancestral home or from their source of livelihood.

5. Project Tiger: The Money Trail

Project Tiger is a Centrally-Sponsored Scheme (CSS). Both the Central and the State Governments jointly provide the money required by the Project Tiger National Parks. This section describes how funds are sanctioned for Project Tiger National Parks²⁶.

5.1. Funds under the Five Year Plans (Plan Funds)

The Project Tiger receives funds in accordance with the Five-Year Plan. A year prior to the beginning of each Five-Year Plan, the Planning Commission calls for a meeting of all the States to decide how much funds will be allocated to each State and under various heads. Each state submitted a proposal of how much funds it needed to the Deputy Advisor of Environment, Planning Commission. The proposal is negotiated before the meeting on the proposal takes place in New Delhi. On the conclusion of negotiations the amount allocated to each Project Tiger National Park in each state is finalised for the duration of the ensuing Five-Year Plan.

The only restriction is that the spent amount must not exceed the amount that was sanctioned for the Five Year Plan.

5.2. Annual Financing of National Parks

Every year the Central Government indicates to the State Governments the amount of funds available to them for the next financial year. This is usually done by the end of the third quarter of the current financial year. Based on this indicated figure, **Field Directors**²⁷ prepare what is called an "Annual Plan of Operation"²⁸ for the Project Tiger National Park under their jurisdiction. The **Chief Wildlife Warden** then approves this Annual Plan of Operation and **Forest Secretary** of each State before it is sent to the Director of Project Tiger²⁹.

The Annual Plan of Operation may be called the "Demand for Grants" of the individual national parks.

The APOs³⁰ have all expenditure divided under three heads:

- 1) **Non-recurring:** The non-recurring portion of expenditure primarily includes expenditure on buildings, out of routine repairs, purchase of equipment and

²⁶ The source for this information include:

- 1) Annual Plan of Operation and Sanction documents for the year 2004-2005
- 2) Thapar, Valmik. 1999. *The tragedy of the Indian tiger: starting from scratch*. 1999. In *Riding the tiger: tiger conservation in human dominated landscapes* edited by J. Seidensnicker, S. Christie, and P. Jackson. Cambridge, UK: Cambridge University Press.
- 3) Sen, P. 2005. Interview by Author. Verbal Interview. World Wildlife Fund, Lodhi Road, New Delhi. June 21, 2005.

Mr. P.K Sen is currently (as on 28th June, 2005) the Director of the Tiger & Wildlife Program at WWF India. He was formerly "Inspector General of Forests and Director (Project Tiger)" in the Ministry of Environment and Forests, Government of India.

²⁷ Of each Project Tiger National Park.

²⁸ Henceforth also called the APO.

²⁹ Who has his office at Project Tiger Directorate, Bikaner House, New Delhi.

³⁰ And the sanction orders.

other expenditure on items of permanent nature. Basically it may be called expenditure on capital goods.

- 2) **Recurring:** This head of expenditure includes items such as salaries, rents, and other activities that are routine in nature.
- 3) **Eco-development:** This includes educating villagers, improving Park management, developing the villages around the parks and other development oriented activities.

All expenditures under non-recurring and eco-development are totally paid for by the Central Government. The Central Government and the Government of the State in which the park is geographically situated share recurring expenditure on a 50:50 basis.

It must be noted that the year of operation runs in consonance with the financial and not the calendar year. The **APO is a request for funds** for the parks from Project Tiger Directorate, Bikaner House, New Delhi³¹. Project Tiger receives this Annual Plan of Operation that contains a detailed breakdown of the line items under which the park proposes to spend the allocated funds. The degree of detail present in an Annual Plan of Operation varies from park to park

The **Director of Project Tiger**³² reviews the APOs of various parks on receiving them. After reviewing them, the Project Tiger Directorate may sanction the full amount (which is rarely the case), reduce the heads of expenditure on various heads, remove certain heads altogether, direct a new allocation of funds between the various heads or even suggest new heads. However, at all times it must ensure that the total amount sanctioned to each reserve does not exceed the total amount allocated for that particular reserve in the current Five-year Plan. If there are major discrepancies³³, the APO is returned to the concerned State for revaluation. The Director of Project Tiger seems to have considerable power in this regard.

Once the Director of Project Tiger has approved an APO, it **passes on the Additional Inspector General of Forest**³⁴ who reviews the APO.

After review and approval of the Annual Plan of Operation by the Additional inspector General of Forests, the proposed expenditure has to be authorised by:

- a) The **Joint-Secretary**, Ministry of Environment and Forests, if the sanctioned amount is less than rupees one crore.
- b) The **Secretary**, Ministry of Environment and Forests, if the sanctioned amount is in excess of rupees one crore.

The **competent authority to release the funds is the Integrated Finance Department (IFD)** of the Ministry of Environment and Forests. Project Tiger Directorate writes to the Integrated Finance Department with the sanctioned Annual Plan of Operation. The Integrated Finance Department also has to give its approval for the money to be released.

³¹ Which is a Government of India department. Essentially the APO is a request for funds by the State Government from the Central Government.

³² Who also happens to be the Inspector General of Forest (IGF).

³³ The Director of Project Tiger is the judge of whether the discrepancies are major or not.

³⁴ The Additional Inspector General of Forests also has office at Project Tiger Directorate, Bikaner House, New Delhi (from where the Director of Project Tiger officiates).

The total money, however, is not released in one lump-sum amount. The money is usually released in **two instalments**. Of these two instalments, the first instalment may be released in two parts. This is so because government departments can spend only 25% of the amount sanctioned by the Parliament in the Finance Bill. The remaining 75% can be spent only after the President of India signs the Finance Bill³⁵. Due to this 25% constrain, the Project Tiger Directorate³⁶ sometimes has to release the first instalment in two smaller instalments. After releasing the first instalment, Project Tiger Directorate waits for the **Utilisation Certificate**³⁷ before releasing the second instalment. As for the unspent balances from the previous year, the Project Tiger Directorate may revalidate or subtract them from the sanctioned amount in the current year.

For the release of each instalment, the Additional Inspector General of Forests writes to

- 1) The **Accountant General at the Nagpur branch of Reserve Bank of India** intimating it to send the specified amount to the Finance Department of the concerned
- 2) The **Senior Accounts Officer** (HQ), O/o Principal Accounts Officer, Ministry of Environment and Forests³⁸ intimating him of the administrative approval 'of the competent authority' (the Secretary/Join-Secretary of the Ministry of Environment and Forests depending on the amount being sanctioned).

On receiving the sanction order from Project Tiger Directorate, the Senior Accounts Officer (HQ) writes to three people:

- 1) The **Accountant General** at the Nagpur branch of Reserve Bank of Nagpur to confirm the sanction order received by it from Project Tiger Directorate.
- 2) The **State Finance Department** intimating it of the sanctioned amount.
- 3) The **State Forest Department** intimating it of the sanctioned amount.

On receiving the confirmation from the Senior Accounts Officer (HQ), the Accountant General authorises payment to the State Government. The Reserve Bank of Nagpur sends the money to the concerned State Government³⁹. It must be kept in mind that the Accountant General waits for the Senior Accounts Officer (HQ) to confirm the sanction orders sent to it by the Additional Inspector General of Forests. Only on receiving confirmation does the Accountant General release the money to the concerned State Government. This may be the cause of significant delay.

The **State Finance Department** sends the money to the **State Forest Department** that in turn sends it to **the Project Tiger National Park** it was intended for. The State Forest Division also takes some time to allot the money to the Park is appropriated for. A glaring example is Bihar where, in the financial year 1996-1997, the money sanctioned for the Palamau Tiger Reserve reached the Park at the end of the financial year⁴⁰.

³⁵ The signing of the Finance Bill by the President of India is the final formality that legalises the Union Budget for that financial year.

³⁶ This is a common phenomenon across all Government departments. The 25% expenditure is allowed so that delay in signing of the Finance Bill by the President does not bring the flow of money in the Government to a halt.

³⁷ For the money released in the first instalment.

³⁸ Henceforth referred to as the Senior Accounts Officer (HQ)

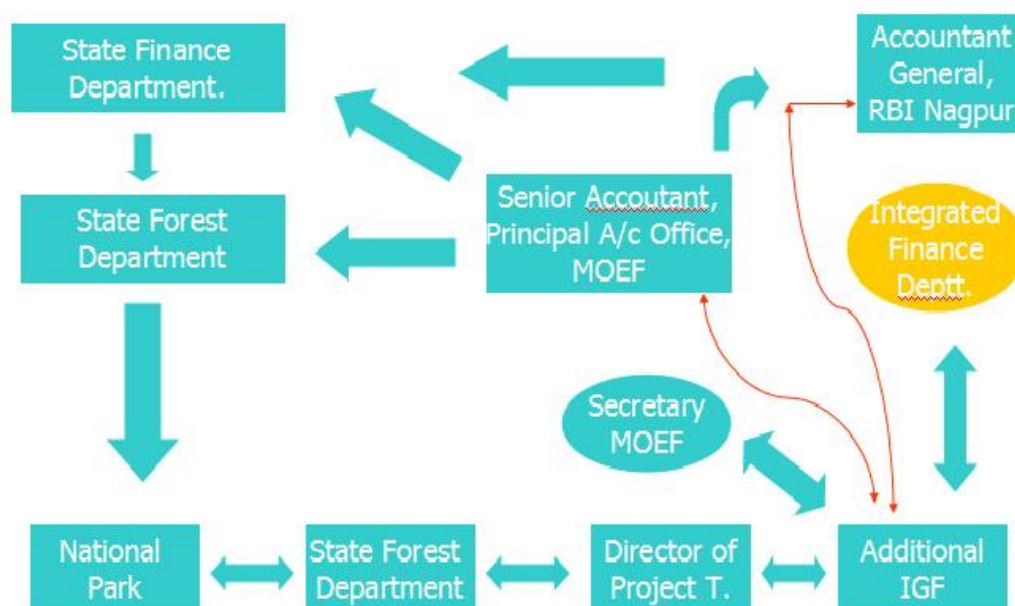
³⁹ If usually sends it along with other funds that are released under various other schemes.

⁴⁰ Thapar, Valmik. 1999. *The tragedy of the Indian tiger: starting from scratch*. In *Riding the tiger: tiger conservation in human dominated landscapes* edited by J. Seidensnicker, S. Christie, and P. Jackson, Page 297. Cambridge, UK: Cambridge University Press.

The flow of money within the State and to the Park differs from State to State⁴¹. For example⁴², in Bihar, the file moves to the Forest Secretary and then to a committee that is responsible for distribution of funds to various planning and financial departments. It is then sent to the Chief Minister of the State. If the amount is below Rs 250,000⁴³ it can be passed. If it is above Rs 2.5 lac, the cabinet has to approve the budget. On the cabinet's approval, the file is sent to an administrative department that sends the money to the Field Director of the Reserve.

Diagrammatically this whole process can be represented as follows:

Flow of Funds in Project Tiger



⁴¹ Prasad, T.N. 2005. Interview by Author. Telephonic Interview. Author was contacted at his residence in New Delhi on 91-11- 55697779. July 5, 2005.

Mr. T.N. Prasad is Field Director and Conservator of Forest, Palamau Tiger Reserve as on July 6, 2005.

⁴² Thapar, Valmik. 1999. *The tragedy of the Indian tiger: starting from scratch*. In *Riding the tiger: tiger conservation in human dominated landscapes* edited by J. Seidensnicker, , S. Christie, and P. Jackson, Page 297. Cambridge, UK: Cambridge University Press.

⁴³ Which, one can see from data, is seldom the case.

6. Project Tiger

6.1. Funds allocated to Project Tiger

The money sanctioned for Project Tiger so far, under the various plans is⁴⁴

Plan	Central Assistance (in Rs Lacs)
IV Plan (only 1973-74)	2.53
V Plan (1974-75 to 1978-79)	387.25
Roll-ing Plan (1979-80)	63.9
VI Plan (1980-81 to 1984-85)	494.86
VII..Plan	1475.42
1990-91	700.98
1991-92	549.81
VIII Plan	3890.09
IX Plan	7500
2002-2003	2200
TOTAL	17264.84

The money sanctioned to Project Tiger under the current⁴⁵ five year plan is⁴⁶

Year	Proposed amount (including NE) (Rs. in crores)
2002-02	24
2003-04	30
2004-05	30
2005-06	32
2006-07	34
TOTAL	150

For the two tables above, it must be kept in mind that the contribution of the States to the Project Tiger National Parks is not factored in the tables. The tables represent only the Centre's contribution to the Parks.

The table below shows the Central Government's contribution to Project Tiger National Parks in the period 1995-2001.

⁴⁴ Project Tiger Directorate. 2005. *Guidelines for Management of Buffer Zone/Multiple use Area of Tiger Reserves*. Pg 18 [document on Project Tiger Website]. New Delhi: Project Tiger, Ministry of Environment and Forests, Government of India. Last accessed on 7 July 2005. Available at <http://projecttiger.nic.in/COMPENDIUM%20OF%20GUIDELINES.pdf>

⁴⁵ The current is the 10th five-year plan.

⁴⁶ Project Tiger Directorate. 2005. *Guidelines for Management of Buffer Zone/Multiple use Area of Tiger Reserves*. Pg 20 [document on Project Tiger Website]. New Delhi: Project Tiger, Ministry of Environment and Forests, Government of India. Last accessed on 7 July 2005. Available at <http://projecttiger.nic.in/COMPENDIUM%20OF%20GUIDELINES.pdf>

Year	Contribution in Rs lacs	
	By Centre	By States
1995-96	839.241	335.6964
1996-97	850	340
1997-98	808.985	323.594
1998-99	1789.48	715.6
1999-2000	1749.162	699.6648
2000-2001	1917.887	767.1548

Source: Project Tiger Directorate, 2001.

6.2. Expenditure analysis for 2004-2005

This section analyses the sanction orders and Annual Plan of Operation submitted by various Project Tiger National Parks for the financial year 2004-2005. The data⁴⁷ in the documents is analysed to arrive at the following:

- Demanded Amounts for 2004-2005
- Sanction Amounts for 2004-2005
- Central Assistance in 2004-2005
- Unspent Balances from Previous Year
- Amount Released by Centre as First Instalment
- Date of release of First Instalment
- Amount of Second Instalment
- Date of release of Second Instalment
- Revalidated amounts from previous year

Methodology for data extraction

The Annual Plan of Action was used to estimate how much money each Project Tiger National Park demanded. The sanction orders were used to estimate how much money was actually released to them. The sanction order documents available to me were addressed to the Senior Accounts Officer (HQ). The Additional Inspector General of Forests also writes simultaneously to the Accountant General at Reserve Bank of India, Nagpur. Thus, from the dates on the sanction orders it was possible to estimate when the Accountant General was intimated of the amounts to be sent to the various State Governments.

