

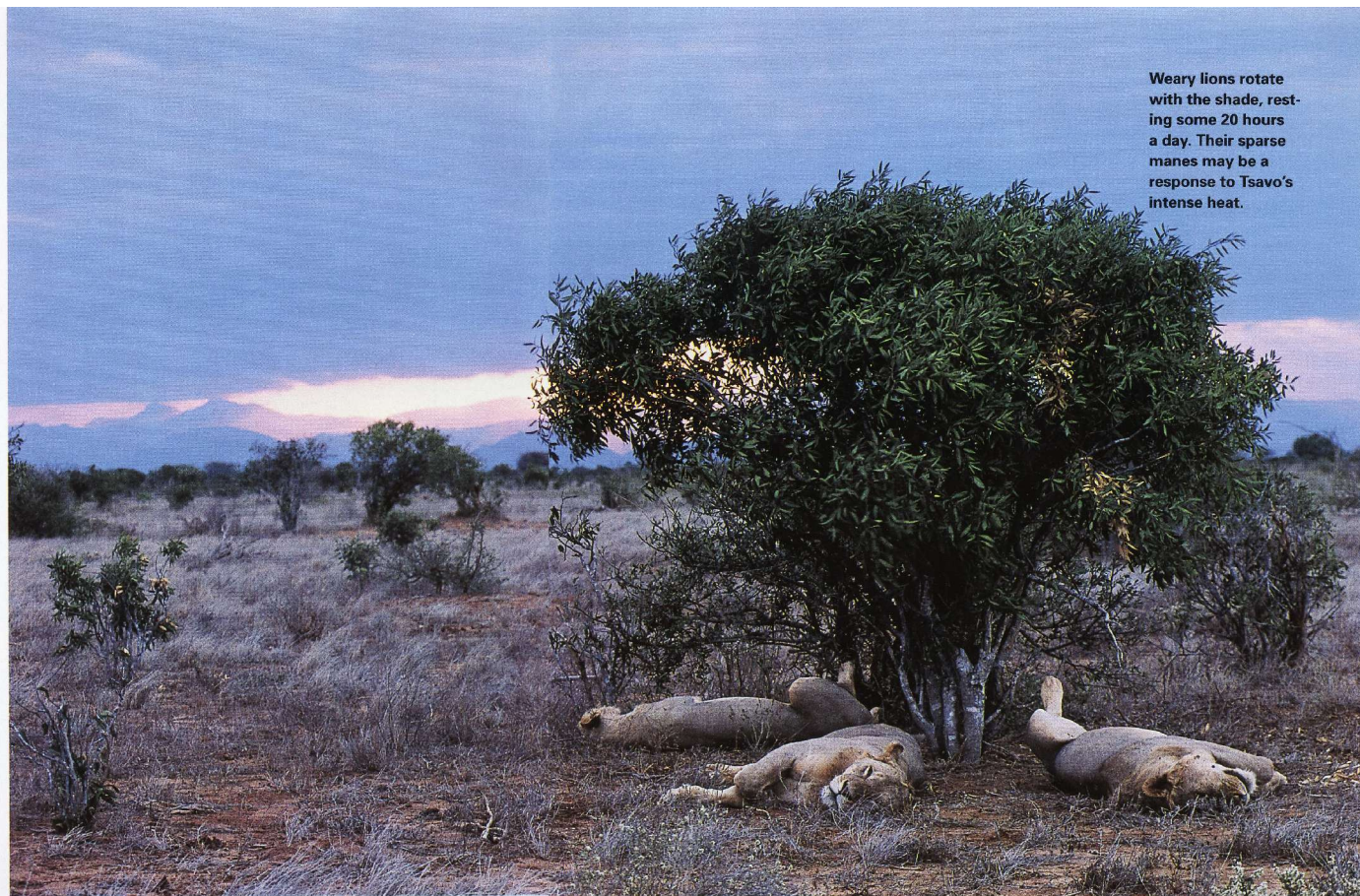
MANELESS IN TSAVO



TSAVO IS A TOUGH PLACE, AND IT BREEDS TOUGH LIONS. THEY'RE SAID TO ATTACK LAND ROVERS, RAID TENT CAMPS, AND STALK TOURISTS. THEY MAY BE BIG AND BAD, BUT WHY ARE THEY BALD?

