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SANCTUARY

ASIA: THE ECOLOGY AND WILDLIFE MAGAZINE

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14 COVER STORY

HIDDEN CADRE: We cannot win a war against insects such as the horned grasshopper that graces this issue's cover, suggests author, ***Bittu Sahgal*** as he goes on to suggest that we would profit more from studying the ways of insects and leaning to appreciate and adjust to them.

22 CHITAWAN - NEPAL WONDERLAND: The author ***A.J.T Johnsingh*** together with 40 biologists from nine-tiger range countries, visited Chitawan National Park in Nepal to study the distribution and abundance of the tiger and its prey species. Sanctuary readers are able to share an insight into the Park and what goes into protecting it.

30 MANIPUR - A BIODIVERSITY THREATENED: Manipur is more than an exotic location in eastern India. The fragile ecology of this rich diversity region is under threat from encroachment, reclamation, insurgency and inadequate laws,says ***Dr. Anwaruddin Choudhury***. But for every setback, Manipur has its miracles too, like the resurrection of the Sangai deer, that was once officially declared extinct.

40 OF BIRDS AND BEAKS: Illustrated with images from its photolibrary, *Sanctuary* takes a look at the manner in which evolution has honed bird beaks into weaponry best suited to exploit food sources.

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CHITAWAN

NEPAL WONDERLAND

TEXT AND PHOTOGRAPHS BY A. J. T. JOHNSINGH

Spring welcomed us as we drove from Meghauli airstrip to Tiger Tops in the famous Chitawan National Park in Nepal in mid-March 1997. The tall elephant grass on the flood plains of the Reu river had been burnt in most places and the grass stalks looked, for all practical purposes, like golden porcupines standing upside down! The patches where the grass had been burnt, and the meadows, were now covered with a thick carpet of tender, emerald-green grass. The 'flame of the forest' *Butea frondosa* trees with its copious gorgeous flowers, outshone the silk cotton *Salmalia malabarica*, which had equally colourful but sparse flowers. A multitude of birds, including parakeets, orioles and hair-crested drongos, thronged these trees to steal the nectar hidden in their blooms. Nature was at its very best at Chitawan. Not for nothing was it declared a World Heritage Site in 1981. What is more, the forests are also one of the last bastions for the endangered great Indian one-horned rhinoceros and the tiger.

We were on a five-day mission to Chitawan to develop a methodology to assess the distribution and abundance of the tiger and its prey species. The 'we' included 40 biologists and managers from nine tiger range countries. We stayed at a tented camp near Tiger Tops Jungle Lodge that was situated within the National Park. Our camp comprised 24; light-green two-man tents laid out in two neat rows. On three sides of us was the dense jungle, dominated by sal *Shorea robusta*, trees. The riverine vegetation of the Reu river was characterised by tall elephant grass that grows wild on the northern side.

Both the tiger (*above*) and the rhino (*facing page*) find safe sanctuary in the forested haven of Chitawan.

The author A J T Johnsingh is Joint Director and Faculty Head of Wildlife Biology at the Wildlife Institute of India in Dehradun. He has a special interest in endangered species and biodiversity conservation in protected areas.

SOON AFTER SETTLING DOWN in the camp we decided to go for an elephant ride to get a first-hand feel of the Park. Dr. Dale Miquelle, from the USA and Evgeny Smirnov, from Russia were on the same elephant as I. Both wildlife biologists, they are studying tigers in Siberia. Smirnov is associated with the Sikhote-Alin State Biosphere Reserve, where he has been working since 1963. Interestingly when he commenced work there as a mouse biologist, tigers were locally extinct. This he attributed to large-scale hunting of both carnivores and prey since 1917 when the revolution made guns freely available to all and sundry. This led to over-hunting all the way through to 1940, when World War II weaned the hunters away from poaching when they joined the army. Smirnov, with a wry smile, said that most of the soldiers never returned. In the absence of hunters, prey and tiger populations slowly began to build up and by 1966 Smirnov was able to record the breeding of tigers. This was when he had changed his study animal from mouse to tiger. He has never looked back to date and now monitors a population of about 40 tigers in his Reserve.

When Smirnov started work in 1963 as a mouse biologist, tigers were locally extinct.