On analysing⁴⁸ the data for the financial year 2004-2004 the following was observed:

- The amounts sanctioned for the National Parks were consistently lower than the amounts demanded by them. Only one case⁴⁹ was observed in which Project Tiger Directorate sanctioned where the total amount demanded by. This fact and an analysis of the Project Tiger Status Report 2001⁵⁰ lead us to the possibility of Project Tiger National Parks being under-funded.

⁴⁷ Included in Annexure II of this paper. The limitations of and the methodology used to arrive at the data are also mentioned.

⁴⁸ Given in Annexure II

⁴⁹ Buxa was sanctioned the total amount demanded by it in 2004-2005.

⁵⁰ Given in Annexure II

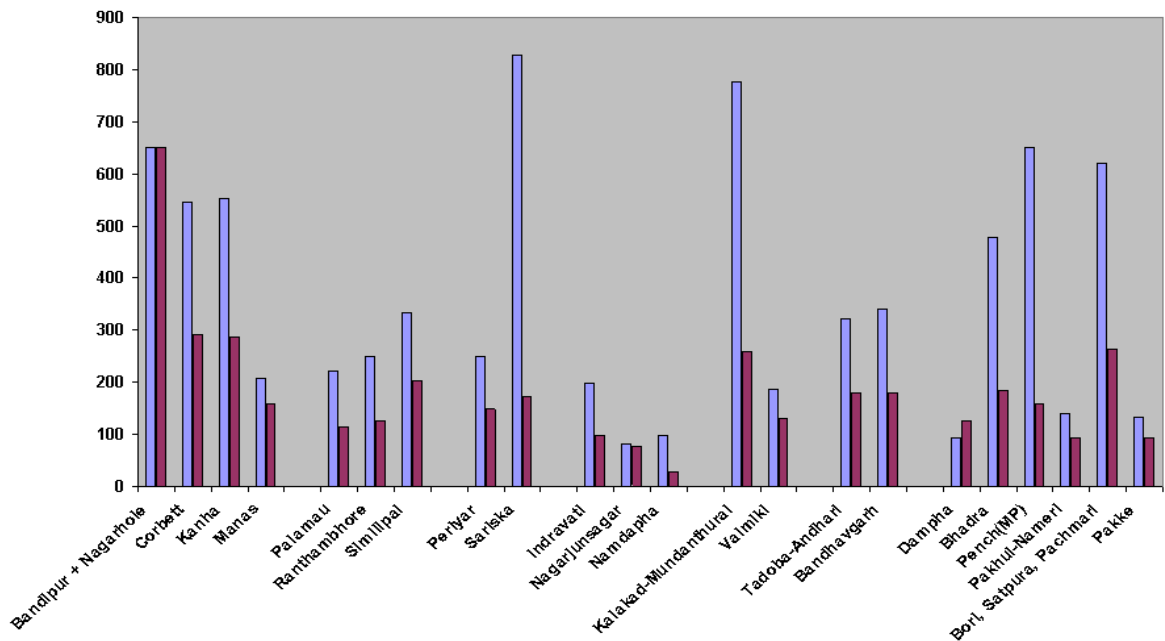
One cannot say this⁵¹ with a certain degree of certainty as it is in the nature of all Government departments to demand more funds than are required. The Project Tiger Status Report 2001 was compiled from questionnaires that were distributed to various national parks. Thus, the possibility is derived purely from what the Project Tiger National Parks have said and from the amounts they have demanded. The possibility that they are not under-funded also exists. **Further research is needed before a concrete statement on the adequacy of funds can be made.**

- In most cases, the first instalment was released by July. The Annual Plan of Operation is usually submitted to the Project Tiger Directorate by the last quarter of the previous financial year⁵². The point to note here is that it takes Project Tiger Directorate almost six months to release the sanction orders. To this we must add the time taken by the money to travel from Reserve Bank of Nagpur to the State; and from the State to the National Park. This gives an idea of how long the processing of the request for funds takes and the extent of delay⁵³ in the transfer of funds to individual National Parks.

The most important reason for the delayed receipt of funds is the long bureaucratic procedures that are involved in its flow to the National Parks.

The graph below shows the funds sanctioned as compared to the funds demanded by various Project Tiger National Parks for the year 2004-2005.

Funds Demanded vs Sanctioned



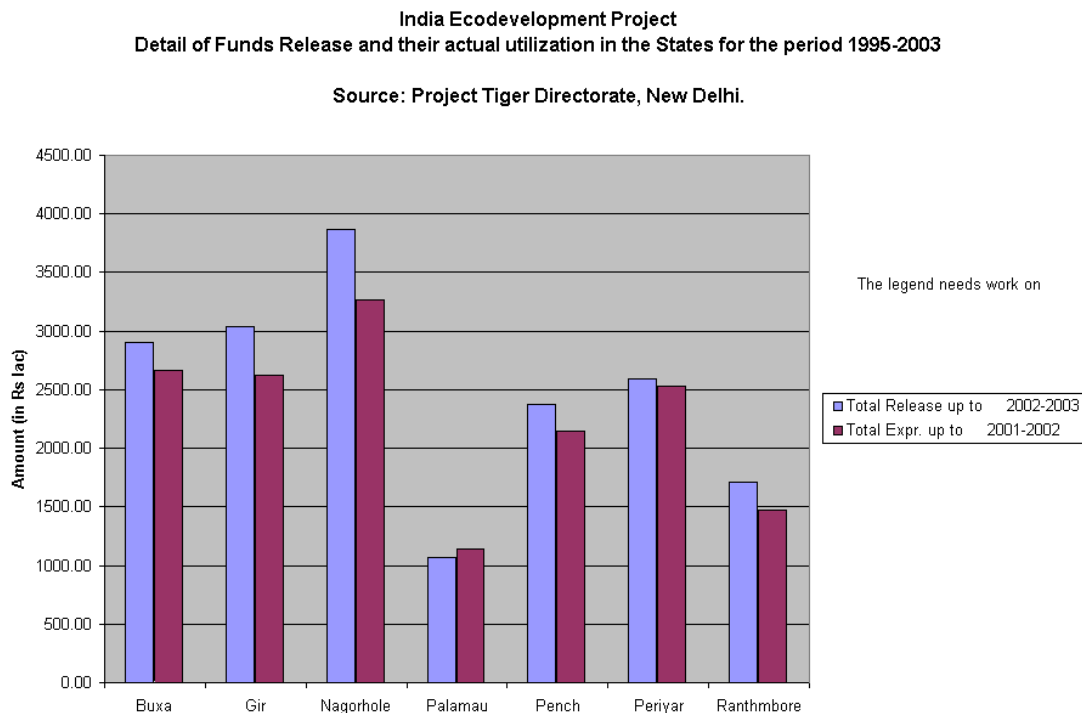
⁵¹ That Project Tiger National Parks are under-funded.

⁵² Sen, P. 2005. Interview by Author. Verbal Interview. World Wildlife Fund, Lodhi Road, New Delhi. June 21, 2005.

⁵³ After the commencement of the financial year.

There is a gross mismatch between the amounts demanded and the amounts sanctioned. From the figures in the above table, it is evident that Project Tiger was grossly under-funded in the financial year 2004-2005. This was a year in which the Ministry of Environment and Forests, Government of India has to explain to the Lok Sabha why it had unspent balance in excess of Rs. 10,00,00,000/-⁵⁴.

Another issue with expenditure in Project Tiger National Parks is highlighted by the analysing data that shows expenditure under the India Eco-Development Project sponsored by the World Bank. The following graphs show the release of funds and expenditure⁵⁵ for the period 1995-2003,



In the above graph we can see a consistent pattern of under-utilisation of funds provided to the seven National Parks under the India Ecodevelopment Project.

Analysing Opening Balances and unspent balances data⁵⁶ in Table III (A, B, and C)⁵⁷ reveals a consistent trend of unspent balances in the data available. Often these unspent balances are not a fraction, but a sizable proportion of the total release of funds to the Parks. It is curious that Parks, whose demand for funds is not usually met⁵⁸, have such a high

⁵⁴ Das, Deepak. 2005. Interview by Author. Verbal Interview. Office of the Controller of Accounts, Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, Lodhi Load, New Delhi. June 30, 2005.

Mr. Deepak Das is the Controller of Accounts, Ministry of Environment and Forests, Government of India as on June 30, 2005.

⁵⁵ Date table given in Annexure III. Graphs for individual years are also given in the same Annexure.

⁵⁶ Data available only for 1999-2003 period.

⁵⁷ Tables given in Annexure III

⁵⁸ As evident from the Project Tiger Status Report 2001.

proportion of unspent balances. Factors that may explain the existence of such unspent balances are:

- **Excessive Release of Funds:** This is can be immediately rejected as Parks have repeatedly complained of inadequate funds.⁵⁹
- **Delayed Receipt of Funds:** This may be an important factor explaining the large amount of unspent balances that are often revalidated for the following year. There are instances in 2004-2005⁶⁰ when the sanction orders, for the release of funds to Parks, were issued as late as February or March⁶¹ in 2004-2005. Given the time that it takes for the funds to flow from the Central to the State Government, the proportion of total sanctioned funds the parks are able to use in that year is questionable.

6.3. Revenue

All revenue from the parks accrues to the State Governments.

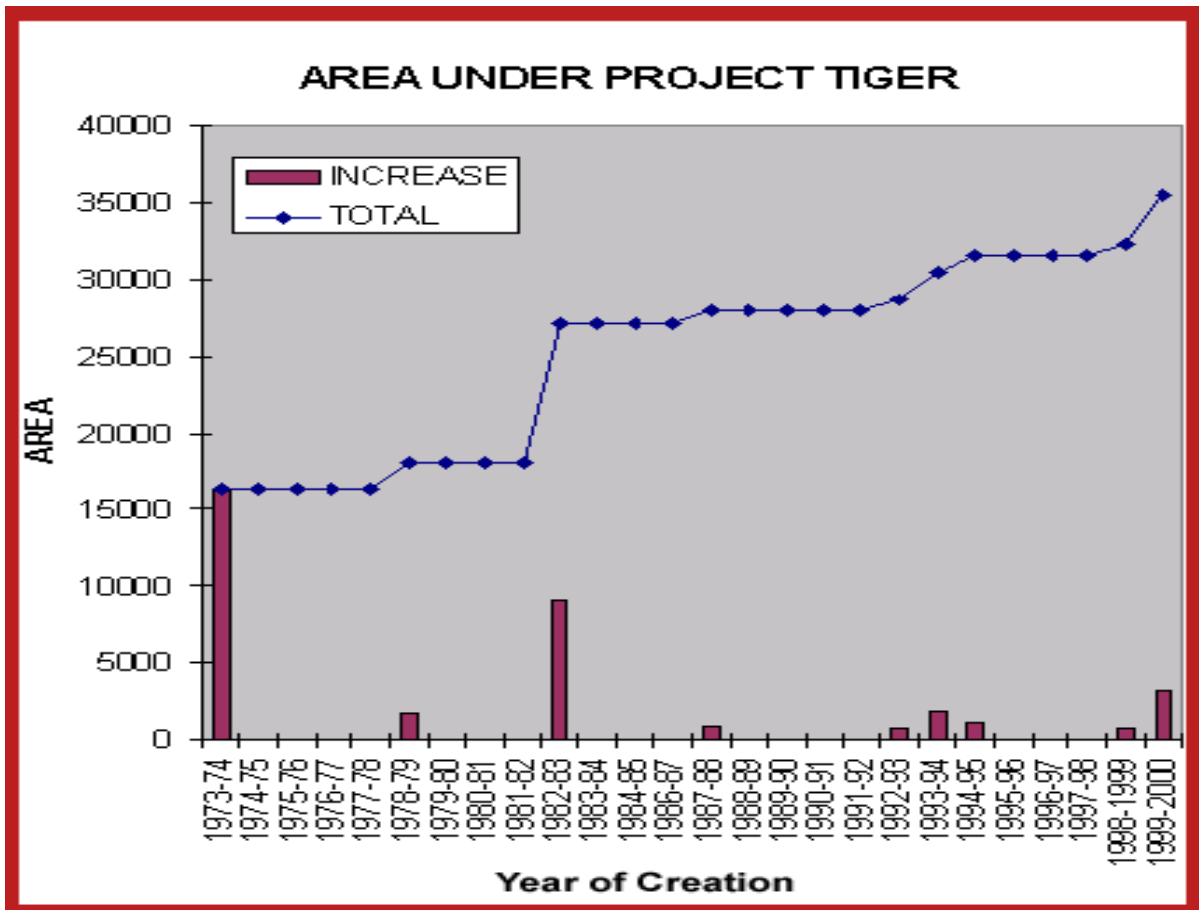
6.4. Performance of Project Tiger

Project Tiger aimed to conserve natural habitat of the tiger. Also, at the inception of Project Tiger, it was clearly stated that the tiger populations would not be kept high by artificial means. Now, the area under Project Tiger has continually increased since its inception. This is depicted by the graph below:

⁵⁹ See Annexure II and Annexure V

⁶⁰ This was the only year for which detailed data was available. Although Project Tiger Directorate has not released data for other years, it can be said (on the basis of the Project Tiger Status Report 2001 and interviews with various personnel who are/were associated with Project Tiger) that delayed receipt of funds is a consistent problem over a

⁶¹ Which is the end of the financial year and the funds need administrative revalidation for the next financial year before they are available to the concerned department.



Source: Project Tiger Website⁶²

The dotted line indicates the area under Project Tiger. This, as one can clearly see from the graph, has been rising over the years. The Government of India has been successful as far as bringing more area under the program. What it has not been successful in, however, is protecting that area well. This can be seen from the poaching data given below:

Year	No. of tigers killed
1994	95
1995	121
1996	52
1997	88
1998	44
1999	81
2000	53
2001	72
2002	43
2003	35

Source: Wildlife Protection Society of India⁶³

⁶² <http://projecttiger.nic.in/images/subsepage/graph-yearofcreation.gif>

⁶³ Wildlife Protection Society of India. 2005. *WPSI's Poaching Statistics*. [webpage]. New Delhi: Wildlife Protection Society of India. Accessed July 10, 2005. Available from <http://www.wpsi-india.org/statistics/index.php>. Internet.

Clearly, the conservation strategy of the government has failed as far as protection of the wildlife is concerned. In part it can be attributed to the inadequate number and inadequately trained staff. However, even if the Government of India is able to adequately man all tiger reserves, one must wonder whether the tiger in the Indian forests will be safe.

Tigers in India do not live just in Project Tiger National Parks. A good number of tigers dwell in Protected Areas (PA)⁶⁴ that is not under Project Tiger. To expect the Government to be able to man every area where there are forests is not practical. Conservation efforts should aim at reducing the threats to tigers by enforcing wildlife laws strictly, curbing illegal wildlife trade, and promoting local interests in the conservation of wildlife for a conservation program sustainable in the long run.