The face is familiar, but this lion lacks the glorious headdress that gives males their regal air. He and his raggedy kind somehow survive on the thirsty plains of Kenya's Tsavo East National Park.

BY PHILIP CAPUTO
PHOTOGRAPHS
BY ROBERT CAPUTO



Weary lions rotate with the shade, resting some 20 hours a day. Their sparse manes may be a response to Tsavo's intense heat.

We

were awake before dawn, the Southern Cross shining brilliantly in a sky as black as when we'd gone to bed. After a hurried breakfast Craig Packer and I left camp in a Land Rover to look for the maneless male lions for which Kenya's Tsavo East National Park is famous. The dusty road appeared as a trail of white ash in the headlights, and a pair of hyena eyes glowed back at us from out of the dense underbrush crowding the roadside. Full daylight arrived before we reached our destination, the stark Ndara Plains. There we turned right at a junction, passed a dry water hole, and rounded a bend. Craig braked to a quick stop. Fifty feet away three male lions lay by the road. They didn't appear to have a hair on their heads. Noting the color of their noses

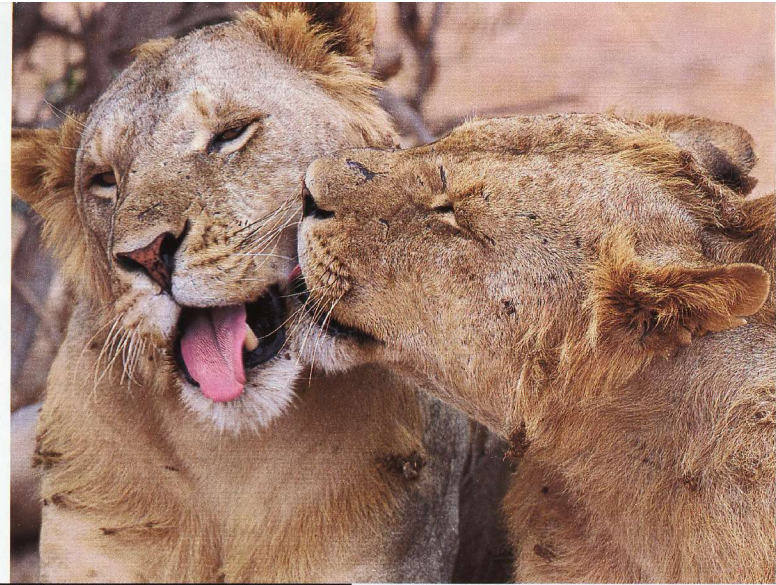
(leonine noses darken as they age, from pink to black), Craig estimated that they were six years old—young adults.

"This is wonderful!" he said, after staring at them for several moments. "This is what we came to see. They really *are* maneless."

Craig, a professor at the University of Minnesota's Department of Ecology, Evolution, and Behavior, is arguably the leading expert on the majestic Serengeti lion, whose head is mantled in long, thick hair. He and Peyton West, a Ph.D. candidate who has been working with him in

Tanzania, had never seen the Tsavo lions that live some 200 miles east of the Serengeti. The scientists had partly suspected that the maneless males were adolescents mistaken for adults by amateur observers. Now they knew better.