Smirnov was thrilled to be in Chitawan. He particularly enjoyed the elephant ride, but was constantly worried that he would not be able to see tiger pugmarks as there was no snow in Chitawan. Once we reached the river bed however, he was delighted to see that, sand left equally tell-tale signs. From our vantage point on the elephant we saw rhino, gaur, hog deer, chital and mugger crocodiles. But Smirnov had eyes only for tiger pugmarks. As we wandered along, sitting on the back of the swaying elephant, the sun slowly but perceptibly slid behind the Shivalik hills. Black Ibis and Red Jungle Fowl called before settling down to roost. It was time to return to camp. When Smirnov was about to conclude that there were no tigers in Chitawan we came across fresh tracks. Thereafter, with immense alertness we looked around for a glimpse of this master predator. In the failing light, every swaying bush and grass clump seemed to hide a tiger. But the elusive tiger remained unseen.

PRIOR TO THE 1950S almost the entire low-land interior valley known as Chitawan, an area of nearly 2,600 sq. km. was clothed by tall elephant grass and dense forest. There were few scattered settlements, populated by an aboriginal people called the Tharus. Over the centuries the Tharus had apparently built up some kind of resistance to the deadly form of malaria then endemic to the region. And the fear of malaria had effectively kept out other settlers. The habitat was thus never over-exploited.

Between 1846 and 1950 when Nepal was ruled by the Rana prime ministers, Chitawan Valley, which was totally untamed then, was the venue of many a grand hunt to which the royalty of Europe and India, and the top brass of the British Raj, were regularly invited. These hunts were lavish operations with several elephants and beaters employed to round up and drive big game towards the shooters. An unconscionably large number of rhinos and tigers were killed. The records reveal that in the last hunt of 1938-39, in which the then Viceroy of India, Lord Linlithgow took active part, a record bag of 120 tigers, 38 rhinos, 27 leopards and 15 sloth bear was taken. Despite such senseless killings, because the habitat remained intact wild animals still managed to thrive. A vast tract of forest existed on the Nepal side contiguous with a larger forest habitat on the Indian side, ensuring a capacious tract of land to the beleaguered animals. And since there was always an interval of a few years between hunts, the tiger and rhino populations were able to recover most of their losses. As late as 1950 tigers were still plentiful and some 800 rhinos existed in Chitawan.

THE PRIMARY REASON FOR the decline of wildlife in Chitawan was the resettlement of a large number of Nepalese hill people during the 1950s. This was in the wake of a deteriorating economic situation in the hills. The settlement was enabled by a malaria eradication programme. This involved massive insecticide use, whose impact on the wilderness has never quite been evaluated. Seventy five per cent of the forest and grassland was destroyed to make way for farms. Inevitably, the large influx of immigrants was accompanied by widespread and persistent poaching. The consequent persecution of large mammal populations made it impossible for them to recover. Because such severe habitat destruction was coupled with unmitigated slaughter, the rhino population plummeted to under 200. Tigers fared no better.

In order to arrest the decline of the rhino and the tiger in 1962, His Majesty's Government of Nepal set aside a portion of the Chitawan valley, south of the Rapti River, as a Wildlife Sanctuary. All hunting was banned and a contingent of armed guards called the Rhino Patrol, was created. The team was instructed to protect the Sanctuary from poachers as well as agricultural encroachment. The situation has since been improving

steadily and the sanctuary became the Royal Chitawan National Park in 1973. International agencies now pitched in to help and poaching and encroachment seems to have been brought under control. Today the 900 sq. km. Park has about 450 rhinos and 75 tigers. It is the pride of Nepal and one of the most precious breeding habitats in the subcontinent.

ONE EVENING SEATED AT the base of a *machan* near Sauraha about a kilometre from the river Rapti we were able to observe a fairly large number of Red Junglefowl. Around us a mixture of plantation species and natural regeneration grew in wild abandon and we were informed that the area had been protected for over eight years. Dr. Eric Dinerstein, from WWF-US, who was a spokesman for the programme, said that the idea for community forestry came from Mr. Shankar Choudhary, a Tharu, who started the project with a small nursery to distribute seedlings to the villagers. Today no less than 586 households of the Sauraha village collectively manage the restored area. Endangered birds such as the Rufous-Bellied Hawk, Eagle, Peregrine Falcon and the Great Indian Hornbill now frequent the area where just few years ago only crows and mynas were to be seen. Since the area is very close to the Park, wild pigs, deer and rhinos have also colonised the area, which predictably began to be frequented by tigers as well. Tourists now visit here even during the rains. The *machan*, with six bedrooms, is a favourite haunt of honeymooners whose unforgettable experiences include seeing wild pig, sambar, rhino and the occasional tiger! For this privilege some people are willing to pay upto US $ 1,000/- per day! Besides community-based ecotourism, harvesting of grass, fodder and small timber also benefit a population of about 4,000 people. In 1995 thinning of trees alone yielded US $ 8,000/- for the village community. Eric concluded that by replicating such economic incentives it might be possible to restore 100 sq. km. of similar habitat along the boundary of Chitawan.