7. Tiger Demography

7.1. Census technique used in India – The Pugmark (Jhala, Y.V and Q. Qureshi , 2005).

The technique used for carrying out the all-India tiger Census⁶⁵ is the traditional technique of using pugmarks to measure tiger populations. The technique is to obtain Pugmark Tracings, Plaster Casts and Gait measurements and collect ancillary information on location, date, and substrate. Individual tigers are identified on the basis of the above information. The census in an area involves continuous monitoring of individual tigers over time and thus arrives at a total count in an area. The various aspects of the pugmark looked at are given in Annexure IV.

The various issues with the pugmark method of census are: -

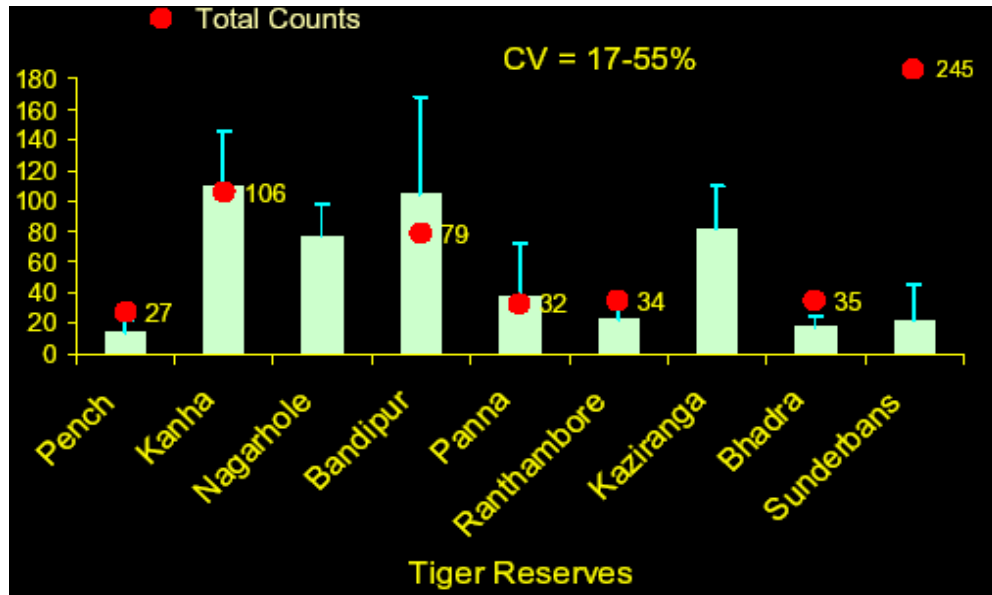
- It attempts a total count of all the tigers in the country. The viability and accuracy of such a technique is questionable due to various reasons such as inadequately trained staff, the large area involved, the terrain, etc.
- The census is based on enumerator's subjective ability to identify individual tigers from pugmarks. The element of human judgement in the method leaves it open to manipulation.
- There may be variations in pugmarks with substratum, gait, and observer's recording skills⁶⁶.
- It is not possible to obtain pugmarks from all tiger occupied landscapes.

A study (Jhala, Y.V., and Q. Qureshi, 2005) in 9 tiger reserves shows that the pugmark technique of census has a co-efficient of variation ranging from 17-55%. This is illustrated in the graph below.

⁶⁴ And some even in non-Protected Areas.

⁶⁵ Which is carried out once in every four years by the States.

⁶⁶ The observer's ability to form a cast of the pugmark from the ground.

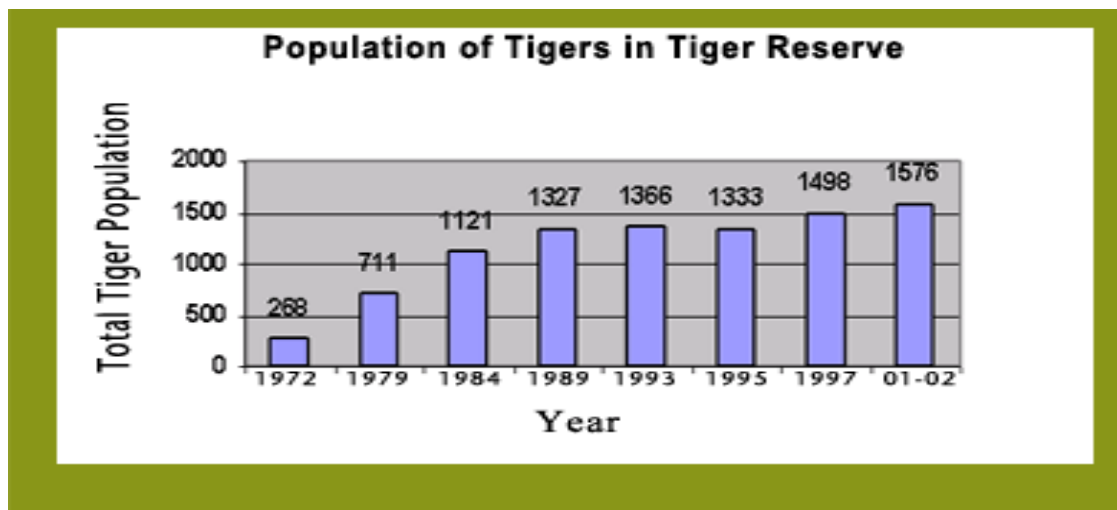


Source: Jhala, Y.V., and Q. Qureshi, 2005.

The census technique used in India is very susceptible to manipulation and results in significantly inaccurate results as can be inferred from the paper written by Jhala and Qureshi for the Ministry of Environment and Forests, Government of India. Better census techniques such as Photographic capture-recapture sampling⁶⁷ should be employed for the purpose of the census.

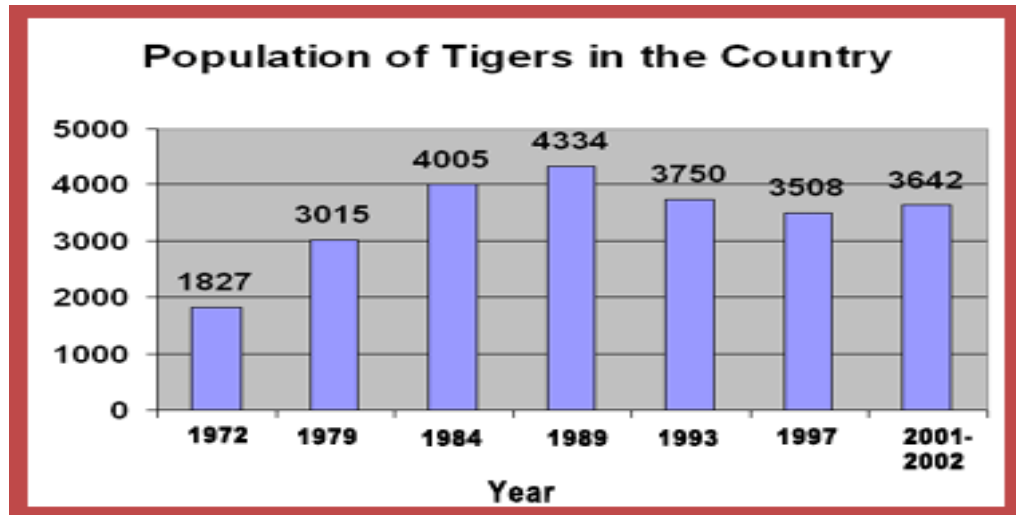
7.2. Demographic Trends

The population of tigers in tiger reserves in India has seen a steady increase while the all-India tiger population has been falling. This is shown in the two graphs below.



Source: Census Figures available from Project Tiger (Annexure VII)

⁶⁷ Karanth, K Ullas., James D Nichols, and N. Samba Kumar. 2004. *Photographic sampling of elusive mammals in tropical forests*. In *Sampling rare or elusive species*. Edited by W.L Thompson. Island Press. p 229-247.



Source: Census Figures available from Project Tiger (Annexure VII)

There is an increasing trend in the population of tigers in Project Tiger National Parks. This can be attributed to the increase in the number of National Parks under Project Tiger.⁶⁸

Another explanation may be that tigers in Project Tiger National Parks are better protected than tigers in other parts of the country. Nothing definite can be said on this issue by looking at the census data available from Project Tiger. This is an area that requires further research.

⁶⁸ From 9 in the beginning to 27 as on July 2005.

8. Problems with Project Tiger

An analysis of the Project Tiger Status Report 2001⁶⁹ brought out various problems faced by Project Tiger National Parks.

8.1. Funds

Project Tiger seems have serious **problems related to funds** can be looked at under the following heads:

- Funds received by a majority of parks are usually **inadequate**⁷⁰. In addition to being late, funds are often **delayed**⁷¹. The Project Tiger Status Report 2001 clearly reveals this⁷². The data for 2004-2005⁷³ shows that funds are still delayed and in deficit of what is demanded.
- A major problem seems to be the Annual Plan of Operation mode of financing. It makes the receipt of funds an uncertain process.⁷⁴

*"The funds are inadequate and often received late. The flow of funds is also not smooth, leading to a situation whereby often it is not possible to pay staff salaries on time. Generally, funds are available only towards the later half of the financial year, making it difficult to execute the various planned activities. Many activities are continuous in nature but due to the Annual Plan of Operation mode of financing, one is not sure if a given activity will continue to receive support in the following years. The emphasis thus shifts to short term activities."*⁷⁵

The APO mode of financing involves appropriation of funds for specific line items. It may so happen that the activities sanctioned in the APO for one particular year may not be sanctioned⁷⁶ for the next year. This uncertainty shifts the focus to short term activities for which finances are certain.

*"As a result⁷⁷, all the maintenance works, protection and habitat management operations, as well as other frontline words, have received a severe set back."*⁷⁸

⁶⁹ It must be kept in mind that the Project Tiger Status Report 2001 contains data that was updated till the year 1998-1999.

⁷⁰ Refer to Annexure V.

⁷¹ Refer to Annexure V and Section 5 of this paper.

⁷² Its analysis reveals that 24 out of the 25 parks studied in it have problems with funds; the funds being either late or inadequate; often being both late and inadequate.

⁷³ Refer to Annexure II.

⁷⁴ Flow of funds becomes an uncertain process with respect to the time when the funds would become available. The Union Government is able to release funds only by July (refer to the section 'How Money Flows in Project Tiger'). This money reaches the State Governments who then further it to the Parks. The time it takes for the money to finally reach the Park from the State Government level depends from State to State.

⁷⁵ Project Tiger 2001. Project Tiger Status Report 2001. New Delhi: Project Tiger, Ministry of Environment and Forests, Government of India. p 35.

⁷⁶ Or it may be sanctioned but with inadequate funds.

⁷⁷ of the delayed receipt of funds

⁷⁸ Project Tiger 2001. Project Tiger Status Report 2001. New Delhi: Project Tiger, Ministry of Environment and Forests, Government of India. p 78.

8.2. Staff

Project Tiger National Parks are also suffering from serious **staff problems**. Most of these problems are associated with Forest Guards- the ground-level staff that is responsible for the protection of the wildlife and forests. 30 per cent of the posts of forest staff are vacant⁷⁹.

Mr. Tito Joseph, Senior Project Officer, Wildlife Protection Society of India explained the problem of staffing in the National Parks in India.⁸⁰

The Indian Forest Service (IFS) officials are recruited by the UPSC. These officials are well paid. Their training is of good quality and is usually done in Institutes in Dehradun by the MOEF. The syllabus is up-to-date. There is no dearth of IFS officials.

Forest Guards: The States for the national parks in their territory recruits these officials. These officials are, usually, not well trained. Their training is done by the State Governments. The syllabus used in the training of the Forest Guards is usually out-of-date. Their pay scales are also low. These Forest Guards do not have strong unions to defend their rights, demand better work conditions or better salaries. They live in the forests and work at the ground level in protecting forests. The Project Tiger directorate cannot interfere with their syllabus. The Forests Guards are not adequately trained or equipped for their job. There are several cases of Forests Guards injured by tigers, killed by poachers and of them being falsely implicated for poaching and other crimes. There is approximately 30% vacancy in the post of Forest Guard. There are various problems associated with frontline staff in the National Parks.

- **Training:** Forest Guards, who are the ground-level enforcement staff, usually are trained only once during the course of their employment. This training, too, is not up to the mark. Proper training is lacking. Non-Government Organisations (NGOs) and various international agencies train the forest guards from time to time. This training, too, is sporadic in nature.
- **Recruitment:** In the state of Rajasthan forest guards have not been recruited for the past 17 years approximately⁸¹. The average age of the forest guard in the state is close to 49-50 years⁸². A similar situation is seen in the Palamau Tiger Reserve in Jharkhand where guards have not been recruited for about 20 years⁸³. The situation is similar in most States throughout the country. This is reflected in the fact that not a single Tiger Reserve reported not having staff problems in the Project Tiger Status Report 2001.

The reason why forest guards are not being recruited may be because that the State Governments are over staffed. Another possible reason is that salaries are recurring

⁷⁹ Thapar, Valmik. 2003. Keeping Forests Alive. *Frontline*, July 05-18, 2003. 20:14 (volume: issue)

⁸⁰ Joseph, Tito. 2005. Interview by author. Verbal Interview. Wildlife Protection Society of India, M-52, Greater Kailash Part - I, New Delhi. May 26, 2005.

Mr. Tito Joseph is Senior Project Officer at the Wildlife Protection Society of India, New Delhi.

⁸¹ Grover, R.K. 2005. Interview by author. Telephonic Interview. Called the interviewee on his mobile phone on 91-9414002415. June 30, 2005.

⁸² Grover, R.K. 2005. Interview by author. Telephonic Interview. Called the interviewee on his mobile phone on 91-9414002415. June 30, 2005.

⁸³ Prasad, T.N. 2005. Interview by Author. Telephonic Interview. Author was contacted at his residence on 91-11-55697779. July 5, 2005.

expenses⁸⁴ towards which the State Governments may not be willing to contribute. Since recruitment of staff other than Indian Forest Service officials is a State matter, the Central Government is powerless in recruiting new ground level staff.

- **Salaries:** The salaries of frontline staff are usually lower than that of clerks. These under-paid forest guards are susceptible to bribes and complacency in their jobs. The forest guards serve in remote areas of the forest that are cut off from civilisation. Their families usually stay outside the forests. Unlike other government employees in the armed forces, the Forest Guards do not receive “Remote Area Compensation” or “Hardship Allowance”. Moreover, there are no incentives to do their job well.

An extreme case of staff shortage is seen in Namdapha Tiger Reserve where there are a mere 22 sanctioned posts of Forest Guards for an area of 1985.245 sq km⁸⁵. These forest guards do have arms but they do not have the authority to use them. Needless to say, their sustained effectiveness in protecting the park is questionable. Moreover, only 11 of these 22 guards are positioned. Of these 11, 3 are ladies not fit for duty. Thus, there are 9 effective guards for 1985.245 sq km. That translates to approximately **220 sq km manned by a SINGLE Forest Guard.**

A detailed list of Project Tiger National Parks facing staff problems is in Annexure VI. The **minimum average vacancy in the post of Forest Guards was 25.83% as of 1999.** There is no data available to suggest that these two figures have improved.

