



THE ADAPTABLE LEOPARD

TWO PLUMP leopard cubs scrambled over a large, weathered tree limb and disappeared into a tallgrass thicket that stood out from an expanse of blackened grass. The previous day villagers had set a fire that swept through most of the 65 acres the cubs called home. Every February, such fires, intended to stimulate a flush of new growth for livestock, are common in Nepal's Royal Chitwan National Park, where, for nearly a decade, my colleagues and I studied leopards living at the edge of the park.

At seven weeks old these cubs were mobile enough to move ahead of the flames. Their radio-collared mother was also safe. She had left the cubs for an extended hunting trip shortly before the fire. Round-the-clock monitoring that we had begun before the fire had revealed surprising information: This mother spent about half her time away from her cubs, leaving them alone for more than 24 hours at a stretch.

The mother was taking advantage of the great disruption the seasonal fires caused for the deer she hunted.

Unfortunately,
it's no match
for modern man

BY JOHN SEIDENSTICKER
WITH SUSAN LUMPKIN

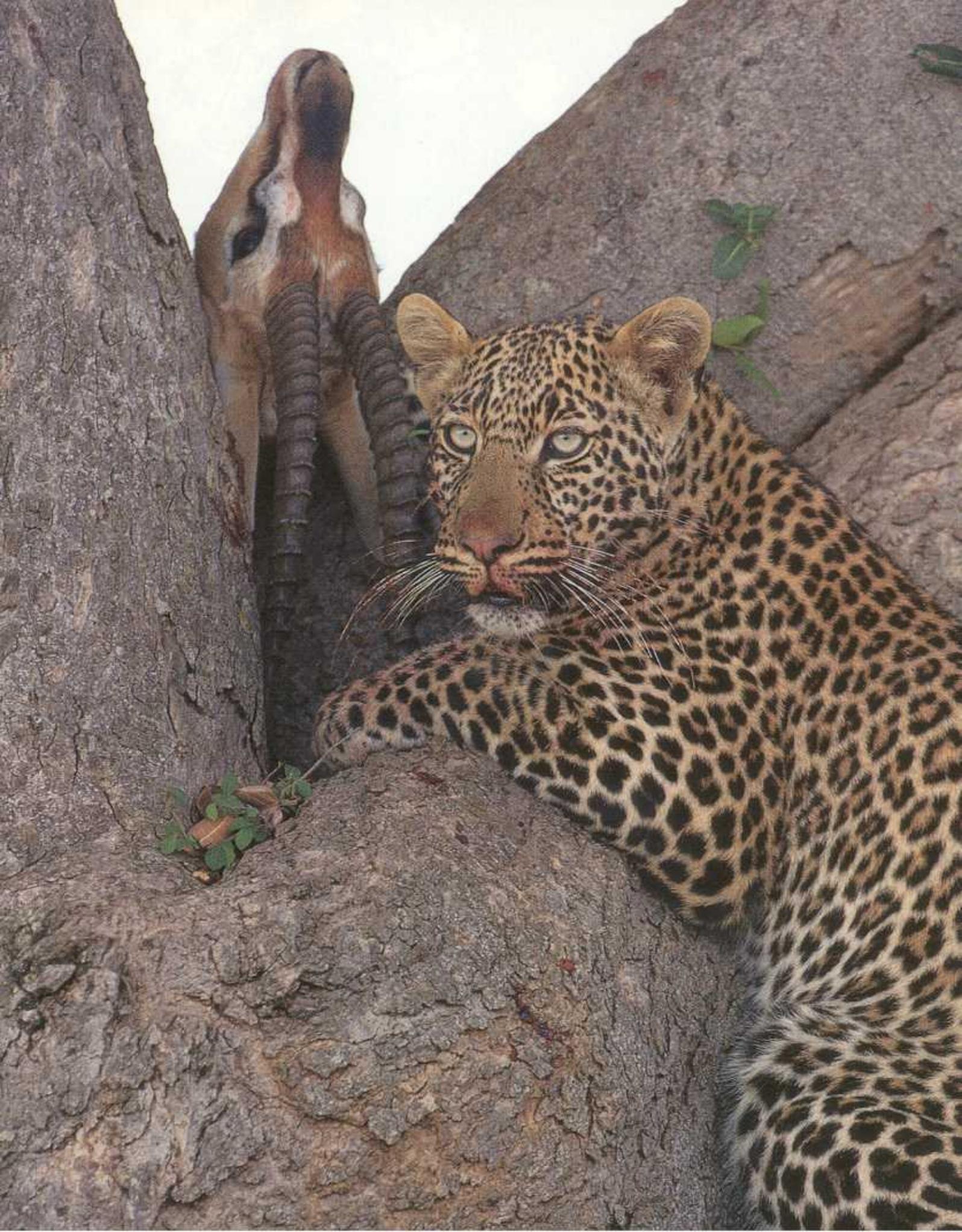


With most of the tallgrass burned away, the territory opened up. Deer and other prey concentrated in thin ribbons of tallgrass in moist swales and in scattered patches of unburned forest, and became easy pickings. After

killing a spotted deer or a sambar fawn, she stayed near her kill until she finished eating it. Carcasses rapidly decompose in Chitwan's hot, humid climate, and scavengers such as jackals and vultures are quick to find them. Some kills she consumed on the ground; others she dragged into trees to secure them from earthbound scavengers. Between feeding bouts she rested and did not return to her cubs, although she easily could have done so: She was never more than a mile and a half away—a distance she could have covered in an hour or so.

Instead she relied on the cubs' camouflage coloring to conceal them in the ten-foot-high grass from a tiger or a dhole (wild dog) pack or another leopard—their most likely predators—while she invested her energy in hunting, eating, and guarding her kills. This lactating mother made a kill about once every three days, twice as often

Young leopards (above) learn hunting skills from their mother, including the post-killing behavior of storing prey in trees (right) to protect it from competitors.





When people harass them, leopards quickly learn not to rest by day on the branch of a tree as this mother and her son are doing.