It was with such thoughts in our heads that the four of us walked along a trail the next morning. The forest floor was covered with dense *sal* leaf litter and it was difficult to find pugmarks. The trail went through one of the least-disturbed areas and soon enough we were indeed able to see evidence of tiger, leopard, sloth bear and rhino. We also saw the mud-rubbing of an elephant, possibly a bull, on a tree at a height of about four metres. Elephants occasionally come here from the Parsa Wildlife Sanctuary, which is to the east of Chitawan. Scrapes and scats also confirmed that the forests of Chitawan were among the finest habitats for the tiger.

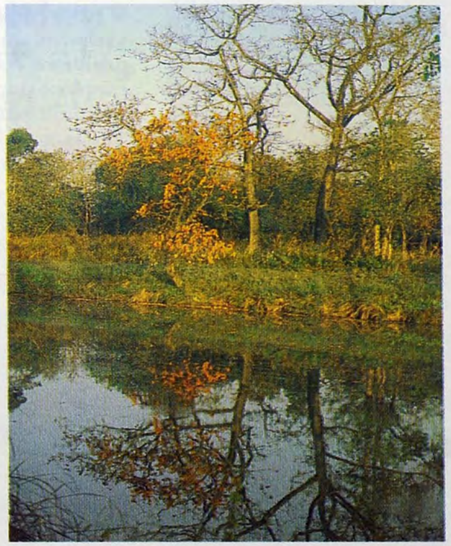
As any wildlifer will confirm, there is no better time to experience a forest than dawn. On one such outing, when early morning mists were being dissipated by a rising sun, Dr.Charles (Chuck) McDougal, who has been studying tigers around Tiger Tops Lodge for the last 20 years, accompanied us as we crossed the Narayani river by boat. We were all very pleased to be in his company as few people know the forests as well as he does. We walked along the broad bed of a tributary between the *Bandarjhula* (monkey swing) islands and the river. It was a fine morning. The densely forested Shivalik hills stood reflected in the clear, still waters of the tributary where Brahminy Duck, Mergansers and Little Egrets quietly fed along the edge. There were numerous old and new tiger and rhino tracks on the riverbed. At one place we saw the battleground of a pair of rhinos. "Look!" exclaimed Chuck as two rhino males, crossed the tributary, one taking off to the right and the other to the left, about 100m. from us. One of them had a long, deep wound on the rump and we presumed they must have been the animals whose warring prints we had seen.

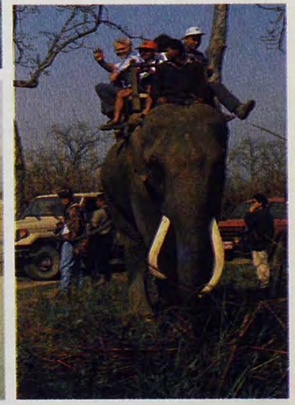
AS WE RAMBLED ALONG, Chuck briefed us about the many problems that beset Chitawan. As in the past the major threat still comes from a rising population that has registered a growth from 36,000 in 1961 to 390,000 in 1991. Besides, about 200,000 cattle live on the periphery of the Park and both human and livestock combine to exert enormous pressure on the forest. Till a decade ago, each year about 50,000 to 100,000 villagers came exclusively to collect thatch grass and reeds, both vital building materials for their homes. Some amount of firewood and timber smuggling also existed. But now most of the villagers around the Park have built permanent houses and as a result their dependency on reeds and grass has come down. But their reliance on timber however has risen, leading to increased levels of timber smuggling.

A small army contingent that was positioned to protect the rhinos has now grown to about 800 soldiers, all

Tharu grass and firewood collectors return from a day in the Chitawan forest. The biomass is vital to their survival.

In the whole of Chitawan there are probably no more than 150 gaur, though their numbers are expected to rise.





FINER MOMENTS...

- A riot of colour (*left*) sets Chitawan ablaze.
- Tourists atop a riding elephant (*below*). Many wildernesses suffer from over-popularity which ultimately diminishes the value of the wilderness that attracts people to it in the first place.
- Checking the sandy bank of the Reu river for pugmarks (*below left*).

CHITAWAN

Map not to scale. Borders neither verified nor

CONSERVATION EFFORTS

The Nepal Government's efforts to protect Chitawan are commendable but implementation lags far behind intent. Laws are not being strictly enforced and this could result in the permanent loss of vast swatches of irreplaceable forest.