8.3. Infrastructure

Adequate Infrastructure is lacking in most Project Tiger National Parks. The Forest Guards and Range Officers are not adequately equipped. Roads, wireless equipment, jeeps, arms and ammunition and other anti-poaching equipment are lacking in many Project Tiger National Parks. Even where arms are available, the bearers of the arms do not have the permission to use them⁸⁶.

The problem of inadequate infrastructure cannot be emphasised enough. The following extract is from the report of the Task Force of 1972:

“Poaching: Special Staff of Rangers will be necessary to control poaching. Each Range officer shall be in telephonic/radio communication with each other. Each Range will have three armed Forest Guards, a four-wheeled drive vehicle and a driver, and these teams will provide the nuclei of the anti-poaching staff...Each vehicle will be equipped with a field telephone and plugs to enable the unit to ‘tee-in’ to telephone lines in the area in the event of an emergency. Their precise zones of operation will be allocated by the joint Director of Reserve”⁸⁷

The above paragraph deals with the poaching measures that would be undertaken with the

⁸⁴ State Governments would have to contribute 50% of the expenditure on salaries. This would lead to drainage of financial resources of the State Government.

⁸⁵ Project tiger status report pg 101

⁸⁶ Forest Guards at Kaziranga are allowed to use arms. It is an exception (source: Joseph, Tito. 2005.) Project Tiger Status Report 2001 talks of various National Parks where guards are armed but are not allowed to use their arms.

⁸⁷ (Task Force, Indian Board for Wild Life, Government of India) 1972. *Project Tiger: A Proposal for Preservation of the Tiger (Panthera tigris tigris Linn.) in India*. New Delhi: Ministry of Agriculture, Government of India. p 25.

Management Plan of individual sanctuaries. It shows that the authorities recognised the importance of communication even in 1972. However, now, 33 years later, infrastructure is still a major problem for most tiger reserves. A list of parks that face trouble with infrastructure is given in Annexure V.

8.4. Other problems

Apart from the above, National Parks also suffer from problems of **poaching, grazing, encroachment, man-animal conflict, and man-forest conflict**. These are enumerated for individual parks in Annexure V.

Forests and Wildlife are subjects under the concurrent list⁸⁸ in the Indian Constitution. Project Tiger, a Centrally Sponsored Scheme, is **planned by the Central Government and executed by the State Governments**. The Central Government has limited powers over the execution of Project Tiger. Thus, while the guideline issued by the Central Government maybe sound their translation in ground realities depend totally on the commitment of the State Government to the issue. Also, it leads to excessive reliance of the State Governments on the Central Government for funds for issues on the concurrent list. This, in case of Project Tiger, has led to a dismal state of management of most National Parks in the country where⁸⁹ most National Parks still lack the basic infrastructure, staff, etc envisaged by the Task Force of 1972.

9. Recommendations

9.1. Funds

The flow of funds in Project Tiger needs to be streamlined. The administrative task at the Central Government level is time consuming. Added to this is the procedure at the States. These administrative processes⁹⁰ are responsible for the delayed receipt of funds by the National Parks that creates numerous operational obstacles⁹¹. A steady flow of funds is both desirable and necessary. Towards this end the following can be done:

9.1.1. Deputation of Staff

The **Integrate Finance Department** may depute staff to the Project Tiger Directorate for such period as may be necessary to approve the sanctions passed by the Additional Inspector General of Forests. This would expedite the entire process at the Central Government by reducing the time taken for the Integrated Finance Department to give its approval. A similar deputation of staff from the **Office of the Secretary/Joint-Secretary, Ministry of Environment and Forests** is also recommended. Such staff should be empowered to sign on behalf of Secretary/Joint-Secretary as the case may be. The staff should be deputed at such specified time when the APOs from the various National Parks⁹² are available at the Project Tiger Directorate.

At the same time, the **State Forest Departments** should follow a similar system of deputing staff to individual National Parks in order to expedite the process of approval of the

⁸⁸ The subjects under the concurrent list are jointly managed by both the Central and the State Governments.

⁸⁹ Even after over 25 years of completion of the program as of 1999.

⁹⁰ Detailed in section 5.2 of this paper.

⁹¹ Detailed in section 8 of this paper.

⁹² At least from most parks, if not all.

Annual Plan of Operation for submission to Project Tiger Directorate. This would result in a similar benefit of reducing cyclicality in communication.

With respect to the above two recommendations, the **staff may be deputed to Project Tiger for a specified period** of say, a month.

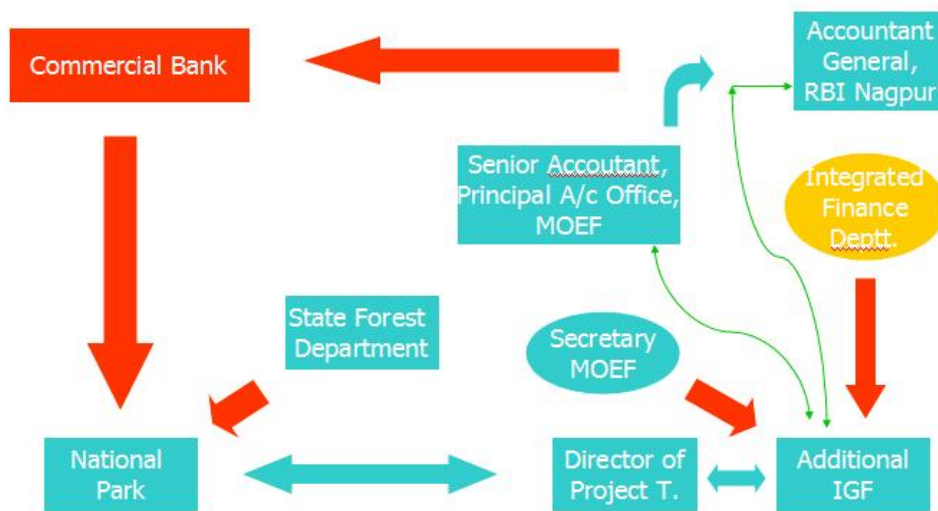
9.1.2. National Parks to have account with Commercial Bank

After the funds are sanctioned by the Central Government, the Accountant General at the Reserve Bank of Nagpur is instructed to send the money to the State Governments. The State Governments then transfer the money to their Forest Departments who sends it to the individual National Parks⁹³. Instead of this practice, the National Parks may be allowed to have their own bank account with any Commercial Bank to which the money will be transferred from RBI Nagpur. This would take the State Government out of the loop and expedite the process.

The rationale behind taking the State Government out of the loop is that the State Government already had its say in the process of approval of the APO. The money that is now received by the State is appropriated for the specific National Park. Involving the State at this juncture merely lengthens the process.

If the money is received by the National Park in a Commercial Bank account, the State will be effectively out of the loop. It must be noted that the suggestions for the change in the flow of funds **do not take any decision making department, of either the Central of the State Government, out of the decision making process**. The new flow of funds is represented in the following diagram:

Flow of Funds after the recommendations are put in place



⁹³ This process may vary from State to State.

9.2. Staff

Recruitment and training: New staff is not easily recruited to fill up existing vacancies in sanctioned posts. The sanctioning of new posts and filling up of existing posts is necessity in most National Parks. The Central Government may assume a greater role in the recruitment and training of frontline staff⁹⁴.

10. Models for Tiger Conservation

10.1. Tiger Conservation in India

Tiger conservation in Indian, as of now, follows the principle of separating man from the forests and wildlife in order to conserve the latter.

The players/stakeholders identified as deeply affected by tiger conservation efforts are:

- **Tribes living in the forests:** Tribes have been living in forests for centuries. The forest is their main source of livelihood. Wildlife and Forest conservation efforts in India involve declaring an area as a Protected Area (PA). Once an area is declared as a Protected Area (PA), the rights of tribes to exploit the resources of the PA for meat, timber, firewood, herbs, and other forest products is curtailed. So, in effect, declaring an area a PA deprives the tribes living in that area of their primary source of livelihood. Such tribes maybe called '**green oustees**'.

The World Bank had initiated its eco-development programme in and around various National Parks around the country. This aims to help tribes and villages in developing and alternate source of livelihood and hence reduce their dependence on the forests. It aims to do this by providing basic infrastructure such as roads, electricity, communications and the like to villages. Unfortunately, like all Government administered schemes, the implementation and planning are not in consonance.

For example, B. G. Karlsson, in a paper on the indigenous people (the Rabhas) of the Buxa Tiger Reserve says "In general the Rabhas have a positive attitude to the World Bank and their involvement in eco-development, but so far the tiger project and increased interest in wildlife conservation have caused nothing but increased hardship for them⁹⁵: less forest department work and restricted access to the forest. The eco-development work carried out so far has originated entirely from above, and the Rabhas have had more or less no part in the planning process. The little work that has been done has largely been of no use."⁹⁶

Deprived of their livelihood, the embittered tribes look at the state with distrust and its promises with cynicism. They turn against the Forest Department that keeps them from their livelihood. These tribes, which were traditionally guardians of the forests, now become the enemies of the forest⁹⁷ in desperate search for

⁹⁴ Which is now the duty of the State Governments.

⁹⁵ The Rabhas.

⁹⁶ Karlsson, B.G.. "Ecodevelopment in Practice: Buxa Tiger Reserve and Forest People." *Economic and Political Weekly*. July 24-30, 1999

⁹⁷ Which are declared as Protected Areas (OPA) by the Government in order to conserve them.

livelihood. Conservation policy in India desperately needs to redress the sustenance problems faced by 'green oustees' to ensure their co-operation in the conservation effort.

- **Villages around the forests:** Villagers around the forests depend on the forests for various forest products. Forest products⁹⁸ are important although villages may not be directly dependent on the forests for their livelihood. Also, for villages around forests, agricultural expansion inevitably implies using forestland for cultivation. We can say that economic benefits do accrue from the forests to the villages around them. Once an area is declared as a Protected Areas, these benefits either stop accruing altogether or they lessen⁹⁹. This antagonises the villagers against the forests.
- **Poachers/hunters/Wildlife Traders and people who exploit forest products:** Forests are a goldmine for those who can exploit it. Wildlife is hunted for its ornamental value. Animals such as the Black Buck, the Tiger, the Rhino, the Elephant and many others are hunted for various reasons ranging from traditional belief, medicinal value¹⁰⁰, decorative purposes, etc. Animal products are valued highly in international markets. For example, a tiger may fetch as much as Rs. 6,000,000¹⁰¹ for a wildlife trader in India.. Each part of the tiger's body is marketable- \$6,000 per kg for tiger bones, \$270,000 per kg for tiger penis, \$20,000 for the tiger skin, \$1,000 per tiger skull, \$900 per tooth¹⁰², \$100 per kg of tiger fat¹⁰³. Timber and herbs from forests also fetch a handsome sum in the markets.

The Indian tiger conservation program¹⁰⁴ largely relies on the '**guns and guards**' to conserve the tiger. This is a centralised approach to wildlife conservation. It had met with initial success in India but its effectiveness now is questionable since tiger populations in India have been declining for some time now.

Tigers in India can be looked at as public goods that provide benefits to the society at large and not necessarily any direct economic benefit. It is difficult to measure and realise the utility that their conservation can possibly provide, and any benefit from having the tigers is long term and opaque. The villagers/tribes in India do not see the tiger conservation as having any economic benefit at all. It is well established that markets do not work in the case of public goods¹⁰⁵ and more so in the case of conservation as it provides no immediate and tangible benefits to firms to earn revenues and profits.

One way to theorize the problem is that if the tiger can become a resource to those who kill it, (particularly the immediate killers - the poachers) killing the tiger will reduce considerably. This is to say that if the tiger can be used to generate an income stream for those who hunt it then they would not, at the minimum, hunt the tiger unsustainably. To be effective and sustainable, conservation policies must not only be ecologically sound and economically

⁹⁸ Such as timber for fuel, forest animals for meat, herbs for medicine, etc.

⁹⁹ Since the villager's access to the forest may be restricted or curtailed altogether.

¹⁰⁰ Which may or may not be scientific. For example, Traditional Chinese Medicine (TCM) uses tiger parts in a large number of preparations. However, there has been, to date, no scientific proof of the effectiveness of preparations that use tiger products.

¹⁰¹ Chengappa, Raj. 2005. *The Missing Tigers: India Today*, Volume XXX Number 20, for week May 17-23,2005; released on May 16, 2005, pages 53

¹⁰² Interesting figure: if a tiger has 32 teeth, only his teeth would cost \$ 28,800.

¹⁰³ Chengappa, Raj. 2005. *The Missing Tigers: India Today*, Volume XXX Number 20, for week May 17-23,2005; released on May 16, 2005, pages 54

¹⁰⁴ Project Tiger

¹⁰⁵ Unless a market for externalities is also created.

efficient, they must also be locally acceptable. It is precisely this principle¹⁰⁶ that is practised in communal management of natural resources.

The failure of centralised approach to natural resource management the world over has led to the concept of **Community Based Natural Resource Management (CBNRM)**. CBNRM integrates wildlife conservation and natural development objective, which has been adopted by several African countries (Bwalya, 2002).

The community based wildlife management strategy as a policy tool recognizes the local communities could be motivated to adopt benign and sustainable wildlife management practices. It is based on the assumption that local communities are interested and willing to adopt and implement wildlife conservation programs as long as they are legally entitled to any resultant ownership of resources and associated benefits.

Three variants to state ownership, control and management of natural resources are¹⁰⁷: -

- **Controlled Open Access**
- **Regulated Common Property**
- **Private Property Regime**

An open access regime involves no salient features for long-term wildlife management. The debate is between Regulated Common Property and Private Property Regime or a hybrid of the two management regimes. The Private Property School argues that Open Access and Unregulated Common Property regimes are inherently inefficient because they fail to produce incentive for individuals to harvest the resources in a socially optimal way. The counter argument is that privatisation would not necessarily lead to efficiency, especially if the efficiency is evaluated in terms of distribution of income. The most cited benefit of privatisation and commercialisation of natural resources is that although local communities are not compensated, they benefit from taking advantage of new employment opportunities generated. **CBNRW assumes that economic incentives will affect the behaviour and interest of individual and transform local resident into conservationists.**

The strong emphasis on conservation, which might not be of the immediate interest of residents, sometimes makes residents highly suspicious and pessimistic of whether their livelihood interests will be preserved and enhanced by the CBNRM program. Like in the buffer zone approach, which is the cornerstone of CBWM programs in Zambia, Zimbabwe, Namibia and Botswana among others, the economic benefits from wildlife operations may not be enough to compensate for the losses incurred by the community as the result of CBWM program.

There are various examples the world over where such policies implemented. Case studies of the following are presented:

- **CAMPFIRE in Zimbabwe**
- **ADMADE in Zambia**
- **Community Forest User Group in Nepal**

¹⁰⁶ Of generating economic benefits for those directly affected by conservation efforts.