as she did before the birth of her cubs.

Despite my fears for this leopard family, all three survived, revealing this cat's impressive resilience in the face of adversity and habitat change. With a 65-acre rearing area rather than a tiny den site, the cubs could find shelter. And their mother used the fire's prey-concentrating effect to great advantage. Tough and adaptable, leopards are able to live in man's shadow more successfully than any of the other large cats.

Two months before the fires, as I watched through a night scope, another female leopard emerged from the forest cover at the edge of a cleared field. Crossing this danger zone, she moved quickly between the shadows of moonlit weeds and rocks until she reached the safety of a small swale. Headed in the direction of a nearby village, she must have had goat or calf in mind. A tiger almost never crosses an open field; a leopard does so with ghostlike ease. The ability to move with such adroitness through exposed terrain serves the leopard well, allow-

ing it to exist in fragmented habitats and to make forays into villages, where it picks off dogs and chickens and other stock, much to the chagrin of human residents. Leopards even live in the suburbs of Asian and African cities, much as coyotes do in the United States.

A key to the leopard's adaptability is its size. Weighing 90 pounds or so, a female leopard is about one-fourth the size of a 300-pound female tiger; an adult male leopard weighs 130 pounds. Such a moderate-size predator can survive on a diet of small prey animals, which are relatively more abundant than the larger prey tigers and other big cats require.

In Chitwan, leopard prey averaged 45 to 110 pounds—about one-fourth the size of a tiger's prey, and included calves and goats, young wild pigs, spotted, axis, and sambar fawns and yearlings, and hog deer. At the extreme southeastern corner of the leopard's range, in the rain forest of Meru Betiri National Park on the Indonesian island of Java, I discovered that

leopards primarily killed long-tailed macaques and langur monkeys. In the bamboo forests of China's Wolong Natural Reserve, George Schaller and his associates noted leopards fed mostly on small tufted and musk deer, but also occasionally killed two-pound bamboo rats, Temminck's tragopans, and blood pheasants. In the woodlands of South Africa's Kruger National Park, Ted Bailey found that leopards took mostly impala. And in the rain forest of the Ivory Coast's Tai National Park, a mixed diet of antelopes, monkeys, and rodents sustained these cats.

