

Down To Earth



Kyoto Protocol is law

Wasted: inland wetlands

Ever eaten eronba?

Maneaten

When news that there were no tigers in Sariska Tiger Reserve, Rajasthan, hit national headlines, RITU GUPTA went fact-finding: what exactly was happening there?

What she found was: a blame-game between foresters and villagers; a science that instead of pinning tiger-numbers down creates imaginary animals; an officialdom, unconcerned and in absolute denial; of course, no tigers

In September 2004, a group of students from the Wildlife Institute of India (WII), Dehradun, went to the Sariska Tiger Reserve of Rajasthan for training. Excited about their work, they painstakingly trekked through the hilly 866 square kilometres (sq km) reserve. They couldn't spot a single tiger. Alarmed, they informed A J T Johnsingh, dean, department of animal ecology and conservation biology, WII. The wildlife network galvanised itself and soon the national media was howling out a question: where were the tigers?

The last census the Sariska field directorate conducted was in May 2004. The census revealed 16-18 tigers, plummeting from 25-28 tigers in 2003. "Tigers were last spotted by officials on November 28, 2004," said Priya Ranjan, deputy conservator of forests, Sariska. Was the vanishing act an annual affair? "No. One or two sightings are common throughout the year," Ranjan admitted. So what happened this year? The big cats couldn't have been decimated by disease, for no carcasses were found. The Union ministry of environment and forests — which spearheads Project Tiger, spread over 27 reserves in the country, including Sariska, in 2003 — has ordered an intensive combing exercise from February 1-15, 2005. *Down To Earth*, too, wanted answers.

So we visited Sariska, to meet villagers living there: what did these insiders think had happened? We visited villages Dabli, Umri and Deori; villages Kakvaadi, Peelapani, Beravaas, Kushalgarh and Kucha; villages Rajore, Nathusaar, Silli Bawari and Khaareda and townships Rajgarh, and Tehla; and Mandalwas, Akbarpur and Kalikhhol (see map). In most places, villagers endorsed what everyone feared: they aren't any tigers left in Sariska. It was a bleak chorus: "Lax attitude killed the *naars* (tigers)." Said Kajori Mai of Mandalwas village, "*Naar kha se meeloge. Naar to afsar ke peta mei hai.*" (How can tigers

be spotted? They were killed, to satiate officers' greed).

Umri village, in core I, is densely forested, and far away from the *pucca* road. Most of its residents survive by selling milk in nearby areas. At first, they shied away. "The forest department is harassing us day after day. If we tell you anything, we will be troubled," said Badami, a 50-year-old. But after assurances to the contrary, people opened up. "At present, four people from the village are helping the department in its tiger hunt. But not even a single pugmark has been found," said Sultan. Shravan, a youngster, had another opinion: "God knows why the forest department is making a hulla-

baloo, when they know that the tiger population has been very low since the past few years. *Ek naar ko panch naar bana dete hai!* (they turn one tiger into 5!)" 70-year-old Parvati summarised Umri's feelings: "We haven't even heard their roar for the past six months. The forest department is responsible for the ruin."

A visit to the nearby *naka* (forest outpost) confirmed what villagers said. Three guards were diligently at work: one making *chai*, another chopping *palak* and the third sweeping the floor. At a time when a 'gruelling combing drive' of the forest department was on! Questioned on this, one of the guards (identity withheld) said: "We do occasional patrolling. Whenever there is firing, we go out and check. But obviously poachers never fire near a *naka*. Moreover, monitoring is risky — eight years ago,

a guard from this *naka* disappeared, suddenly. Nobody knows what happened to him." Another guard further revealed: "How can we fight hunters when they all have guns, and we just have *lattis*? It's better to sit in the *naka*." As a guard in the Kalighati *naka* puts it. "Today there is a hullaabaloo. Last year we had told our seniors about the sudden drop in population, but nobody listened to us. There were around 10 tigers, down



ANANDA BANERJEE / CSE



IMAGING: MRIDUL

from 25. But nobody investigated: 10 tigers could have been saved. Poaching is bound to happen. Some *nakas*, situated where maximum infiltration can take place, remain closed. What can one expect?"