¹⁰⁷ Bwalya, Samuel Mulenga. 2002. *"Critical Analysis of Community-Based Wildlife Resource Management in Southern Africa: Case Study from Zambia."* Presented at "The Commons in an Age of Globalisation," the Ninth Conference of the International Association for the Study of Common Property, Victoria Falls, Zimbabwe, June 17-21, 2002. Accessed July 10, 2005. Available from http://www.cbnrm.net/pdf/bwalya_sm_001_zambiabcwm.pdf. Internet.

10.2. CAMPFIRE, Zimbabwe

Zimbabwe has adopted a policy of conservation through utilization and promotes exploitation for profit as the best hope for conserving wildlife. The policy was initiated through elephant harvesting to maintain elephant herds within the carrying capacity of their home range. The wildlife utilization philosophy was extended to communal farming areas through the Communal Areas Management for Indigenous Resources (CAMPFIRE) Project in 1989. CAMPFIRE saw a dramatic rise in revenues, from US \$327,621 in 1989 to over \$1.4 million in 1993.

CAMPFIRE's objective is to encourage the establishment of co-operatives with territorial rights over well defined communal resource areas. Since its inception, the program has generated substantial revenue in several communal areas primarily from trophy hunting.

The success of CAMPFIRE in encouraging rural Africans to regard wildlife as a valuable asset has been directly related to the level of involvement of local villagers in the decision making process (Kreuter, Urs B. 1993). Decisions made at the Government level had little impact in terms of inducing people to conserve wildlife. **However, when people were allowed to make wildlife related decisions on their own, they saw the economic benefits that can be derived from wildlife.**

For example, in the Mahenye Ward of the Chipinge District in southeast Zimbabwe, poaching activities decreased dramatically and the people voted to relocate seven villages on an island in the Save River to expand the wildlife area after the meat from two elephants shot by foreign hunters was distributed to the villagers. This was a remarkable decision from people who had been evicted from their ancestral homes when the nearby Gonarezhou Game Reserve was established only twenty years earlier. In another example, the inhabitants of the Chikwarakwara Ward were allowed to decide how the revenue from two elephants shot in their area should be divided between community projects and household dividends. At the village gathering arranged to make the decision, the District Council Chairman said: "This money comes to you from your wildlife. You did not have to work for it, just have wildlife. It is your money. The decision is yours." (Kreuter, Urs B. 1993).

Both Chikwarakwara and Mahenye demonstrated that with direct receipt of benefits, local communities readily appreciate the value of their wildlife resources, and education on the benefits elephant and other wildlife conservation is unnecessary. The only sustainable strategy for conserving African elephants is to promote wildlife as a valuable resource that provides direct benefits to the people who incur the costs of co-existing with it. To achieve this, the full economic potential of elephants must be realizable and local management and decision-making processes must be promoted. (Kreuter, Urs B. 1993).

CAMPFIRE communities reap the benefits of their wildlife resources in different ways:

- **Trophy hunting**¹⁰⁸
- **Nature tourism**¹⁰⁹
- **Harvesting natural products**
- **Live animal sales**
- **Meat cropping**

Revenues generated from CAMPFIRE activities are collected and disbursed by Rural District Councils. These councils negotiate hunting and tourist concessions on the communal lands under their authority and ensure that local communities receive dividends from the venture.

In 1993, the Department of National Parks published the revised version of *Guidelines on the Revenue Distribution Process*, which was distributed freely to all district councils participating in CAMPFIRE. Among its suggestions:

¹⁰⁸ Revenue from hunting of game.

¹⁰⁹ Revenue from safaris and wildlife tours.

- 80% of wildlife monies (produced by CAMPFIRE) should be devolved to local communities in the areas that generated the income. The communities should decide collectively the best way to spend their revenue.
- District Councils should retain 20% of revenues: 15% to manage CAMPFIRE in the area, and 5% for general council administration and development.

Financial reports and hunting records of the District Councils are checked every year by the Department of National Parks. This ensures upward¹¹⁰ and downward¹¹¹ accountability of the District Councils. Only after an audit are hunting quotas for the next year issued.

10.3. Administrative Management and Design (ADMADE) in Blue Lagoon, Zambia

Blue lagoon is located on the Kafue flats. It forms part of the Kafue Wetlands and provides habitat to some of Zambia's finest wildlife species like 5000 Zebras, over 90 species of other mammals, 400 species of birds including Wattle crane.

The Kafue wetland is a major source of industrial supplies, agriculture, livestock and wildlife. It also acts as a sink for industrial and agricultural waste. In addition, Kafue Wetland is rich in minerals like gypsum and magnite. These mining activities act as a threat to wildlife and the Kafue ecosystem.

The major source of livelihood of most of the people living in the Blue Lagoon is Agriculture. The residents are traditionally cattle herders and the Kafue fisheries provide fishing communities. These activities are very crucial to the livelihoods of the local communities and should be more sustainable. The conservation program ignored these realities and disenfranchise people from these resources may attract resistance.

The ADMADE program started in 1987 following the Lipande Development project. Its institutional structure is typically **top-down decision-making** structure with some power decentralized to the district government, **but not yet to lower community and traditional level structures. Local participation in decision-making is just as important as the financial component of ADMADE program.** The data suggests that residents have a relatively good understanding of the importance of Wetland and believe they should be conserved. There was no indication to that residents are opposed to managing Wetlands as protected areas¹¹².

The number of patrols and arrests increased with the implementation of ADMADE. The success of reducing poaching and increasing population of large mammals like elephants has largely been associated with increased enforcement effort and not "social fencing". **In the aggregate, the emerging evidence suggested only modest improvements in wildlife conservation following ADMADE.**

In Zambia, it was observed that social service provision were the most preferred community development project financed by ADMADE revenue but the benefits of these services have not influenced on local behaviour and incentive to participate in wildlife management is limited. Communities certainly wonder why they ought to give up their land for wildlife and

¹¹⁰ Towards the Government.

¹¹¹ Towards the communities.

¹¹² Although they did indicate that they did not benefit from ADMADE program.

tolerate wildlife damage to crops to a service that benefit everyone and whose provision is entirely government's responsibility.

The extent to which CBWM have achieved conservation goal in southern Africa is mixed. The Zambian case study and other case study shows that CBWM programs itself and in particular the benefit associated has not influenced the behaviour and resource use among local communities. Most studies suggest that the conservation and wildlife management record did not improve in aggregate as a result of CBWM program. The basic reason for this lack of clear success partly lies in **government's failure to institute and provide secure property rights** to local communities, not only with respect to wildlife resources but also to ecosystem in coexistence with wildlife resources. **CBWM design and implementation seem to ignore social, political, historical and economic factors of the local community.** This contributed to the loss of CBWM program. The great emphasis placed on economic and financial returns does not seem to induce successful community wildlife management program in Africa. In addition, **the capacity of local community to manage low stock and degraded natural environment in buffer zones and to generate substantial revenues for community development in absence of secure property rights is highly questionable.**

11. Conclusion

The Indian Tiger Conservation program met with exceptional success¹¹³ in the first 15 years of its existence when the tiger populations in India reached 4334 in 1989¹¹⁴. Even if the speculation of over estimation of the tiger population in the early years is true, the rise is still spectacular. Recently, however, according to media reports¹¹⁵ tiger populations in certain reserves in the country have started declining.

Urgent administrative reforms are required to smoothen the flow of funds to Project Tiger National Parks. Only when money reaches the National Parks on time will they be able to utilise it fully. There is urgent need to increase the staff in National Parks. Cases like Nadampha¹¹⁶ need to be looked into.

To make the conservation program effective, Project Tiger Directorate¹¹⁷ should be given more power with respect to implementation of plans in National Parks that it has charge of. In the long run, however, putting in place guns and guards cannot protect the tiger and the forests. Local communities need to be involved in the conservation effort on a sustained basis. The long-term objective of the Government should be to **shift its role from keeper to regulator**. The current approach of Joint Forest Management needs to be taken further to the extent of communal stewardship where villagers have rights to the forests they manage. This would give them incentive to protect the forests. Communal Management of resources has seen success Nepal, Zimbabwe and various other places in Africa. There are cases like Zambia where it has not met with much success.

¹¹³ Refer to graph in Annexure VII.

¹¹⁴ Refer to Annexure VII.

¹¹⁵ Mazoomdaar, Jay. 2005. *If Sariska Wasn't Enough*, Volume XXV Number 3, June 2005. p 28

¹¹⁶ Refer to Section 8.2.

¹¹⁷ At the level of the Central Government.

The current situation in India is a precarious one¹¹⁸. Handing over the forests to the local people should be a slow transition process with a strong regulatory framework. Communal stewardship needs to be approached with caution, lest it leads to uncontrolled exploitation of our forests. Communal management is not a panacea. One of the problems that may face such a program is low per capita economic incentive¹¹⁹. However, international experiences have shown it as a better alternative than Government protection of natural resources

¹¹⁸ With cases galore of poaching in National Parks. Tiger census 2005 (which will be completed in November 2005) will reveal a clearer picture.

¹¹⁹ Due to high and rapidly growing population of the country and limited forest land.

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Annexure I

This annexure contains the sections of the Wildlife Protection Act, 1972 pertinent to the declaration of National Parks in India.

National Parks¹²⁰

35. Declaration of National Parks. – (1) Whenever it appears to the State Government that an area, whether within a sanctuary or not, is, by reason of its ecological, faunal, floral, geomorphological, or zoological association or importance, needed to be constituted as a National Park for the purpose of protecting & propagating or developing wildlife therein or its environment, it may, by notification, declare its intention to constitute such area as a National Park.

(1) Provided that where any part of the territorial waters is proposed to be included in such National Park, the provisions of Sec.26A shall, as far as may be, apply in relation to the declaration of a National Park as they apply in relation to the declaration of a sanctuary.

(2) The notification referred to in sub-section (1) shall define the limits of the area which is intended to be declared as a National Park.

(3) Where any area is intended to be declared as a National Park, the provisions of Sec.19 to 26-A (both inclusive except clause (c) of sub-section (2) of section 24)] shall, as far as may be, apply to the investigation and determination of claims and extinguishment of rights, in relation to any land in such area as they apply to the said matters in relation to any land in a sanctuary.

(4) When the following events have occurred, namely

(a) the period for preferring claims has elapsed, and all claims, if any, made in relation to any land in an area intended to be declared as a National Park, have been disposed of by the State Government, and

(b) all rights in respect of lands proposed to be included in the National Park have become vested in the State Government the State Government shall publish a notification specifying the limits of the area which shall be comprised within the National Park and declare that the said area shall be a National Park on and from such date as may be specified in the notification.

(5) No alteration of the boundaries of a National Park shall be made except on a resolution passed by the Legislature of the State.

(6) No person shall, destroy, exploit, or remove any wildlife from a National Park or destroy or damage the habitat or any wild animal or deprive any wild animal or its habitat within such National Park except under and in accordance with a permit granted by the Chief Wildlife Warden and no such permit shall be granted unless the State Government, being satisfied that such destruction, exploitation, or removal of wildlife from the National Park is

¹²⁰ *Wild Life (Protection) Act. 1972. India. Section 35.*

necessary for the improvement and better management of wildlife therein, authorises the issue of such permit.

(7) No grazing of any livestock shall be permitted in a National Park and no livestock shall be allowed to enter except where such [livestock] is used as a vehicle by a person authorized to enter such National Park.

(8) The provisions of secs. 27 and 28, secs.30 to 32 (both inclusive), and CIS, (a), (b) and (c) of [Sec.33, 33A14] and sec.34 shall, as far as may be, apply in relation to a National Park as they apply in relation to a sanctuary.

Section 38 of Chapter 4 of the Wildlife Protection Act, 1972 also states the following as regards the power of the Central Government in declaring an area as national park:

Sanctuaries or National Park declared by Central Govt.¹²¹

38. Power of Central Government to declare areas as Sanctuaries or National Park.- (1) Where the State Government leases or otherwise transfers any area under its control, not being an area within a Sanctuary, to the Central Government the Central Government may, if it is satisfied that the conditions specified in sec.18 are fulfilled in relation to the area so transferred to it, declare such area, by notification, to be a sanctuary and the provisions of sec 18 to 35 (both inclusive), 54 and 55 shall apply in relation to such sanctuary as they apply in relation to a sanctuary declared by the State Government.

(2) The Central Government may, if it is satisfied that the conditions specified in sec.35 are fulfilled in relation to any area referred to in sub-section (1), whether or not such area has been declared, to be a sanctuary by the Central Government, or the State Government, declare such area, by notification, to be a National Park and the provisions of secs.35, 54 and 55 shall apply to such National Park as they apply in relation to a National Park declared by the State Government.

(3) In relation to a sanctuary or National Park declared by the Central Government, the powers and duties of the Chief Wildlife Warden under the section referred to in sub-section (1) and (2). shall be exercised and discharged by the Director or by such other officer as may be authorised by the Director in this behalf and references in the sections aforesaid to the State Government, shall be construed as reference to the Central Government and reference therein to the Legislation of the State shall be construed as a reference to Parliament.

The following of the Wildlife Protection Act, 1972 lay out the **procedure** to be followed for the creation of a National Park¹²²:

¹²¹ *Wild Life (Protection) Act. 1972. India. Section 38.*

¹²² *Wild Life (Protection) Act. 1972. India. Sections 19 to 26A.*

19. *Collector to determine rights.* – When a notification has been issued under Sec.18, the collector shall inquire into, and determine the existence, nature and extent of the rights of any person in or over the land comprised within the limits of the sanctuary.

20. *Bar of accrual of rights.* – After the issue of a notification under Sec.18, no right shall be acquired in, or over the land comprised within the limits of the area specified in such notification, except by succession, testamentary or intestate.

21. *Proclamation by Collector.* – When a notification has been issued under Sec.18 the Collector shall publish in the regional language in every town and village in or in the neighbourhood of the area comprised therein, a proclamation:

- (a) specifying, as nearly as possible, the situation and the limits of the sanctuary; and
- (b) requiring any person, claiming any right mentioned in Sec. 19, to prefer before the collector within two months from the date of such proclamation, a written claim in the prescribed form specifying the nature and extent of such right, with necessary details and the amount and particulars of the compensation, if any, claimed in respect thereof.

22. *Inquiry by Collector.* – The Collector shall, after service of the prescribed notice upon the claimant, expeditiously inquire into

- (a) the claim preferred before him under Cl. (b) of Sec.21, and
- (b) the existence of any right mentioned in Sec.19 and not claimed under Cl.(b) of Sec.21, so far as the same may be ascertainable from the records of the State Government and the evidence of any person acquainted with the same.

23. *Powers of Collector.* – For the purpose of such inquiry, the Collector may exercise the following powers, namely

- (a) the power to enter in or upon any land and to survey, demarcate, and make a map of the same or to authorise any other officer to do so;
- (b) the same powers as are vested in a civil court for the trial of suits.