The Tsavo research expedition was mostly Peyton's show. She had spent several years in Tanzania, compiling the data she needed to answer a question that ought to have been answered long ago: Why do lions have manes? It's the only cat, wild or domestic, that displays such ornamentation. In Tsavo she was attacking



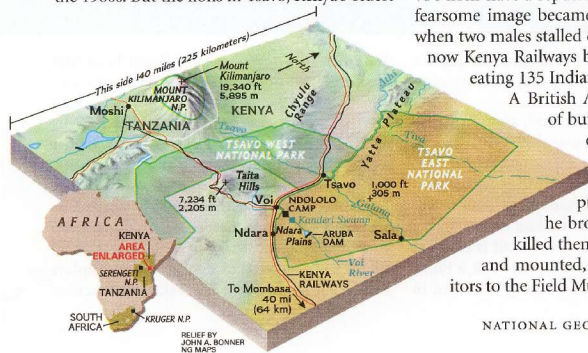
the riddle from the opposite angle. Why do its lions not have manes? (Some “maneless” lions in Tsavo East do have partial manes, but they rarely attain the regal glory of the Serengeti lions.) Does environmental adaptation account for the trait? Are the lions of Tsavo, as some people believe, a distinct subspecies of their Serengeti cousins?

The Serengeti lions have been under continuous observation for more than 35 years, beginning with George Schaller’s pioneering work in the 1960s. But the lions in Tsavo, Kenya’s oldest

and largest protected ecosystem, have hardly been studied. (Tsavo’s nearly as big as Massachusetts at more than 8,000 square miles, ranging from an arid eastern half to green western hills that look out toward the ice-crowned peak of Mount Kilimanjaro, 75 miles away.) Consequently, legends have grown up around them. Not only do they *look* different, according to the myths, they *behave* differently, displaying greater cunning and aggressiveness. “Remember too,” *Kenya: The Rough Guide* warns, “Tsavo’s lions have a reputation for ferocity.” Their fearsome image became well-known in 1898, when two males stalled construction of what is now Kenya Railways by allegedly killing and eating 135 Indian and African laborers.

A British Army officer in charge of building a railroad bridge over the Tsavo River, Lt.

Col. J. H. Patterson, spent nine months pursuing the pair before he brought them to bay and killed them (see page 51). Stuffed and mounted, they now glare at visitors to the Field Museum in Chicago.



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Lions play-fight (above left) and groom away flies and burrs (above) in Tsavo East, more arid and game-poor than Tsavo West (map). “These males are likely stressed—from heat and from struggling to eat in marginal habitat,” says biologist Peyton West. “This could cause mane loss or simply prevent mane growth.” Lion research in the cooler, greener Tsavo West is lacking, but, she says, “I’d expect to see more full manes in that better habitat.”

make a buck. Tsavo lions are generally larger than lions elsewhere, enabling them to take down the predominant prey animal in Tsavo, the Cape buffalo, one of the strongest, most aggressive animals on Earth. The buffalo don’t give up easily: They often kill or severely injure an attacking lion, and a wounded lion might be more likely to turn to cattle and humans for food.

And other prey is less abundant in Tsavo than in other traditional lion haunts. A hungry lion is more likely to attack humans. Safari guides and Kenya Wildlife Service rangers tell of lions attacking Land Rovers, raiding camps, stalking tourists. Tsavo is a tough neighborhood, they say, and it breeds tougher lions.

Patterson’s account of the leonine reign of terror, *The Man-Eaters of Tsavo*, was an international best-seller when published in 1907. Still in print, the book has made Tsavo’s lions notorious. That annoys some scientists.

“People don’t want to give up on mythology,” Dennis King told me one day. The zoologist has been working in Tsavo off and on for four years. “I am so sick of this man-eater business. Patterson made a helluva lot of money off that story, but Tsavo’s lions are no more likely to turn man-eater than lions from elsewhere.”