Throughout Nepal's history Government policies have had an enormous impact on the Himalayan forests within its borders. Early in the 18th and 19th century, Nepal imposed taxes on both land and labour. Such taxes put such enormous pressure on the people that they were forced to look towards the forests for their sustenance. They converted large patches into agricultural land and this was a major cause for the deforestation evident today. In the 20th century, the tax rate was reduced but the nationalisation of the forests in 1957 and the stipulation in the 1970s that farmers had to register individual private lands resulted in still more forest clearance. It was only in the 1980s that the government finally woke to the adverse impact of its own policies. Each village was now given direct control over its forests and once they had a stake in their long-term survival the glades recovered quickly despite use by people.

Other factors played a role in the denudation of Nepal. Labour exploitation and high taxes forced people to have more children, as children ultimately grew to earn wages. This has left the Himalayan Kingdom grossly overpopulated and economically impoverished. Sensible population control is key to the effective regeneration of Nepal's forests, particularly as over 80 per cent of the population tills the land. Corruption is yet another blight and has reared its head higher than ever before in the 1990s. Trade problems with India resulted in timber worth over US $300 million being smuggled into other Asian countries in 1991 alone. The 15-month trade embargo by India virtually held Nepal to ransom and in the absence of petroleum products, the Nepalese were forced to turn to firewood for their everyday cooking and heating requirements. By some estimates, nearly 200 hectares of forests were lost each day during this dark period. Timber scandals saw one Nepal forestry Minister in jail. Forests were also cleared in the name of infrastructure. But the declaration of Chitawan as a National Park could serve to reverse some of these trends.

living in camps on the periphery of the Park. The soldiers obey only their commanders. This sometimes leads to tensions between the army and wildlife protection staff. Chuck has suggested that an active anti-poaching unit of about 150 soldiers, under the command of the Park Warden, would be much more efficient and preferable to a passive, sitting, trouble-causing army of 800. But these problems continue. Another problem that has been in existence since 1985 is the presence of a paper factory that was built with assistance from the Chinese Government. The factory is sited on the banks of the Narayani river, which is home to the endangered golden *mahseer*, *gharial*, *mugger* and Gangetic dolphin. The collection of raw material (grass) from the Park and the surrounding areas is a relatively small problem. The major ecological problem involves the continuous release of untreated effluents into the Narayani river. To date appeals to install an effluent treatment plant have fallen on deaf ears.

OVER THE YEARS TOURISM has grown manifold. Twenty years ago only the Tiger Tops Jungle Lodge was sited within the Park. Now there are a total of seven lodges with about 100 elephants carting tourists around. The feeding of these elephants exerts enormous pressure on the biomass resources of the Park. On the bright side, tourism generates around US $ 800,000.00 annually, half of which, according to the new law in Nepal, is to be used to strengthen conservation through buffer zone development involving local people.

Chuck was consequently upbeat about the future of Chitawan, which, along with the Parsa Wildlife Sanctuary in Nepal in the east, and the Valmiki Tiger Reserve in India to the south, forms a 2,000 sq. km. stretch of protected tiger and rhino habitat.

ON THE LAST DAY of our Chitawan trip, as the sun was about to glide behind the Shivalik hills we saw a herd of gaur walking across the grassland at a distance. Initially we mistook them for rhinos. We were very grateful for the sighting as we had all spoken about the need to photograph gaur earlier in the day. All six riding elephants therefore moved towards the herd. There were 20 animals in all and once they reached an open area carpeted with short-green grass they stood in a group with four golden-brown young calves in the middle. There was one adult bull in the herd. Massive; with muscles rippling and a tar-black body, he stood like a shining sentinel in the golden light. Surprisingly the gaur were not one bit shy and allowed us to approach very close. In Chitawan, gaur descend from the hills to the flood plains around Tiger Tops in March to feed on the short new grasses after the elephant grass is burnt. In the whole of Chitawan there are probably no more than 150 gaur, though their numbers are expected to rise.

A paper factory on the banks of the Narayani river endangers the golden mahseer, gharial, mugger and Gangetic dolphin.

The calls of owls and nightjars made the night prior to my departure as noisy as usual. Once in the middle of the night the alarm calls of chital woke me up. As I lay in the warmth of my sleeping bag the resounding call of a tiger drifted through the night air. This was the third time I had heard a tiger in the four nights we stayed at the tented camp. A rhino, possibly alarmed by the tiger was running helter-skelter, among the bushes in the forest just behind my tent. I hurried out hoping to get a glimpse of the pachyderm but saw nothing at all. Peter Jackson, Chairman, Cat Specialist Group, who was staying at a cottage 50 metres from my tent and had missed the nocturnal excitement, smilingly insisted the next day that I had only been dreaming.