24. *Acquisition of rights.* – (1) In the case of a claim to a right in or over any land referred to in Sec.19, the Collector shall pass an order admitting or rejecting the same in whole or in part.

(2) If such claim is admitted in whole or in part, the Collector may either

- (a) exclude such land from the limits of the proposed sanctuary, or
- (b) proceed to acquire such land or rights, except where by an agreement between the owner of such land or the holder of rights and the Government the owner or holder of such rights has agreed to surrender his rights to the Government, in or over such land, and payment of such compensation, as is provided in the Land Acquisition Act, 1894(1 of 1894)
- (c) allow, in consultation with the Chief Wildlife Warden, the continuance of any right of any person in, or over any land within the limits of the sanctuary.

25. *Acquisition proceedings.* – (1) For the purpose of acquiring such land, or rights in or over such land,

- (a) *the Collector shall be deemed to be a Collector, proceeding under the Land Acquisition Act, 1894 (1 to 1894):*
 - (b) *the claimant shall be deemed to be a person interested and appearing before him in pursuance of a notice given under sec.9 of that Act.*
 - (c) *the provisions of the sections preceding Sec.9 of that Act shall be deemed to have been complied with;*
 - (d) *where the claimant does not accept the award made in his favour in the matter of compensation, he shall be deemed, within the meaning of Sec.18 of that Act, to be a person interested who has not accepted the award, and shall be entitled to proceed to claim relief, against the award under the provision of Part III of that Act;*
 - (e) *the Collector, with the consent of the claimant, or the Court, with the consent of both the parties, may award compensation in land or money or partly in land and partly in money, and*
 - (f) *in the case of the stoppage of a public way or a common pasture, the Collector may, with the previous sanction of the State Government provide for an alternative public way or common pasture, as far as may be practicable or convenient.*
- (2) *The acquisition under this Act of any land or interest therein shall be deemed to be acquisition for a public purpose.*

26. *Delegation of Collector's powers. – The State Government may, by general or special order, direct that the powers exercisable or the functions to be performed by the Collector under Sec. 19 to 25 (both inclusive) may be exercised and performed by such other officer as may be specified in the order.*

(26A) *Declaration of area as Sanctuary. –(1) When –*

- (a) *a notification has been issued under sec.18 and the period for preferring claim has elapsed, and all claims, if any, made in relation to any land in an area intended to be declared as a sanctuary, have been disposed of by the State Government; or*
 - (b) *any area comprised within any reserve forest or any part of the territorial waters, which is considered by the State Government to be of adequate ecological, faunal, geomorphological, natural or zoological significance for the purpose of protecting, propagating or developing wildlife or its environment, is to be included in a sanctuary, the State Government shall issue a notification specifying the limits of the area which shall be comprised within the sanctuary and declare that the said area shall be sanctuary on and from such date as may be specified in the notification. Provided that where any part of the territorial waters is to be so included, prior concurrence of the Central Government shall be obtained by the State Government. Provided further that the limits of the area of the territorial waters to be included in the sanctuary shall be determined in consultation with the Chief Naval Hydrographer of the Central Government and after taking adequate measures to protect the occupational interests of the local fishermen.*
- (2) *Notwithstanding anything contained in sub-section (1), the right of innocent passage of any vessel or boat through the territorial water shall not be affected by the notification issued under sub-section (1).*
- (3) *No alteration of the boundaries of a sanctuary shall be made except on a resolution passed by the Legislation of the State.*

Periyar	194.75+55	95+55	62.25+43	64.2	40	24/6/04	22.25	11/1/05	
Sariska	828.4	171.9	119.48		37.5 + 37.5	23/07/04 + 3/1/05			
Buxa		66	50.75		30	24/6/04	20.75	21/2/05	1,85,295
Indravati	197.05	98.77		7.245	27.75	21/2/05			
Nagarjunsagar	82	76		23.141	15				
Namdapha	98.968	28.718		21.093					
Dudhwa+Katarniaghat	999.48+448.06 25	208.93 + 53.00	136.615 + 38.1		105	25/6/04	69.715=61. 615+8.1	21/3/05	11.5
Kalakad-Mundanthurai	776.5	259.25	188.12	7.075	80	20/08/04			
Valmiki	187.61	131.45		8.7986	85	27/12/04			
Pench									
Tadoba-Andhari	321.92	180.47	142.925	85.545	37.5 + 37.50	23/07/04+ 3/01/05	67.0646	28/02/05	
Bandhavgarh	341.25	178.6	110.35		55	13/7/04	30	22/3/05	
Panna	56	156.4	107.575		30	23/7/04	30	3/1/005	
Dampha	92.468	92.245+34. 34			60	25/6/04	25.35 + 34.34 **	10/12/04 + 31/12/04(APO) **	
Bhadra	477.8828	183.9	111.497	15.15	75	25/6/04	36.497	31/12/04	
Pench(MP)	650.02	158.9	94.725	4.795	50	3/8/04	39.93	31/12/04	
Pakhui-Nameri	140.61	92.124							
Bori, Satpura, Pachmari	355.67+263.73	263.73	210.04		75	24/06/04	95	31/12/04	
Pakke	133.624	92.124			35	9/6/04			

Pench(maharashtra)		176.89	139.77		37.50 +37.50	23/07/07 + 3/01/05	12.77	22/2/05	
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Source: Sanction Orders and Annual Plan of Action of the National Parks (mentioned in the table above) obtained from Project Tiger Directorate, Bikaner House, New Delhi.

The plus sign in this column indicates the break-up of the release of first instalment. Often the first instalment may be broken down further into two instalments. This is so because government departments can spend only 25% of the amount sanctioned by the Parliament in the Finance Bill. The remaining 75% can be spent only after the Finance Bill is signed¹²³ by the President of India. Due to this 25% constrain, the Project Tiger Directorate¹²⁴ sometimes has to release the first installment in two smaller installments.

@@@ The plus sign in this column indicates the dates when the two parts of the first installment are actually sanctioned.

^^^ Data in this column is given in the following format:

$$X + Y$$

Where X denotes the amount in the Annual Plan of Operation

Y denotes the amount in the Additional Annual Plan of Action (if any)

Whenever data for either is unavailable, it is denoted by '??'

If only one figure is given in the column, it denotes the amount demanded in the Annual Plan of Operation.

** The figure after the plus sign here is for the Additional Annual Plan of Operation submitted by this reserve.

Disclaimer

The data provided in this annexure is the author's estimation. The data may be incomplete in case the documents provided to the author were incomplete. The author had no way of verifying the figures. However, for 2004-2005 was procured in June 2005, it is assumed to be complete.

It is noteworthy that the Project Tiger Directorate was extremely reluctant in releasing data.

¹²³ The signing of the Finance Bill by the President of India is the final formality that legalises the Union Budget for that financial year.

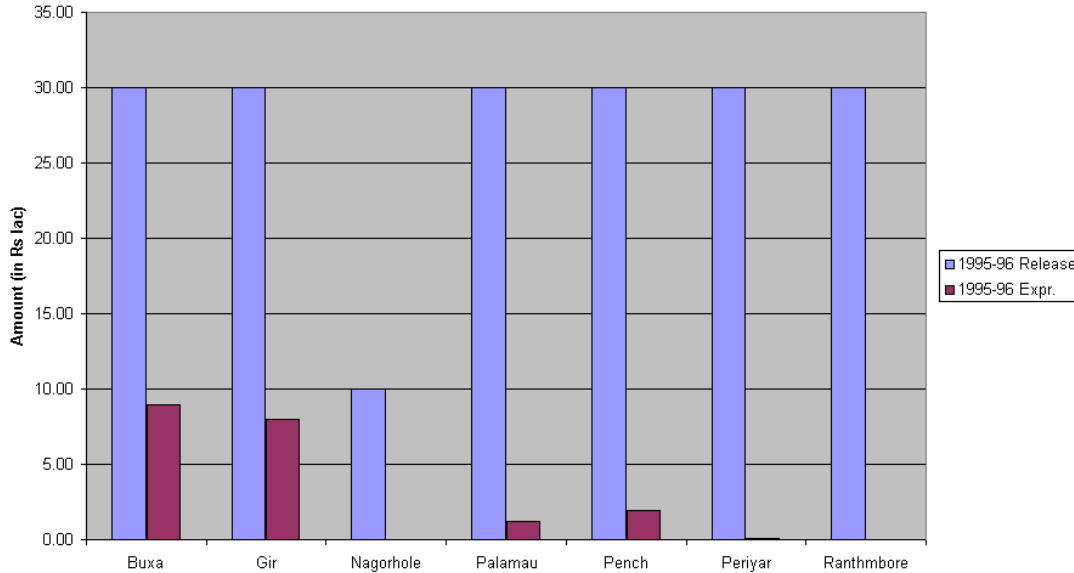
¹²⁴ This is a common phenomenon across all Government departments. The 25% expenditure is allowed so that delay in signing of the Finance Bill by the President does not bring the flow of money in the Government to a halt.

Annexure III

The following graphs showing the release of funds and expenditure out of those funds for seven National Parks under the India Eco-development Project from 1995-2003. The data depicted in the graph is provided in tables at the end of this Annexure.

India Ecodevelopment Project
Detail of Funds Release and their actual utilization in the States in 1995-1996

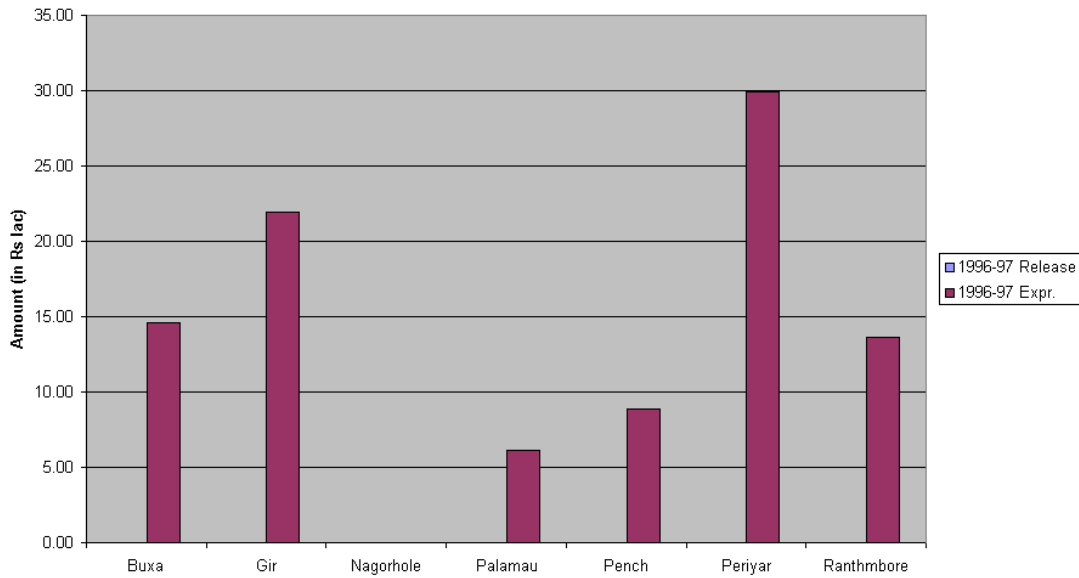
Source: Project Tiger Directorate, New Delhi.



In the initial year of the Indian Ecodevelopment Project, the released amounts and the amounts spent differ by a wide margin. This was due to delay in the Union Government's approval for the scheme. A delayed approval translated into a delayed receipt of funds by the National Parks. Thus, the Parks were unable to spend much as can be seen from the above graph.

**India Ecodevelopment Project
Detail of Funds Release and their actual utilization in the States in 1996-1997**

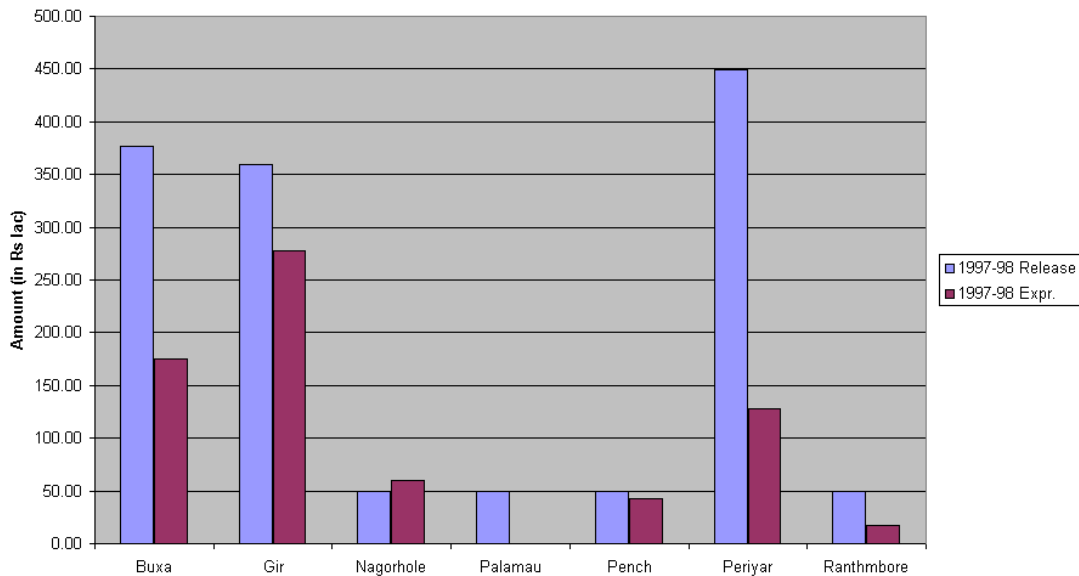
Source: Project Tiger Directorate, New Delhi.



This is the second year of the India Ecodevelopment Project. The graph shows that no money had been released during this year. This is essentially because the unspent balances from the previous were revalidated for this year.

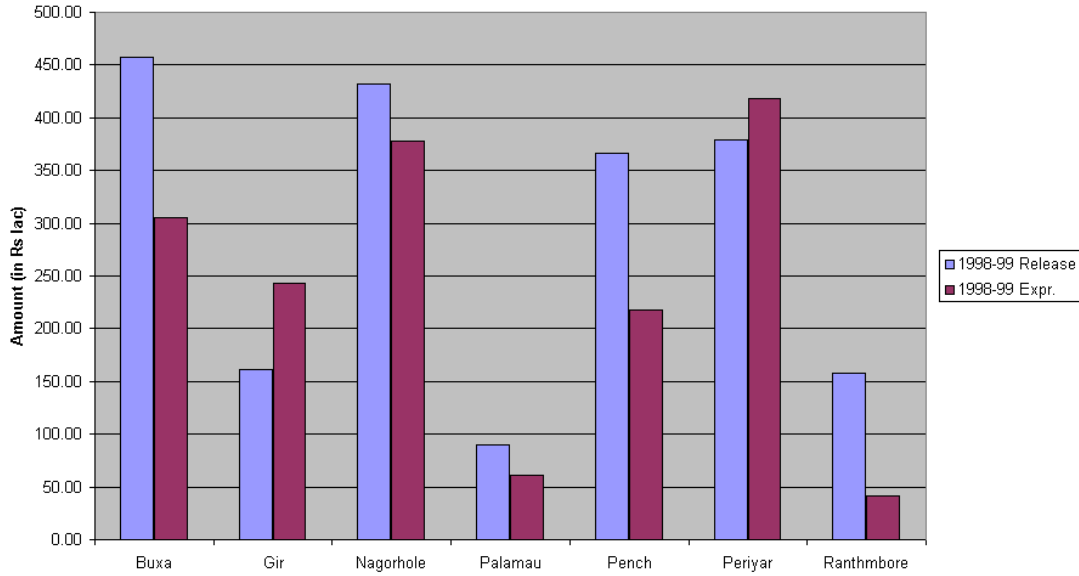
**India Ecodevelopment Project
Detail of Funds Release and their actual utilization in the States in 1997-1998**

Source: Project Tiger Directorate, New Delhi.