But tales of their savagery and wiliness don’t all come from sensationalist authors looking to

But are they really tougher? And if so, is there any connection between their manelessness and their ferocity? An intriguing hypothesis was advanced two years ago by Thomas Gnoske, a researcher from the Field Museum, and Julian Kerbis Peterhans, an associate professor at Roosevelt University: Tsavo lions may be similar to the unmaned cave lions of the Pleistocene (*Panthera spelea*). The Serengeti variety is among

MANE EVENT

Dummies lugged into the field by Peyton West and Craig Packer tested how real lions react to manes of differing hues. “We suspect that mane color, like size, sends a message to other lions,” says West (right, with Packer and “Fabio,” foreground). In the Serengeti, light manes seemed least threatening to resident lions. Results in Tsavo matched: A pair of males approached only the blond decoy—sniffed it (below), turned as if to see what it was looking at (center), and finally knocked it over (bottom). “Bob wanted more photos, but I revved the engine and yelled to scare them off before they could do damage,” says West. “I’ve spent enough hours sewing those dummies up.”



the most evolved of the species—the latest model, so to speak—while certain morphological differences in Tsavo lions (bigger bodies, smaller skulls, and maybe even lack of a mane) suggest that they are closer to the primitive ancestor of all lions.

Craig and Peyton had serious doubts about this idea, but admitted that Tsavo lions pose a mystery to science. To tackle it, they had come equipped with an arsenal of tools: a pair of life-size dummy lions that could be dressed in manes of varying sizes and colors (to test behavior), an infrared camera that measures body heat and converts the measurements to digital images (to test levels of heat stress),

GPS (to mark locations of prides), night-vision scopes, and tape recordings of various animal calls (to summon lions from their lairs).

They brought their resources to bear on the trio Craig and I had found. Later that day, joined by Peyton, we returned to Ndara and found the three doing what lions spend most of their time doing—nothing. They lounged in the bushes, flicking at flies with their tails. We christened them Baby Huey (the largest), Meathead (whose jutting jaw gave him a stupid expression), and Fur Boy (the smallest but the owner of the most hair: sparse side-whiskers and a furry “bib”). Peyton ran an experiment using techniques developed in the Serengeti,

where she found evidence suggesting a correlation between a luxuriant mane and masculine vigor. She and Craig didn’t expect the same results with the three Ndara males, because Fur Boy’s inferior size indicated that he was the youngest, but when the recorded roar of a female lion was broadcast through a speaker mounted on the roof of Peyton’s Land Rover, Fur Boy was the first to set off toward the sound and the first to arrive at the Land Rover—where he looked for a lioness but found only a female of the wrong species.

In any event he and his companions had behaved as Serengeti lions would have in the same circumstances.



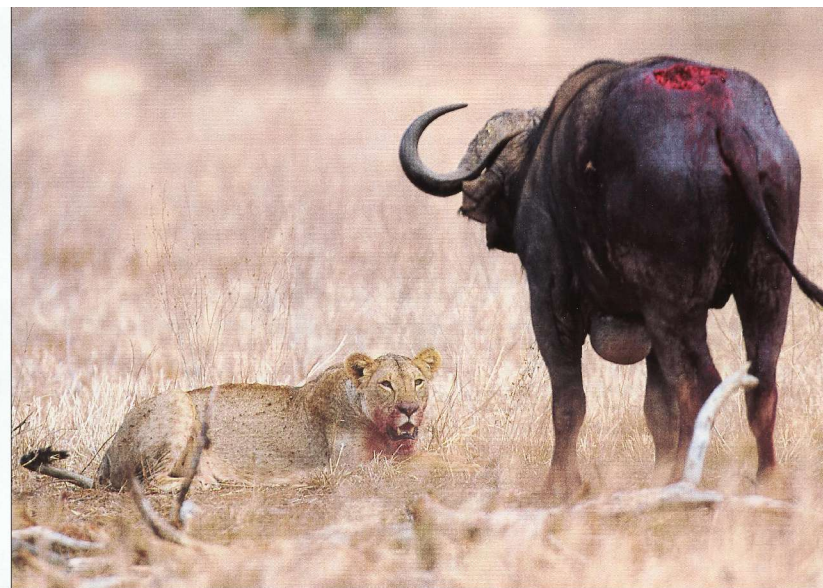
Craig exulted. "It would have taken years just by observing things as they happen naturally to see what we saw tonight in minutes." But in science as in life, pride goeth before the fall. The next experiment, four days later, failed.