The least one can expect is that Sariska should be treated as a reserve. But today, anybody can enter at will. Every Tuesday and Saturday, entry is free for those visiting the Pandupole temple inside. Also, state highway number 13 (Alwar to Jaipur) runs for about 30 kilometres through the reserve, and traffic here has killed many animals. A detour had been made, but locals, aided by local politicians, have filed a lawsuit against the state government in the Thanagazi district court. "Accidents kill lots of animals. Four years ago, a tiger died at the gate of our hotel," said Mahendra Sharma of the RTDC Hotel Tiger Den, Sariska. In such conditions, is it not easy to poach? "Yes," admitted Seturam Yadav, assistant conservator of forests (ACF), Sariska Tiger Reserve. "However, the reserve does not suffer

because of poaching. I am sure there are tigers," he added.

Villagers don't share his confidence. "Our animals have not been eaten by tigers for the past six months. How can the tigers survive? In the wild, numbers of *nilgais* — a pet prey — has increased," said Kamli Devi of Peelapani village. If a tiger existed around Peelapani, villagers pointed out, they would know: it would have visited their check dam, the only source of water here. Pada baba of Mandalwas village was hopeful: "Maybe the tigers have migrated to nearby jungles." Pure wishful thinking, others said. "Had they migrated," said Pallaram Meena of Silli Bawari, "Other places would have shown signs of increase in tiger population. Why would they go elsewhere? There is enough water and prey in Sariska." Pallaram is right. 404 indigenous and naturalised plant species, 272 genera of 87 families, are found here. Sariska is also famous for leopard, cheetal (spotted deer), sambar and *nilgai*.

There is no water scarcity, thanks to bubbling check dams constructed over years. The fields are green, livestock healthy. In such conditions, tigers can surely survive.



MAP: SHRI KRISHAN

"They have been poached"

This correspondent was fortunate to land up at an informal meeting of 35 people at a house in village Ramji ka guwada. When questioned, people were sure. "No point talking about missing tigers; they have been poached." According to them, the forest department conducts a census for the heck of it. "They even assume the pugmark of an old panther — similar to a tiger's — as a tiger's," said Govind Ram of Gooli ka guara village.

Other problems plague Sariska, people said. "A Rs 50 note can enable anyone to take a truck of wood from the forests," said Meena. Official apathy is what concerned a guard at Kundla Ckowi. "Just to please seniors," he said, "Guards create new impressions from old ones. Our research officials have very little clue about differences in pugmarks." He should know; he's been working here since 1981. Even when a *naka* reports poaching, nothing happens: "On our own, we can't do anything. We have to inform the directorate. By the time the requisite force is mustered up, the poachers escape," he said.

Conflicting interests

On February 15, 2005, a meeting of the Sariska Suraksha Samiti — comprising villages from all parts of Sariska — convened. In it, both villagers' exasperation and authorities' tedium were apparent. Said Ramjilal Choubey of Gekar village: "On January 15, 2005, I saw a car of a Bhartiya Janta Party politician entering the reserve. One person had a big gun. But they were allowed to

A ramshackle outpost at Umri, Sariska (below), signifies non-management. Its effect (right)



enter. What is this? If animals are missing, isn't poaching to blame?" Quickly countered ACF Yadav: "Hunters don't come by parachute. They obviously get local support. It is the moral responsibility of the villagers to inform us." Replied Choubey: "The administration is thinking of taking steps after so much damage has been done." Added Bhagwan Meena of village Anara: "First you get the tigers killed, and now you are asking us to find them. *Praja kya kare jab raja hi chor ho!*" Yadav couldn't refute villagers at the meeting. But later, he declared to this correspondent: "Villagers are to be blamed. Because of them, the habitat has got disturbed. They even aid poachers."