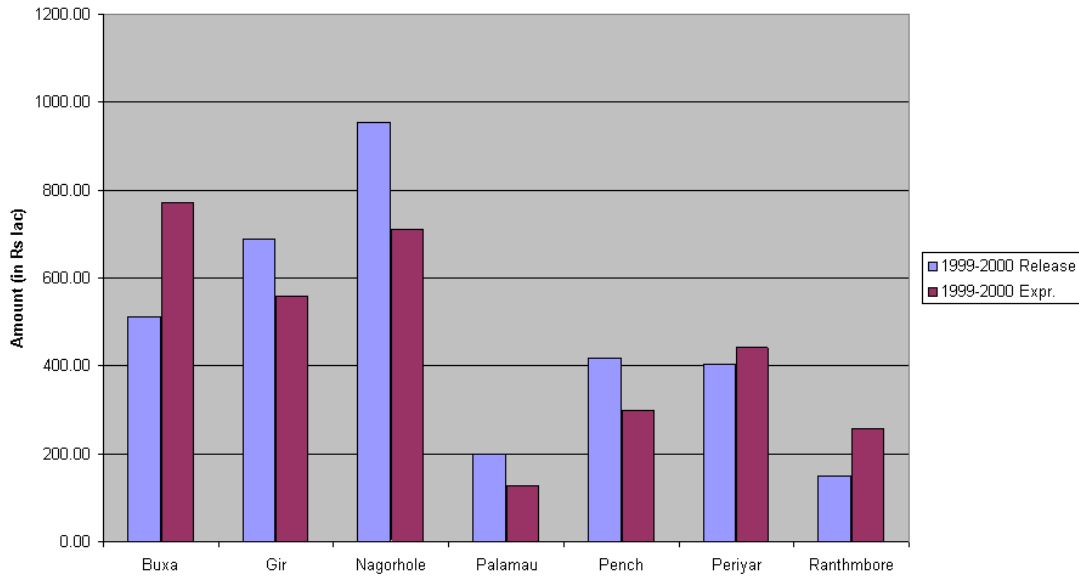
**India Ecodevelopment Project
Detail of Funds Release and their actual utilization in the States in 1998-1999**

Source: Project Tiger Directorate, New Delhi.



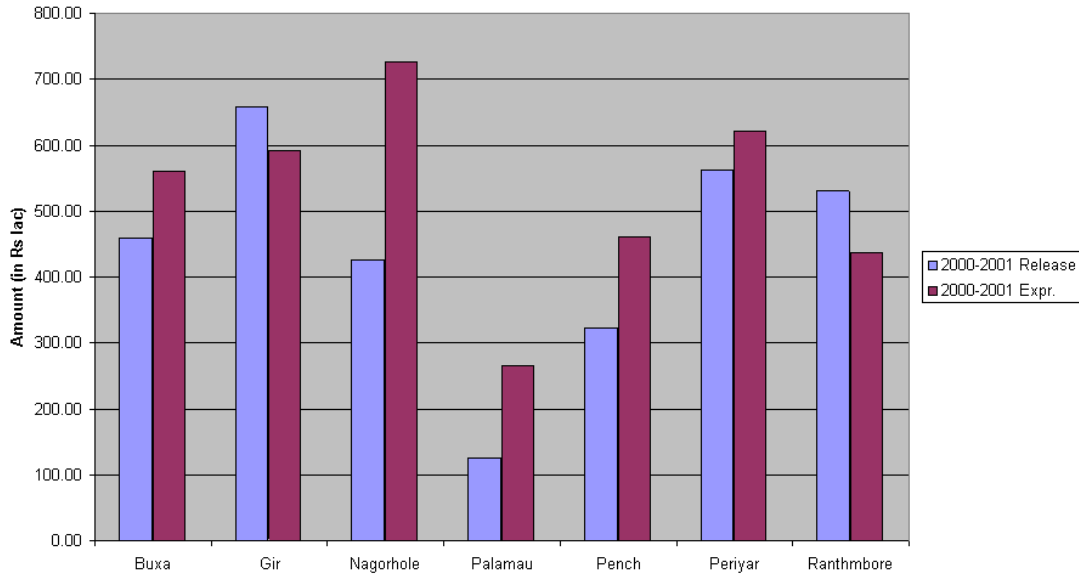
**India Ecodevelopment Project
Detail of Funds Release and their actual utilization in the States in 1999-2000**

Source: Project Tiger Directorate, New Delhi.



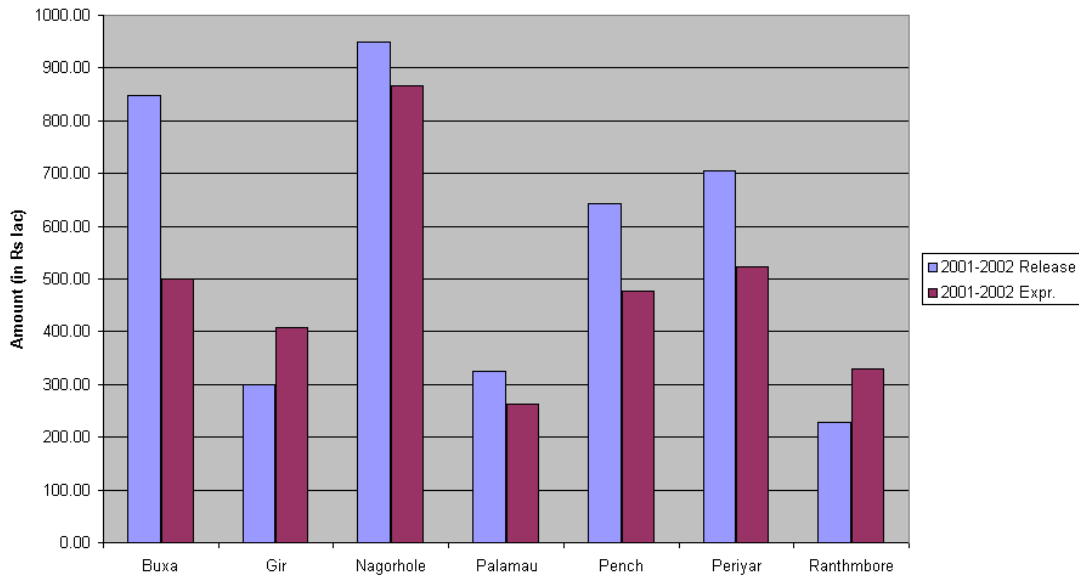
**India Ecodevelopment Project
Detail of Funds Release and their actual utilization in the States in 2000-2001**

Source: Project Tiger Directorate, New Delhi.



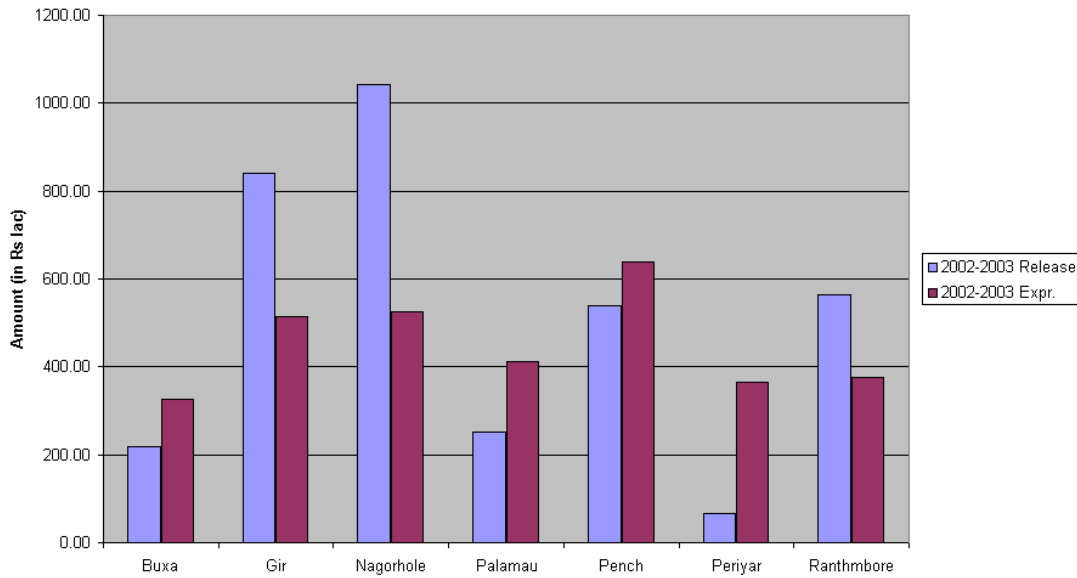
**India Ecodevelopment Project
Detail of Funds Release and their actual utilization in the States in 2001-2002**

Source: Project Tiger Directorate, New Delhi.



**India Ecodevelopment Project
Detail of Funds Release and their actual utilization in the States in 2002-2003**

Source: Project Tiger Directorate, New Delhi.



From the above graphs we see that Parks are almost never able to spend completely the funds allocated to them in a particular year.

There are also instances in the above graphs when a particular National Park spends more in a financial year than has been released to it. This is the case usually when a Park was unable to spend the amount sanctioned for it in the previous financial year. This amount is generally revalidated for the next year which is how the parks are able to spend, in a given year, more than what was sanctioned to them in the year.

Table II – A

Note- all figures in Rs lacs.

Parks	1995-96		1996-97		1997-98		1998-99	
	Release	Expr.	Release	Expr.	Release	Expr.	Release	Expr.
Buxa	30.00	8.94	0.00	14.56	377.00	174.61	457.70	305.40
Gir	30.00	7.98	0.00	21.90	360.00	278.22	161.00	242.90
Nagorhole	10.00	0.01	0.00	0.00	50.00	59.99	432.00	377.56
Palamau	30.00	1.25	0.00	6.11	50.00	0.00	89.99	61.15
Pench	30.00	1.96	0.00	8.89	50.00	42.84	365.87	217.44
Periyar	30.00	0.10	0.00	29.90	449.50	127.65	378.95	418.73

Ranthmbo re	30.00	0.00	0.00	13.63	50.00	17.64	158.00	41.47
Total	190.00	20.24	0.00	94.99	1386.50	700.95	2043.51	1664.65

Source: Project Tiger Directorate, Bikaner House, New Delhi.

Table II – B

Note- all figures in Rs lacs.

Parks	1999-2000		2000-2001		2001-2002		2002-2003	
	Relea se	Expr.	Release	Expr.	Release	Expr.	Release	Expr.
Buxa	512.80	771.06	459.39	560.96	848.63	500.56	217.38	NA
Gir	689.20	557.58	658.73	591.99	300.00	407.14	840.58	NA
Nagorhole	955.15	709.59	425.85	725.85	950.00	866.30	1042.33	NA
Palamau	200.00	126.79	125.00	265.38	325.67	262.09	252.39	NA
Pench	417.72	297.75	322.94	461.44	643.79	477.21	539.21	NA
Periyar	402.57	441.13	561.81	620.39	704.41	524.04	65.01	NA
Ranthmbo re	150.00	255.82	531.28	437.77	227.50	329.36	564.91	NA
Total	3327.4 4	3159.7 2	3085.00	3663.78	4000.00	3366.70	3521.81	NA

Source: Project Tiger Directorate, Bikaner House, New Delhi.

Table III – A

Note- all figures in Rs lacs.

1999-2000					
S. No.	Name of the Centrally Sponsored Scheme - India Ecodevelopme nt Project	Opening Balance at the beginning of the year	Total Release	Unspent Balance at the end of the year	Percentage of unspent balance to Opening Balance + Total release
1	RAJASTHAN	165.260	150.000	59.440	18.85
2	WEST BENGAL	361.196	512.800	102.936	11.78
3	MADHYA PRADESH	174.744	417.720	294.714	49.74

4	JHARKHAND				
	(+) Transferred from Bihar				
		101.485	200.000	174.699	57.95
5	GUJARAT	0.000	689.200	131.620	19.10
6	KERALA	282.070	402.570	243.510	35.57
7	KARNATAKA	54.440	955.150	300.000	29.72
	Total	1139.195	3327.440	1306.919	29.26

Table III – B

Note- all figures in Rs lacs.

2000-2001					
S. No.	Name of the Centrally Sponsored Scheme - India Ecodevelopment Project	Opening Balance at the beginning of the year	Total Release	Unspent Balance at the end of the year	Percentage of unspent balance to Opening Balance + Total release
1	RAJASTHAN	59.440	531.280	152.947	25.89
2	WEST BENGAL	102.936	459.390	1.366	0.24
3	MADHYA PRADESH	294.714	322.940	156.214	25.29
4	JHARKHAND				
	(+) Transferred from Bihar				
		174.699	125.000	34.323	11.45
5	GUJARAT	131.620	658.730	198.360	25.10
6	KERALA	243.510	561.810	184.930	22.96
7	KARNATAKA	300.000	425.850	0.000	0.00
	Total	1306.919	3085.000	728.140	16.58

Source: Project Tiger Directorate, Bikaner House, New Delhi.

Table III – C

Note- all figures in Rs lacs.

2001-2002					
S. No.	Name of the Centrally Sponsored Scheme - India Ecodevelopment Project	Opening Balance at the beginning of the year	Total Release	Unspent Balance at the end of the year	Percentage of unspent balance to Opening Balance + Total release
1	RAJASTHAN	152.947	227.500	51.087	13.43
2	WEST BENGAL	1.336	848.630	349.406	41.11
3	MADHYA PRADESH	156.214	643.790	322.794	40.35
4	JHARKHAND			97.903	
	(+) Transferred from Bihar			174.704	
		34.323	325.670	272.607	75.73
5	GUJARAT	198.360	300.000	91.220	18.30
6	KERALA	184.930	704.410	365.300	41.08
7	KARNATAKA	0.000	950.000	83.700	8.81
	Total	728.110	4000.000	1536.114	32.49

Source: Project Tiger Directorate, Bikaner House, New Delhi.