In the interim we'd discovered that Baby Huey, Meathead, and Fur Boy belonged to a male coalition that included a fourth lion, which we found devouring a maggot-infested buffalo carcass with a lioness near Aruba Dam. We called him Burr Boy because of the burrs matting his scruffy side-whiskers. He was courting his female dining companion, Melinda, as a second lioness, an old one with rounded teeth, Granny, joined the group.

One day photographer Bob Caputo returned from a scouting trip and reported that he'd just spotted Burr Boy all on his own, bedded down behind the earthen dam. A solitary male provided an excellent opportunity to test how a male reacts to mane length in rival males. The dummies were recoiffed, the first with a long "wig," the other with a short one. Peyton had run this experiment seven times in Tanzania, and every time,

the live lion approached the dummy with the smaller adornment, leading her to hypothesize that another purpose of a mane is to send a message to males: The more prominent it is, the stronger is its possessor, telling potential rivals, "I'm no one to mess with."

We set up alongside the lake in the splendid light of a late East African afternoon. A hen plover and two chicks, each hardly bigger than a locust, pecked grass seed at the shore. A sacred ibis flew low over the water, a winged spear of black and white, while a pair of hippopotamuses wallowed, one giving a cavernous yawn—it looked as if you could park a Volkswagen in its jaws. In the far distance a herd of elephants proceeded at a stately pace toward the water hole. The idyllic scene was shattered when Peyton switched on her recording of hyenas on a kill. It sounded like hell's own choir accompanied by a madhouse glee club: a demonic medley of groans, cackles, giggles, howls, and shrieks. As unpleasant as it is to human ears, the racket hyenas make when devouring prey is an irresistible summons to lions, telling them that there is food to be had by simply driving off the hyenas.



Cape buffalo are tough quarry, but a coalition of Tsavo males (one visible here) usually prevails. Not this day: Despite its bloody wounds, the buffalo held its ground. When successful, Tsavo lions rarely gorge on a kill, perhaps to avoid heat stress. Instead, says Packer, "they'll gnaw for days on rotting carcasses no self-respecting Serengeti lion would touch."

In a few minutes Burr Boy's head appeared above the berm. He started forward, but instead of finding a pack of hyenas and a more or less free meal, he saw what looked like two invading males. He approached with utmost care, amber eyes riveted on his adversaries, nostrils twitching to pick up a scent. An arresting sight, all that golden muscle flowing in the golden light, but I wasn't too impressed with his intelligence. In the Land Rover with Peyton, I whispered that he ought to have figured out by now that the two creatures in front of him, scentless, motionless, and silent, were decoys.

She replied that confrontation with a rival male or males is the biggest event in a lion's life; he can't afford to be anything but extremely

cautious, the consequences of rash action being catastrophic: eviction from his pride, serious injury, even death. "If you were in a dark alley, and some guy pointed an authentic-looking toy pistol at you and said, 'Give me your wallet,' what would you do, even if you suspected the gun was fake?" she asked.

Burr Boy, now within five yards of the dummies, crept toward the one with the shorter mane, lowering his head and circling around to its side, which is something lions always do around a strange male. Facing eyeball to eyeball is sure to provoke a fight.