Radio-tracking studies provide precise information on the size of areas leopards use. In Chitwan, female leopards confine themselves to just over two to five square miles, whereas in the Stellenbosch Mountains and the Kalahari Desert of southern Africa, they prowl 150 to nearly 200 square miles. The largest leopard home range exceeds the smallest by a factor of 80, an extreme variation that reflects the availability of food. A six- to 20-fold difference in home range size is the norm for

THE OTHER LEOPARDS

most carnivores. An 80-fold discrepancy is remarkable—another confirmation of this cat's flexible nature.

Due to its moderate size, stealthiness, willingness to eat whatever is available, and ability to live in diverse habitats from rain forests to deserts, the leopard has one of the widest distributions of any mammal. No wonder cat researchers have always looked upon the leopard as a survivor. Other big cats—lion, tiger, cheetah, and snow leopard—have suffered great losses from hunting and habitat destruction, but we thought the leopard would slip by these problems, much as it can slip into a village to kill a goat. Further assurances came when leopards near some African wildlife reserves were declared locally overabundant.

We are not so sure about the leopard's survivability now. Throughout much of its range, the leopard is threatened or endangered. Considering how adaptable it is, the question is: Why?

As it turns out, one of the leopard's adaptive habits has become a vulnerability. A leopard will not hesitate to eat rotting flesh, and if it is disturbed while feasting on carrion, it will return repeatedly to finish its meal. When harassed, a leopard quickly learns not to lie about in trees; it becomes more wary. So, instead of trying to hunt down a wary cat, people lace carcasses with poison and set wire snares on paths that leopards frequently travel. Because of these tactics, leopards have been wiped out or exist only in reduced numbers throughout most of their range.

I have been privileged to watch leopard cubs at play in Chitwan's tallgrass and to find a leopard draped over the limb of an African sausage tree. But I wonder whether my young daughter will have the chance to form a leopard memory of her own. Unless we all act together with determination, leopards will be lost to the children of the future.

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SLIGHTLY SMALLER THAN A leopard, the endangered snow leopard (right) is the largest cat throughout most of its range across the high mountains of central Asia. Its distribution overlaps that of the leopard only in some of the uppermost reaches of the Tibetan Plateau. Snow leopards prey on wild sheep and goats but will turn to domestic livestock when the opportunity arises. As more people move into the snow leopard's territory and deplete its prey, the cats have little choice but to attack domestic animals. In retaliation, herders kill snow leopards and sell their highly prized fur in tourist shops. And as tigers disappear, snow leopard parts are being substituted for tiger parts as ingredients in traditional medicines sold in Asian pharmacies. The human pressures on these magnificent cats are enormous. No one knows for sure how many remain in the wild, but the population is estimated at only a few thousand.

While the snow leopard rules the roof of Asia, the clouded leopard prowls the rain forests and riverside evergreen forests of southeast Asia, including the islands of Sumatra, Borneo, and Taiwan. For 20 years biologists have attempted, without success, to study clouded leopards using radiotelemetry; as yet no one has figured out how to catch these cats unharmed. Thus we know very little about this cat's life in the wild.

Compared with other cats the clouded leopard (below) has a large head on a small body. (A cat's skull and teeth reflect its diet; its body proportions and adaptations reflect habitat use.)



The clouded leopard is adapted to kill larger animals than its 15- to 30-pound body weight would indicate. It is especially well equipped to kill mammals living in trees. The structure of this cat's wrist bones allows it to grip a tree trunk or branch in much the same way as a squirrel does. In Sumatran wildlife rehabilitation centers, clouded leopards are known to be deadly killers of orangutans. They also efficiently prey on terrestrial mammals such as wild pigs and deer. Loss of their forest habitat is the major threat to clouded leopards, although recent observers say they are able to survive in cut-over forests. These cats are also frequently captured in traps and snares set by subsistence farmers throughout Asian forests.

—J.S. and S.L.