According to Yadav, the biggest constraint is staff shortage. A fund crunch in 1986 caused the Rajasthan government to ban recruitment in almost all departments. Result: a single



REUTERS

guard patrols 7.5-10 sq km of forest. Sariska needs 5,729 forest guards, but only 3,666 have been sanctioned. Of this, only 3,216 are actually working. Further, staff quality is questionable. On October 29, 1991, the Supreme Court had passed an order stating all daily wage employees, who had completed either two or 10 years of service before 1989, were to be made (respectively) semi-permanent or permanent. "Many daily wage workers got false certificates about their age. Hence, those who are 50 years old in our records are actually 70 or even 80 years old," asserted Yadav.

The reserve lacks infrastructure. As per the Sariska directorate's status report of 2000, there was only one revolver and four guns to save Sariska! The reserve's recurring expenditure in 1999-2000 was Rs 94 lakh; non-recurring Rs 93 lakh. In the same period, about Rs 37 lakh was collected as entrance fee. So money isn't a problem.

What, then, is?

First, the fact there is a crisis. "During our recent combing exercise, we have found evidence of tigers," said Arun Sen, the Rajasthan's chief wildlife warden. Asked about poaching, he replied: "There is a possibility, as the park is open from all sides. But we cannot do anything, on humanitarian and religious grounds." Then why waste lakhs every year? "Money is not wasted. We have constructed many waterbodies that have increased the moisture level of the area," said Sen. But when all the animals are poached, how will the moisture level help?

At Sariska, officials are kicking up a huge fuss. But, as was clear to this correspondent, it wasn't about protecting tigers.

Imaginary tigers



REUTERS

The pugmark method of counting tigers is all wrong

The Sariska scam reveals the tiger census is a lie. It is a lie because the method it is based on — counting by tracking pugmarks — is inadequate. The Union government has no role in the tiger census, despite being the main funding body. More appallingly, state forest departments do not keep records of a drop in tiger population. “How do you expect us to conduct research about missing tigers, when we have others things — such as tourism — to take care of?” declares Arun Sen, chief wildlife warden, Rajasthan.

For the past 30 years, India’s wildlife officials have used only the pugmark method to monitor tiger populations. Invented in 1966 by Indian forester S R Choudhury, the method requires thousands of people to fan out across jungles for a 1-2 week period every year, searching for tiger tracks. Once located, plaster casts (or tracings) are taken of the left hind paw. Pugmarks so collected are then compared to identify individual tigers. Cross-comparisons among census blocks and reserves refine the identifications. And so comes about what is called a reliable estimate tiger numbers in India.

The method presupposes the following: in a given area, adult male and female tigers do not belong to the same species; tigers live in pairs; transient (non-breeding) tigers

reside in marginal habitats, away from core breeding areas; and, tiger populations at higher densities have a relatively lower proportion of transient tigers. On this basis, it is assumed that the probability of the tracks of the same tiger being found in different counting units is negligible, so avoiding multiple counts.

But this inference is wrong, shows a 2003 review paper, ‘*Science deficiency in conservation practice: the monitoring of tiger populations in India*,’ published in the journal *Animal Conservation* by the Zoological Society of London. Researchers from India, Nepal and the US marshalled the review. After analysing scientific data on tiger ecology, they found tigers are polygynous and do not form pair bonds. Although breeding tigers may occupy exclusive ranges in some high-density areas, neighbours intensively use the same travel routes. In other areas, overlap between individuals is considerable. In low tiger density areas, even breeder ranges show large overlaps. More importantly, adult male ranges spatially overlap two-six breeding territories. Thus, the pugmark census is not scientific.

The paper further states: India’s tiger habitat extends over 300 million hectares. But in reality, only an unknown fraction of this area is intensively searched.