I knew better. And I longed to return to this exquisite haven that is protected by the enlightened efforts of the Government of Nepal. It should continue to be the prime home of rhinos and tigers as long as we share the planet with them.

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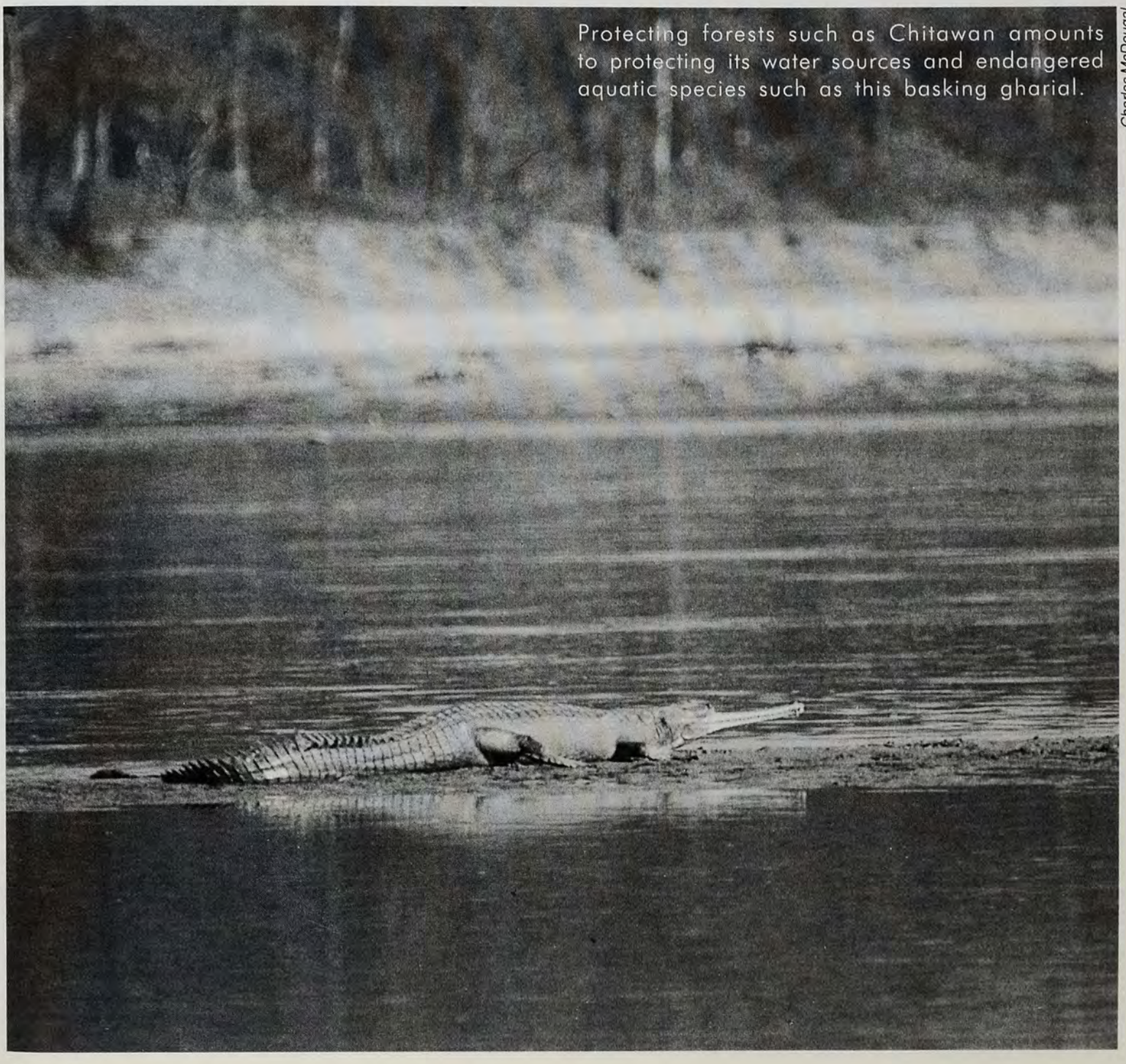

Protecting forests such as Chitawan amounts to protecting its water sources and endangered aquatic species such as this basking gharial.

Charles McDougal