Annexure IV

The various aspects of a tiger's pugmark that are looked at to distinguish one tiger from another are (Jhala, Y.N and Q. Qureshi, 2005):

1. Area of Toe 3
2. Length Toe 3
3. Pug width
4. Distance for T2 to T3
5. Angle between T2 & T3
6. Distance between N1 & N2
7. Length T2
8. Heel to toe length
9. Distance of pad to toe base
10. Stride
11. Straddle

Annexure V

Table IV

No	Name of Tiger Reserve	Infrastructure	Funds	Poaching	Encroachment	Grazing	Human Conflicts
1	Bandhavgarh	Problems	Problems	Problems	No Problems	Problems	Problems
2	Bandipur-Nagahole	Problems	Problems	Problems	No Problems	No Problems	Problems
3	Bhadra	No Problems	Problems	Problems	No Problems	No Problems	Problems
5	Buxa	Problems	No Problems	No Problems	No Problems	Problems	Problems
6	Corbett	Problems	Problems	No Problems	Problems	No Problems	Problems
7	Dampha	Problems	Problems	No Problems	No Problems	No Problems	No Problems
8	Dudhwa	No Problems	Problems	Problems	Problems	Problems	Problems
9	Indravati	Problems	Problems	Problems	No Problems	Problems	No Problems
10	Kalakad-Mundanthurai	Problems	Problems	Problems	Problems	Problems	Problems
11	Kanha	No Problems	Problems	No Problems	No Problems	No Problems	No Problems
12	Manas	Problems	Problems	Problems	Problems	No Problems	Problems
13	Melghat	No Problems	Problems	No Problems	No Problems	No Problems	Problems
14	Nagarjunsagar	Problems	Problems	Problems	Problems	Problems	No Problems
15	Namdapha	Problems	Problems	Problems	Problems	Problems	Problems
16	Pakhui-Nameri	Problems	Problems	Problems	No Problems	Problems	Problems
17	Palamau	Problems	Problems	Problems	No Problems	Problems	Problems

18	Panna	No Problems	Problems	Problems	No Problems	Problems	Problems
19	Pench (Maharashtra)	Problems	Problems	Problems	Problems	Problems	Problems
20	Pench (MP*)	Problems	Problems	Problems	No Problems	Problems	Problems
21	Periyar	No Problems	Problems	No Problems	No Problems	No Problems	Problems
22	Ranthambhore	Problems	Problems	Problems	Problems	Problems	Problems
23	Sariska	Problems	Problems	Problems	Problems	Problems	Problems
24	Similipal	Problems	Problems	Problems	Problems	Problems	Problems
25	Sunderbans	Problems	Problems	Problems	No Problems	Problems	Problems
26	Tadoba-Andhari	Problems	Problems	Problems	No Problems	Problems	Problems
27	Valmiki	Problems	Problems	No Problems	No Problems	No Problems	Problems

Source: Project Tiger Status Report 2001.

- MP stand for Madhya Pradesh

Annexure VI

Table V

No.	Name of Tiger Reserve	Total area (In Sq. Kms.)	Staff Problems	Sanctioned	Vacant	Percentage of Total Posts Vacant	Area manned by a single staff	Comments
1	Bandhavgarh	1162	Yes	--	--	--	--	(1)
2	Bandipur Nagahole	1508	Yes	231	74	32.03	6.53	
3	Bhadra	492	Yes	59	15	25.42	8.34	
4	Buxa	759	Yes	--	--	--	--	(2)
5	Corbett	1316	Yes	446	95	21.30	2.95	(3)
6	Dampha	500	Yes	35	9	25.71	14.29	(4)
7	Dudhwa	1362	Yes	326	119	36.50	4.18	(5)
8	Indravati	2799	Yes	147	35	23.81	19.04	
9	Kalakad-Mundanthurai	800	Yes	210	44	20.95	3.81	(4)
10	Kanha	1945	Yes	316	14	4.43	6.16	
11	Manas	2840	Yes	471	158	33.55	6.03	
12	Melghat	1677	Yes	185	17	9.19	9.06	(6)
13	Nagarjunsagar	3568	Yes	210	51	24.29	16.99	
14	Namdapha	1985	Yes	22	11	50.00	90.23	(7)
15	Pakhui-Nameri	1206	Yes	--	--	--	--	
16	Palamau	1026	Yes	292	107	36.64	3.51	
17	Panna	542	Yes	--	--	--	--	(4)
18	Pench(Maharashtra)	257	Yes	--	--	30	--	
19	Pench(Madhya Pradesh)	758	Yes	47	24	51.06	16.13	
20	Periyar	777	Yes	112	12	10.71	6.94	(4)

21	Ranthambhore	1334	Yes	214	20	9.35	6.23	(8)
22	Sariska	866	Yes	108			8.02	(9)
23	Similipal	2750	Yes	138	25	18.12	19.93	(10)
24	Sunderbans	2585	Yes	268	63	23.51	9.65	
25	Tadoba-Andhari	620	Yes	158	15	9.49	3.92	(11)
26	Valmiki	840	Yes	97	45	46.39	8.66	

Source: Project Tiger Status Report 2001

- (1)- Staff comprises of local people. Some of them are connected to timber thieves
- (2) Severe shortage of staff
- (3) Shortage primarily in frontline staff
- (4) Staff not trained
- (5) Ban on recruitment by State Government in Observance of High Court order
- (6) Training is severely lacking. Only 2 of 7 Range officers are trained.
- (7) Of the 11 serving field staff, 3 are women unfit for work.
- (8) Staff is uneducated and untrained. It is difficult to delegate tasks requiring education/training.
- (9) Management finds it difficult to administer the Park with inadequate frontline staff.
- (10) Families of staff are neglected totally. Staff is often assaulted.
- (11) The Government of India had sanctioned 50 posts which had not been sectioned by the Government of Maharashtra

The figures for sanctioned posts and vacant posts given above may be different for different National Parks. In case of some parks the figures include administrative and field staff while for others the figures may represent only field staff.

To arrive at the minimum figures for area manned by a forest guard, the **assumption is that all posts are field posts**. Thus, in the calculations administrative staff of some parks may have also been counted as a field staff. This **increases the denominator and thus understates the minimum area manned by a field staff**.

Annexure VII

Table VI

POPULATION OF TIGERS IN THE TIGER RESERVES AS REPORTED BY THE STATES									
S.NO.	NAME OF RESERVE	1972	1979	1984	1989	1993	1995	1997	2001-02*
1.	BANDIPUR (KARNATAKA)	10	39	53	50	66	74	75	82
2.	CORBETT (UTTARANCHAL)	44	84	90	91	123	128	138	137
3.	KANHA (MADHYA PRADESH)	43	71	109	97	100	97	114	127
4.	MANAS (ASSAM)	31	69	123	92	81	94	125	65*
5.	MELGHAT (MAHARASHTRA)	27	63	80	77	72	71	73	73
6.	PALAMAU (JHARKHAND)	22	37	62	55	44	47	44	32
7.	RANTHOMBORE (RAJASTHAN)	14	25	38	44	36	38	32	35
8.	SIMILIPAL (ORISSA)	17	65	71	93	95	97	98	99
9.	SUNDERBANS (WEST BENGAL)	60	205	264	269	251	242	263	245
10.	PERIYAR (KERALA)	-	34	44	45	30	39	40	36
11.	SARISKA (RAJASTHAN)	-	19	26	19	24	25	24	22
12.	BUXA (WEST BENGAL)	-	-	15	33	29	31	32	31
13.	INDRAVATI (MADHYA PRADESH)	-	-	38	28	18	15	15	29
14.	NAGARJUNASAGAR (ANDHRA PRADESH)	-	-	65	94	44	34	39	67
15.	NAMDHAPA (ARUNACHAL PRADESH)	-	-	43	47	47	52	57	61
16.	DUDHWA (UTTAR PRADESH)	-	-	-	90	94	98	104	76*
17.	KALAKAD (TAMIL NADU)	-	-	-	22	17	16	28	27
18.	VALMIKI (BIHAR)	-	-	-	81	49	N.R.	53	53
19.	PENCH (MADHYA PRADESH)	-	-	-	-	39	27	29	40
20.	TADOBA (MAHARASHTRA)	-	-	-	-	34	36	42	38
21.	BANDHAVGARH (MADHYA PRADESH)	-	-	-	-	41	46	46	56
22.	PANNA (MADHYA PRADESH)	-	-	-	-	25	22	22	31
23.	DAMPHA (MIZORAM)	-	-	-	-	7	4	5	4

24.	PENCH (MAHARASHTRA)	-	-	-	-	-	10(1994)	-	14
25.	BHADRA (KARNATAKA)	-	-	-	-	-	-	-	35
26.	PAKHUI - NAMERI (ARUNACHAL PRADESH- ASSAM)	-	-	-	-	-	-	-	26 Nameri
27.	BORI-SATPURA- PACHMARI (MADHYA PRADESH)	-	-	-	-	30	-	-	35
	Total	268	711	1121	1327	1366	1333	1498	1576

Source: Project Tiger Website (Project Tiger, 2005. *Population of Tigers in India*. [webpage on Project Tiger Website]. New Delhi: Project Tiger Directorate, Ministry of Environment and Forests, Government of India. Last accessed on July 10, 2005. Available at <http://projecttiger.nic.in/populationinindia.htm>.)

N.R. - Not Reported by States

* Tiger census was not carried out in North East States in 1997.

** Under vetting

*** Only for Namdapha Tiger Reserve

Table VII

POPULATION OF TIGERS IN THE TIGER RESERVES AS REPORTED BY THE STATES									
S.NO.	NAME OF RESERVE	1972	1979	1984	1989	1993	1995	1997	2001-02*
1.	BANDIPUR (KARNATAKA)	10	39	53	50	66	74	75	82
2.	CORBETT (UTTARANCHAL)	44	84	90	91	123	128	138	137
3.	KANHA (MADHYA PRADESH)	43	71	109	97	100	97	114	127
4.	MANAS (ASSAM)	31	69	123	92	81	94	125	65*
5.	MELGHAT (MAHARASHTRA)	27	63	80	77	72	71	73	73
6.	PALAMAU (JHARKHAND)	22	37	62	55	44	47	44	32
7.	RANTHOMBORE (RAJASTHAN)	14	25	38	44	36	38	32	35
8.	SIMILIPAL (ORISSA)	17	65	71	93	95	97	98	99
9.	SUNDERBANS (WEST BENGAL)	60	205	264	269	251	242	263	245
10.	PERIYAR (KERALA)	-	34	44	45	30	39	40	36
11.	SARISKA (RAJASTHAN)	-	19	26	19	24	25	24	22

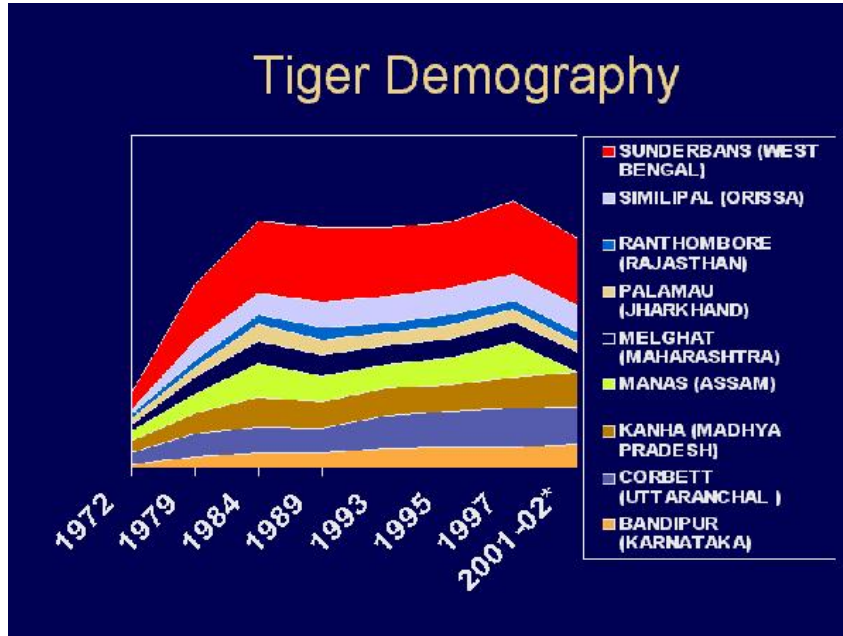
12.	BUXA (WEST BENGAL)	-	-	15	33	29	31	32	31
13.	INDRAVATI (MADHYA PRADESH)	-	-	38	28	18	15	15	29
14.	NAGARJUNASAGAR (ANDHRA PRADESH)	-	-	65	94	44	34	39	67
15.	NAMDHAPA (ARUNACHAL PRADESH)	-	-	43	47	47	52	57	61
16.	DUDHWA (UTTAR PRADESH)	-	-	-	90	94	98	104	76*
17.	KALAKAD (TAMIL NADU)	-	-	-	22	17	16	28	27
18.	VALMIKI (BIHAR)	-	-	-	81	49	N.R.	53	53
19.	PENCH (MADHYA PRADESH)	-	-	-	-	39	27	29	40
20.	TADOBA (MAHARASHTRA)	-	-	-	-	34	36	42	38
21.	BANDHAVGARH (MADHYA PRADESH)	-	-	-	-	41	46	46	56
22.	PANNA (MADHYA PRADESH)	-	-	-	-	25	22	22	31
23.	DAMPHA (MIZORAM)	-	-	-	-	7	4	5	4
24.	PENCH (MAHARASHTRA)	-	-	-	-	-	10(1994)	-	14
25.	BHADRA (KARNATAKA)	-	-	-	-	-	-	-	35
26.	PAKHUI - NAMERI (ARUNACHAL PRADESH-ASSAM)	-	-	-	-	-	-	-	26 Nameri
27.	BORI-SATPURA-PACHMARI (MADHYA PRADESH)	-	-	-	-	30	-	-	35
	Total	268	711	1121	1327	1366	1333	1498	1576

Source: Project Tiger Website (Project Tiger, 2005. *Tiger population in States*. [webpage on Project Tiger Website]. New Delhi: Project Tiger Directorate, Ministry of Environment and Forests, Government of India. Last accessed on July 10, 2005. Available at <http://projecttiger.nic.in/populationinstate.htm>.)

* Under Compilation/vetting

The graph below shows the tiger populations for the period 1972-2001 in the 9 reserves that were created at the inception of Project Tiger.

Fr



The graph above shows a drastic rise in tiger populations in the initial years of Project Tiger. The rate of increase in populations reaches a plateau in around 1984. This plateau lasts till 1997 after which tiger populations start declining. One can assume that the plateau, since it had lasted for a period of approximately 12 years (1984-1997), represents the maximum sustainable population that the respective National parks could have supported. Post 1997 the populations start declining. This is a matter of grave concern as the tiger is an endangered species that, being at the top of the food chain, is crucial to the ecosystem in which it inhabits.