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example, only about 30,000 hectares out of the total three lakh hectares of the Namdapha tiger reserve was covered in the 1996 census.

The 2003 review paper cites other difficulties: in some areas, like the Western Ghats and north-eastern hills, substrate (soil layer) conditions and terrain hinder track location. For instance, a study in the Nagarahole reserve in Karnataka — it has a high tiger density; 12 per 10,000 hectares — showed pug-marks were often impossible to detect along many tiger routes because of inappropriate substrates; but other methods such as radio-telemetry and camera trapping showed intensive tiger movements in these routes.

Also, lifting footprints from a firm substrate overlaid with dust or sand is an essential pre-condition to get an accurate pug-mark. But such ideal soil conditions do not occur in most areas. So, artificial track-plots (called pug impression pads) are often laid out. But these track-plots often do not work due to practical problems: lack of suitable soil in the vicinity, the logistical problem of transporting soil, and the effects of rain, wind or animal movement. For example, the track plots observed in Namdapha during the 1996 pugmark census were made from the wrong soil type.

The paper questions the census on another account: "Field mangers initially reported an increase in tiger population in 1994, despite mounting evidence of deteriorating reserve protection and increasing poaching pressure. In response, the authorities of Project Tiger arbitrarily reduced the census tally by 750 tigers, to instil a sense of crisis among field officials. Although the situation has not improved greatly thereafter, recent pugmark censuses are once again reporting increasing tiger numbers."

This is obviously a case of inflating numbers. Why do that? Funding? "No, that's not a problem. Funding is always available because of the generous bureaucracy. Wrong census figures can be attributed to lax attitude. Officials are hardly interested in working in the fields, and the method leaves a lot of

Lifting footprints from a firm soil layer is essential to an accurate pugmark. But often, ground conditions defeat such intentions



ANANDA BANERJEE / CSE

Reliable methods to count tigers

RADIO COLLARING: This entails tranquillising the tiger first, often from the back of an elephant, after basing the dose on the animal's size. After sedation, a radio-collar is fitted. The signals emitted from the collar are picked up through a hand-held antenna, which helps locate the tiger. The normal life of the antenna's battery is three years. This is the best method to track tigers throughout the year.

THE CAMERA TRAP METHOD: Infra-red cameras are placed around waterholes. Presence of any animal in the area triggers off the camera. On the basis on the photographs, the tigers' stripes are analysed. As the tigers' have different patterns of stripes, each one is given a particular tag.

PREY-PREDATOR MATHEMATICAL RELATIONSHIP: K Ullas Karanth and N Samba Kumar from Wildlife Conservation Society, Bangalore, along with William A Link, William E Hines and James D Nichols from the us Geological Survey have developed a mathematical model that predicts populations of predators such as tigers on the basis of the abundance of their prey.

The model was tested using data from a landscape-scale long-term field study that estimated tiger and prey densities in 11 ecologically diverse sites in India. This model can be used to verify field study results.

REGISTRATION METHOD: As per this method, photographic records of individual tigers are kept over a period of time. Their presence is checked periodically; if an animal is found missing, it indicates a loss.

"If one field director has given a number (of tigers), the subsequent one can't give a lower one. If he did, it means more hassles"

— Rajesh Gopal, director, Project Tiger, Union ministry of environment and forests

scope for fudging, as its rate of error is very high," says R S Chundawat, an independent wildlife researcher.

Is no wildlife manger interested in telling the right numbers? Explains Rajesh Gopal, director of Project Tiger, Union ministry of environment and forests: "If one field director has given a number of 22 tigers, then the subsequent one can't give a lower number. If he did, it means more hassles. Who wants them? Moreover, to know there is a problem, one has to go to the field. How many of our top wildlife mangers bother do that. Most prefer to sit in air conditioned rooms and watch television." Has Gopal tried to rectify the situation in his three-year tenure? "We were following the pugmark method till now because it is cost-effective. But this means that science is missing from tiger conservation efforts. We have now evolved a programme to tiger population using the Global Imaging Satellite System." But this could take time; what happens in the interim?