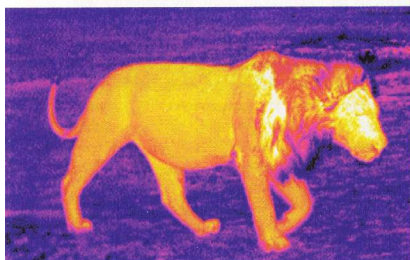
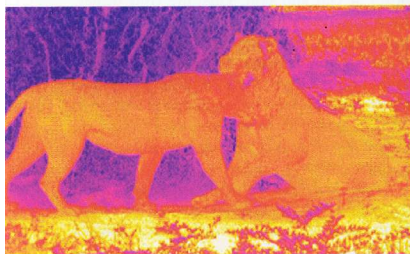
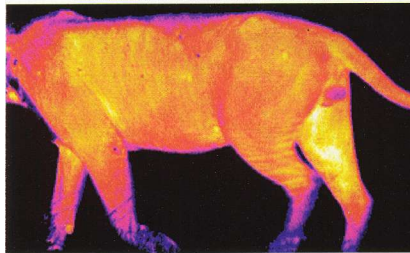
Craig and Peyton were satisfied. Eight times in a row, the last time here, a lone male approached the dummy with the sparsest mane, calculating that it was the lesser of two possible evils. As far as behavior went, the evidence was tipping toward a similarity, rather than a difference, between Tsavo and Serengeti lions.

But if manes are so important, why are Tsavo lions so hairless? Peyton was working on a few ideas. Tsavo's heat was central to one. Noon temperatures often approach, and sometimes exceed, one hundred degrees F. We had seen lions reacting to the heat—panting constantly,

IN HEAT

Thermal photos reveal what's hot (white), what's cool (blue), and everything in between (yellow). A mated pair of Tsavo lions chill out just barely in the shade (center), while a Serengeti male (bottom) displays a hot spot where his ample mane insulates his neck. The maneless Tsavo male (below) keeps a cool head and, more important, cool testicles—“without which sperm production would go way down,” says West. “Serengeti females prefer mates with fuller manes, but in Tsavo there's a trade-off.” Fierce-faced and postcoital at right, a partly ruffed Tsavo male may have traded big hair—a badge of virility—for better heat regulation and reproductive success.

Thermal photographs: PEYTON WEST, UNIVERSITY OF MINNESOTA



lying on their backs with their legs spread, like giant house cats on an August afternoon. Readings from the infrared camera in the Serengeti and Tsavo suggest that manes may raise overall body temperature: In a colder climate, males can afford a mane, but in a hot place like Tsavo, their health might be seriously compromised. Peyton speculates that because much of the Tsavo lions' lives is devoted to keeping cool, a mane would be a costly burden. The Serengeti is higher and cooler than Tsavo, so the males there can develop their distinctive ornamentation without paying too high a price.

Perhaps the lions of Tsavo are genetically different. But the surest way to determine

genetic influences is impractical for now: capturing a male cub from Kruger National Park in South Africa, another from the Serengeti, and a third from Tsavo and raising them in identical conditions. If all grew manes at roughly the same rate, then we could say that Tsavo's environment explains manelessness. If not, then we would have a good indicator of significant genetic variation.

For now Peyton wanted to make further studies of males with the infrared camera. We had located a large pride not far from camp, near a place called Ndololo, but we'd seen only lionesses, cubs, and juveniles. The pride had to be accompanied by at least one or two adult

males, and she went in search of them one morning, with me tagging along.

I had found lion research to be much less exciting than I'd expected—hours and hours of boredom punctuated by moments of sheer boredom, waiting for the lazy beasts to do something. I was shortly to learn that the work can be otherwise.

We bounced along a rutted track bordering the Kanderi Swamp and the Voi River, hornbills flying past with plaintive cries. We found a place where the undergrowth thinned, affording us a good view. Peyton played the hyena tape, and as the hideous wails echoed across the landscape, we scanned with binoculars.



His chin propped up to keep cool, a scar-faced male grabs a catnap.

"Oh my God!" Peyton said suddenly. In the same instant came the shrill trumpets of elephants angered by the hyena cries. Turning to look, I saw nine of them, charging out of the scrub to our right: three calves and two adolescents behind a phalanx of four females, coming on at a stiff-legged run, gray hides reddened by Tsavo's lateritic dust, ears flapping like unsheeted sails in a gale, trunks raised, tusks glinting in the early light.

