

FOCUS



AN AGRICULTURAL WORKER walks across land threatened by coal mining, near Barkagaon, Jharkhand, India; coal from illegal mining is burned to make coke; a lone tree is left standing by the side of an opencast coal mine. PHILIP CARTER PHOTOS

PROTECTING INDIA'S 'WILD EAST'

Wildlife corridors, the key to conservation

By PHILIP CARTER

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HAZARIBAGH, Jharkhand, India
As a new environmental consciousness becomes more entrenched, the focus for conserving the so-called "flagship species" such as the great predators tigers and bears, and also elephants, has shifted. When India's Project Tiger was started in the 1970s with the purpose of bringing the great cat back from the brink of extinction, it was implemented with an "island" type of mentality, creating tiger sanctuaries but neglecting to consider the forests in between them. With India's booming economy and increasing population in the first years of the 21st century, the forested links between sanctuaries have become increasingly under pressure. The need to consider these so-called "wildlife corridors" has now come to the fore.

The states of Jharkhand and Orissa in east-central India are sometimes called India's "Wild East" because of the rush by mining companies to exploit the mineral resources of the region. The state of Jharkhand, created in 2001, is home to rich mineral reserves, including uranium, iron ore and bauxite. However, it is the opencast coal mining that feeds India's insatiable need for power that causes the greatest challenges to wildlife.

I first traveled to this beautiful but troubled state in 1997 to investigate reports that wildlife corridors important for elephants and tigers were imminently threatened by large-scale opencast coal mining. The World Bank had funded environmental impact studies that had dismissed the rich agricultural and forest land as being "degraded forest" where mining should be allowed. The fact that large predators such as the tiger require a vast, connected habitat, was basically ignored. A few weeks of investigation traveling to tribal Adivasi villages with Bulu Imam, a noted cultural and environmental activist, showed that tigers were indeed present and feeding on the large water buffalo that the villagers were using for farming.

When I returned to Jharkhand in the autumn of 2006, I found that the concept of wildlife corridors had become recognized by the Jharkhand Forest Department and rehabilitation of some of the corridors had started. According to Dinesh Kumar, the divisional forest officer for the state capital of Ranchi, of the 92 elephants normally resident in Dalma Elephant Sanctuary in Jharkhand, between 50 and 55 migrate just after the rainy season every year to the neighboring state of West Bengal. They raid rice fields and break into houses in search of food during this migration, sometimes injuring or killing villagers.

Kumar says that the corridor forest is degraded in many places, so to encourage the giant creatures not to stray into neighboring rice fields, rehabilitation is being carried out by planting elephant fodder species such as bamboo inside the corridor.

"We don't plant any exotic species" he said, when I spoke to him inside the ornate British Colonial period building used as the Forest Department's headquarters. "In 2006, we planted 296 hectares of land, which is spread over the corridor from Dalma to Bandawan in West Bengal. This is the one route we have tried to enrich." According to Kumar, there are a total of five migration routes used by the Dalma elephants, of which this was the first where rehabilitation has been attempted.

Also, as a defensive measure solar-powered electric fences are being erected around the villages. These fences, which have gates to allow villagers to take their cattle into the forest to graze, stop elephants entering villages. In 2006, 42 kilometers of this fencing, was

erected, protecting six or seven villages. According to Kumar, the fencing has drastically reduced the number of villagers being killed and injured from elephant-human conflict. "Before, there were so many, and always we had to provide trackers" he said, referring to people who tracked the elephants to scare them away. In addition, diesel vehicles were needed for patrolling at night to protect villages. "Before this, we were very much worried about these elephants" he said. "They came out and damaged houses, injured human beings and even killed some people; So this has been effective and the damage has been greatly reduced."

As pressure mounts on habitat with the rapid expansion in mining activity, elephants are also being forced from their habitual migration routes that have been followed from time immemorial. Richa Sharma of the Birla Institute of Technology near Ranchi has been mapping the changing elephant migration routes, using GIS (Geographic Information System) mapping, satellite imagery, and by following the reported elephant-human conflicts that often occur. As the migration routes change, Sharma aims to identify appropriate new corridors that can then be established using the same methods the Forest Department is using for rehabilitating existing elephant corridors. The aim is to encourage the elephants to move to the nearest forest reserve with minimum human-elephant conflict.

According to a paper published by Sharma's team, there are two herds of elephants normally resident in the forests around Dalma Elephant Sanctuary that have become displaced and are trying to relocate to the northern part of



A WILD Bengal tiger in India. Tigers and elephants need a vast connected habitat to survive, making the preservation of wildlife corridors essential in India. J. SEIDENSTICKER PHOTO, COURTESY OF SAVE THE TIGER FUND

Jharkhand state. One of the herds has about 125 elephants, the other about 25, and these elephants are causing a great amount of destruction at present. The planned corridor for these elephants tries to avoid agricultural land as much as possible and encourage the elephants to use forested routes, which include water bodies such as lakes, to the greatest extent possible.