Experts say that understanding the population dynamics of a species in decline is central to putting in place recovery practices. "Only in India we try to know the exact numbers, and get into trouble. There is no need to know the exact number. You can help tigers by assessing their abundance," says Johnsingh.

They also say that using a single method countrywide is bad thinking. "There is nothing wrong with the pugmark method, but the

Indian government has over-abused it. It primarily is an indicator of the tiger population, and not the best way to judge exact numbers," says Johnsingh. "The choice of census method should, most importantly, depend on population densities and the terrain," feels Qamar Qureshi, reader, department of landscape level planning and management, WII. In a high-density area, where protection is good, camera traps can be used to estimate numbers. In a terrain with good substrate, and where tiger numbers are less, the pugmark method is quite reliable. Otherwise — where substrate and terrain are bad, and tiger density high — the method fails.

Forget numbers

Wildlife management does not necessarily entail knowing exact animal numbers. It's more about protecting them and their habitat. At present, Project Tiger claims there are 1,576 tigers in its reserves. This figure looks high; it gives the sense that these animals are 'safe'. For this very reason, it is

misleading. Fudged census apart, this is an aggregation of hundreds of populations, most of which are small and isolated, and so highly vulnerable.

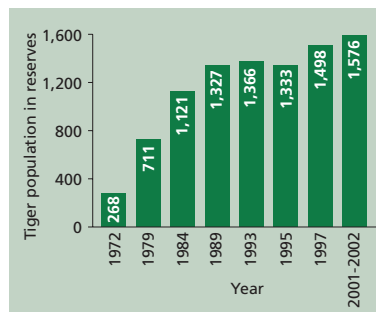
As per an analysis conducted by Chundawat, and Neel Gogate of the World Wildlife Fund, tigers have mostly disappeared from 70 per cent of their original habitat in semi-arid forests and from 35 per cent of dry tropical forests. These two habitats together form the largest (over 45 per cent) tiger habitat in India. If this trend continues, they assert, lots of India's tigers will stare extinction in the face.

During their research in the Panna Tiger Reserve, Madhya Pradesh, Chundawat and Gogate found the survival of tiger populations depends more on the size of the breeding population. Any tiger population is a mix of territorial (breeding) and non-territorial (transient, non-breeding) individuals. The former remain constant; the latter fluctuate.

In a typical tiger population, territorial/breeding types are proportionally smaller. The viability of this population

Fudged?

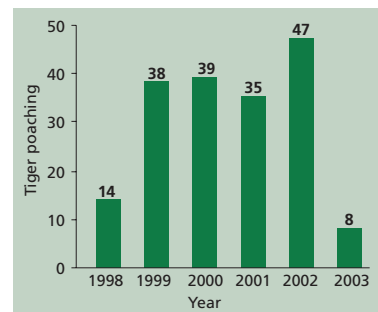
How many tigers really exist?



Source: projecttiger.nic.in as viewed on February 25, 2005

Fudged, too?

How many tigers disappear?



depends on how large or small this proportion is. For example, in a population of 100 tigers, if only 10 per cent are breeding, the population may not be viable in the long run, despite being large: the larger proportion of fluctuating non-territorial tigers contribute little to viability. "To save a tiger population in the wild," they conclude, "The park management needs to create conditions suitable for maintaining an appropriate proportion of territorial tigers. A preliminary analysis of our data indicates that a minimum of nine female (breeding) territories would keep Panna's population of 35 tigers viable."

The researchers also observed that in two adjoining female territories, the tigress' responses differed. One had high prey density, water and no disturbance. The tigress here had a 100 per cent success rate in raising 11 cubs. The neighbouring one, in a disturbed territory with uneven resource distribution, had only 39 per cent success rate in raising her cubs.

Mere counting means nothing. Can conservation science please reach the tiger?