They were a hundred yards away at most, a distance they halved in about two seconds, which was when the matriarch ceased trumpeting and lowered her head—a signal that the threat displays were over. This was the real thing. She came straight for us with a terrible single-mindedness of purpose. Her tusks could easily pierce the Land Rover's thin aluminum skin, and with a little help from her friends she could overturn the vehicle and leave it looking like a flattened beer can, with us inside looking like—well, I didn't care to think about *that*. With admirable

sangfroid, Peyton switched off the tape recorder, started the engine, and took off as fast as the road would allow, meaning not very fast. We hadn't gone far by the time the matriarch, followed by the rest, thundered through the spot where we'd been parked. Eight of the elephants carried on, but the old girl, with astonishing agility, turned abruptly and chased us down the road, like a traffic cop pursuing a speeder.

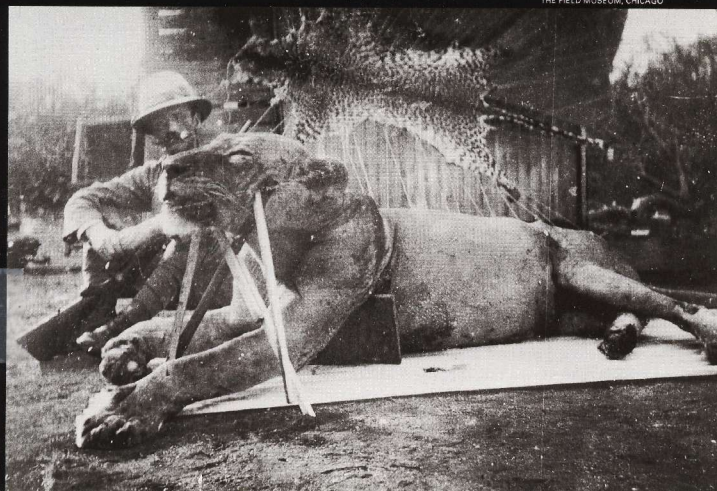
Peyton stepped on the gas. Finally, satisfied that we'd been seen off, the matriarch halted and, with a parting trumpet and final toss of her great head, turned back to rejoin the others. We watched the herd shamble off, now as calm as they'd been enraged—a magisterial procession against an eastern sky going from bright orange to peach to primrose.

We doubled back to see if the hyena calls had stirred any lions. I doubted we were going to see a one; if they had been drawn in by the calls, the elephant charge would have scared them off. Then I yelled, "Stop!" There on the riverbank,

MAN-EATERS?

In 1898 two male Tsavo lions made meals of a reputed 135 laborers, stopping construction of what is now Kenya Railways in its tracks. Lt. Col. J. H. Patterson finally "bagged the brutes" by rifle fire. "The prize was indeed one to be proud of," wrote the Brit, below with his first kill. Why the taste for humans? Perhaps because rinderpest, a disease brought by European settlers' cattle, had killed most of the lions' natural prey. In the rare attack on a human today, the culprit lion is often old or injured—lacking the stamina to take on a buffalo.

THE FIELD MUSEUM, CHICAGO



posed as if for a family portrait, was the Ndololo pride. We counted 11 altogether, but once again, all lionesses, cubs, and subadults. Peyton turned off road and eased toward them. They were not “tourist” lions, accustomed to people in motor vehicles, and nervously drifted away, across the dry riverbed. It was steep-sided, 20 to 30 feet deep. We drove slowly along our side, looking for drift so we could cross and follow the pride.

“Look! The males!”

Peyton pointed ahead. Two of them lay in the grass, both maned—sparsely, but maned nonetheless, the one black, the other blond. Peyton was counting the spots on their muzzles (each lion possesses a unique number and pattern of muzzle spots, a kind of leonine fingerprint) when they rose and padded away. They were by far the best looking males we’d seen so far, with sleek, tawny-gray coats, deep chests, and shoulders striated with muscle. They went across the riverbed, into the deep scrub beyond. We trailed them to the other side, but another surly elephant drove us off and sent the entire pride into hiding. Time to call it a morning.