Corridors are also essential for the other great symbol of India's wild natural environment, the tiger. According to S.E.H. Kazmi, the former divisional forest officer for Hazaribagh district in the northern part of the state, the situation has improved from five or six years ago. "The situation was quite bad at that time" he said. "In fact, people did not know about the corridors or the corridor issues involved. Now at an official level, and a government level, peo-

ple are more aware.

"Corridors are under threat because of various activities. There are plans for coal mining, there are plans for iron mining, and it seems that the whole of the world is trying to enter into Jharkhand for mining purposes. Basically, what all the miners want is to allocate the land for themselves, and to reserve the minerals for themselves, which they can mine later on when the prices increase. But definitely things are improving and people are talking of corridors, and there is protection of corridors. But as I said there is a lot of pressure also and at times it is very difficult."

One of the most threatened wildlife corridors in Jharkhand connects Palamu Tiger Reserve in the west to Hazaribagh Wildlife Sanctuary in the north of the state. Kazmi described how, in 2005, the first tiger sighting for over a decade was

confirmed in Hazaribagh Wildlife Sanctuary, but getting it officially recognized by his superiors turned out to be a challenge.

The problem was that as soon as a tiger is officially recognized, the local officials become responsible for it, and at that time they knew the tiger was likely a transitory tiger, one that would wander along the wildlife corridor into connecting forests. "If you don't acknowledge it, and the tiger doesn't exist on record, if it is lost or something bad happens to it, you are not held accountable. That's why it was neglected," Kazmi said. Kazmi finally had a seat collected, which he sent to the Wildlife Institute of India in Dehra Dun north of Delhi for DNA analysis, where it was confirmed as belonging to a tiger.

Conservationist Bulu Imam, once a former professional tiger and rogue-elephant hunter, points out that there is a difference between tiger

and elephant migration, in that while tigers often migrate to find a mate, elephants generally migrate for food. Some corridors suitable for tigers therefore may not be suitable for elephants, which can lead to conflict. The northern Jharkhand corridor is one of those, according to Imam. "Whenever elephants have been forced to use this northern corridor there has been man-elephant conflict resulting in large numbers of human deaths. In February 1973 a herd of four elephants began killing people in this northern corridor and I was called on to hunt them down. I completed this unpleasant job in October of the same year. The elephants had killed several hundred people by that time."

The environment in the region remains severely threatened. Environmental clearance was recently given to a new opencast coal mine at

Punkhri-Bawardih, a small town located in pristine agricultural land about 30 km to the southwest of Hazaribagh town. Apart from the loss of some 40 square km of agricultural land and forest, around 14,000 families are expected to become displaced. These are mostly Adivasis, the tribal people native to the region. The Adivasis are so indigenous that rock art dated to paleolithic times, 5,000 or more years ago, found nearby, is virtually identical to the religious painting still used to decorate Adivasi houses for weddings and the Sohrai harvest festival.

Such large-scale human displacements have helped fuel a grinding Maoist-Communist-inspired insurgency across India's east-central states, including Jharkhand, Orissa and Chattisgarh. In Chattisgarh in March 2007, 55 police were killed when suspected Maoist insurgents attacked their camp. Violence is also expected as fierce local opposition grows to the newly approved mine in Jharkhand.

Small-scale farmers displaced by such mammoth industrial development projects often become destitute, and turn to a hazardous way of life where entire families will go underground in disused coal mines. Men and women dig the coal, and children bring it to the surface. The coal is then sold to a "coal-pusher," a man who ties coal bags to his bicycle, which he then pushes for up to two days to get into town, where the coal is sold for perhaps ¥300. Virtually all the coal used for perhaps ¥300. Virtually all the coal used for perhaps ¥300. Virtually all the coal used for perhaps ¥300.

The environmental impact of many such opencast mine developments is far reaching, with forest often cut down within a radius of many kilometers around the mine itself. In one case I witnessed, only a lone tree considered to be sacred by tribal people was left standing by the mining company as the forest surrounding it was completely destroyed.

A number of important water sources will become poisoned or destroyed by the Punkhri-Bawardih mine, including tributaries of the major Damodar River, which flows east toward the Bay of Bengal. The lower part of the Damodar River has already been badly polluted by coal mining over many years, but now the upper Damodar River valley where the Punkhri-Bawardih mine is located faces a severe threat from many such coal mines.

Despite such a difficult situation, there have been some positive developments regarding environmental protection. In March 2007, a landmark agreement was reached between the state governments of Jharkhand, West Bengal and Orissa for the identification and restoration of elephant corridors connecting to Dalma Elephant Sanctuary. The agreement, reported in news media in India, involves setting up a new inter-state committee responsible for identifying elephant corridors crossing the state boundaries and setting measures for their restoration, while minimizing elephant-human conflict.

According to one news report, the plan aims to counter forest degradation related to the Subarnarekha Multipurpose Project, a mega-project aimed at transferring water between river systems, for the purpose of irrigation. While this illustrates the extreme pressures on the ecosystem due to India's accelerating economic growth, the government recognition of the need to take urgent countermeasures regarding wildlife corridors is one positive sign for the future.

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COAL LABORERS in Jharkhand stand outside their loaded truck; tribal villagers sit outside their traditionally painted house in Belwara, Jharkhand, India. PHILIP CARTER PHOTOS