The Sariska scam

Exists countrywide

In Ranthambore this year, up to 18 tigers are missing. On February 2, 2005, the Delhi Police seized 39 leopard skins, 42 otter skins, and two tiger skins. Did they belong to Sariska? Today, Project Tiger cannot fulfil even its limited objective: ensure a viable tiger population by containing factors that contribute to decline in population.

Forest departments countrywide lack the human-power and infrastructure to fight poaching, despite the substantial Project Tiger budget. The 10th five-year plan earmarks Rs 150 crore for it, up from Rs 70 crore in the 9th five-year plan. In 2001-2002, the Union government released Rs 19.4 crore to states to implement the project. But very little percolates to the field. Every year, Central funds are returned unutilised from many reserve forests, because states do not cough up their share. "Some states like Bihar, Assam and Tamil Nadu are a problem. Other states release funds, but the delay is so much that most cannot be utilised. We try to push them. But in a democracy you cannot force anyone," says Rajesh Gopal, director of Project Tiger, Union ministry of environment and forests. The indifference is also evident from hundreds of vacancies, insufficient vehicles, arms and communication facilities. "Even if you provide them with new vehicles they get transferred to the headquarters located in metropolitan areas," asserts P K Sen, director, Tiger Programme, World Wildlife Fund, New Delhi, and ex-director of Project Tiger.

Could inspirational leadership help? But most of India's state-appointed tiger reserve managers are not trained in wildlife. In this respect, Gopal admits, "We are helpless. At the most we can stop their funds, but that doesn't make much of a difference. Nobody but the tigers would suffer." But even when funds are available, tigers continue to suffer! Sen, being an ex-director of Project Tiger has another angle: "If the centre stops funds, then the state will be given a chance to blame the



AMIT SHANKER / CSE

Centre for the failure of Project Tiger. Why should we give them this opportunity?"

In places like Rajasthan, the situation is more alarming because forests are degrading, making wildlife highly vulnerable. But Gopal refuses to acknowledge this. "The forest cover in most areas is increasing. Sariska, for instance, is the most resilient habitat and it has survived despite so much pressure." He may have a point. But this only deepens the mystery of the missing tigers.

Counter government?

At present the government's claims about tiger population and forest cover cannot be scientifically verified. "Nobody is allowed to conducted research in the reserves. Even if permission is granted, ten thousand hurdles are posed and we are even accused of killing the animals. Ullas Karanath, a renowned tiger expert, has 18 criminal cases against him. How can one except

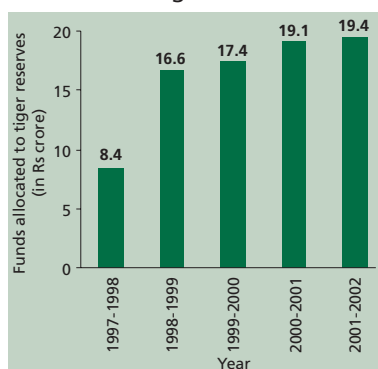
tiger science to prosper in such a state of affairs?" asserts R S Chundawat. Gopal is quick to refute this. "We have wildlife experts on prestigious committees to save wildlife. But till now, what have they done? People are indeed given opportunity to work in a reserve for 6-7 years. The results help people earn funding and awards. The park is in the same condition."

Wildlife management has certainly become a mud-slinging affair, with nobody really interested in the animals. Gopal is convinced the situation will soon reverse, once the GIS system is introduced. He may be right. But, in addition, what about willingness, the motivation and the commitment to protect wildlife — both on the part of wildlife experts and officials?

In March this year, the prime minister of India will reportedly preside over a meeting of the National Board for Wildlife, one of India's foremost bodies on conservation matters. At this meeting, surely the primary agenda ought to be a review of Project Tiger. After all, since its inception, this project has not gone any such scrutiny! ■

The money's there

Where does it go?



Source: projecttiger.nic.in on February 25, 2005