Three days later Craig and Peyton spotted the Ndololo pair again and tracked them a long way before losing them less than a mile from camp. The striking lions deserved better than the condescending nicknames we’d given the others, so we called them Othello and Prince Hal. The scientists decided on another experiment with the dummies, by dressing one with a black wig, the second with a blond. Peyton’s work in the Serengeti had shown that when threatened by two invaders with dark and light manes, lions choose to attack the latter, which suggests that a dark mane is a sign of strength, light a sign of weakness.

Two hours before dusk the dummies were placed side by side, with 20-odd feet separating them. A female lion’s roar blasted through the speaker on Craig and Peyton’s vehicle. As daylight faded, Othello and Prince Hal appeared, stalking up from behind us.

Every movement was sure and purposeful as they approached in a rippling of sinew and muscle. They slipped through the underbrush with barely a rustle, disappearing, reappearing, disappearing again.

They circled around and crept toward the invaders, Othello leading the way. Suddenly he let out a throaty cough, then a rising, resonant



History’s manslayer is now science’s ecological enigma. “The Tsavo lion lives on the edge,” says Packer, “but still it manages to thrive.”

roar, followed by a series of grunts in diminution. *Wauugh-aaraRRRAR-UNH-unh-unh-unh*. As his fell off, Prince Hal sounded his call, and Othello made the decisive move. With Prince Hal backing him up, he skirted around to the light-maned dummy’s side, then gave it a good sniff. On the radio Craig told us to switch on our headlights, because otherwise his expensive decoy would soon be torn to bits.

We did as we were told, and the lions ran off into the elephant grass. But by approaching the light-maned dummy first, the lions had supported Peyton and Craig’s earlier observations. They could not have been more delighted.

Craig had to return to Tanzania the next morning, taking with him the new information the expedition had gleaned about Tsavo’s maneless lions. Many mysteries remain: Before he left, Craig told me it would take several more years of research to bring the lions of Tsavo out of the shadows of legend and into the light of

scientific knowledge. I’m not entirely sure that will be a good thing. I’m one of those people Dennis King doesn’t care for, reluctant to surrender the myth.

I cling to the image of Othello and Prince Hal, roaring in the African night, beautiful in some terrible way, incarnations of all that’s left in our world of the wild and the unknown. □

MORE ON OUR WEBSITE

Sneak up on maneless lions and the scientists studying them at nationalgeographic.com/ngm/0204.

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KENYA

The Mane Question

Decoys offer insight into behavior of maneless lions

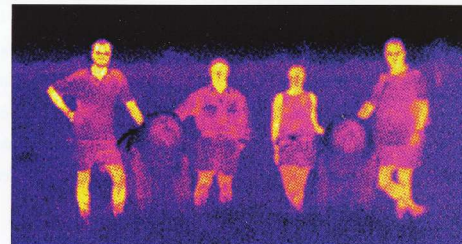
These two lion dummies (above) may not look terribly threatening to us, but they're enough to attract the attention of genuine maneless lions in Kenya's Tsavo East

National Park. "An invasion by a strange lion is the greatest threat a male will ever confront, aside from an armed human being," says author **Phillip Caputo** (second from left).

"So the lion must be extremely cautious." The lions' reactions to the decoys, fitted with wigs by researchers Craig Packer (far left) and Peyton West (second from right), reveal much about the role of manes.

Phil—a novelist, former marine, and Pulitzer Prize-winning reporter—first encountered Tsavo's maneless lions as a boy in Chicago, when he saw two specimens in the Field Museum.

"Hardly anyone has subjected them to a really thorough study, although a research team from the museum is working on one," says Phil, who is currently writing a book on the maneless lions of Africa. He was joined in Tsavo by veteran Africa photographer **Robert Caputo** (no relation). The four also star in an infrared photograph (right); the researchers use such images to measure heat stress on a lion's body.



ROBERT CAPUTO (TOP); OGETO MIWESI