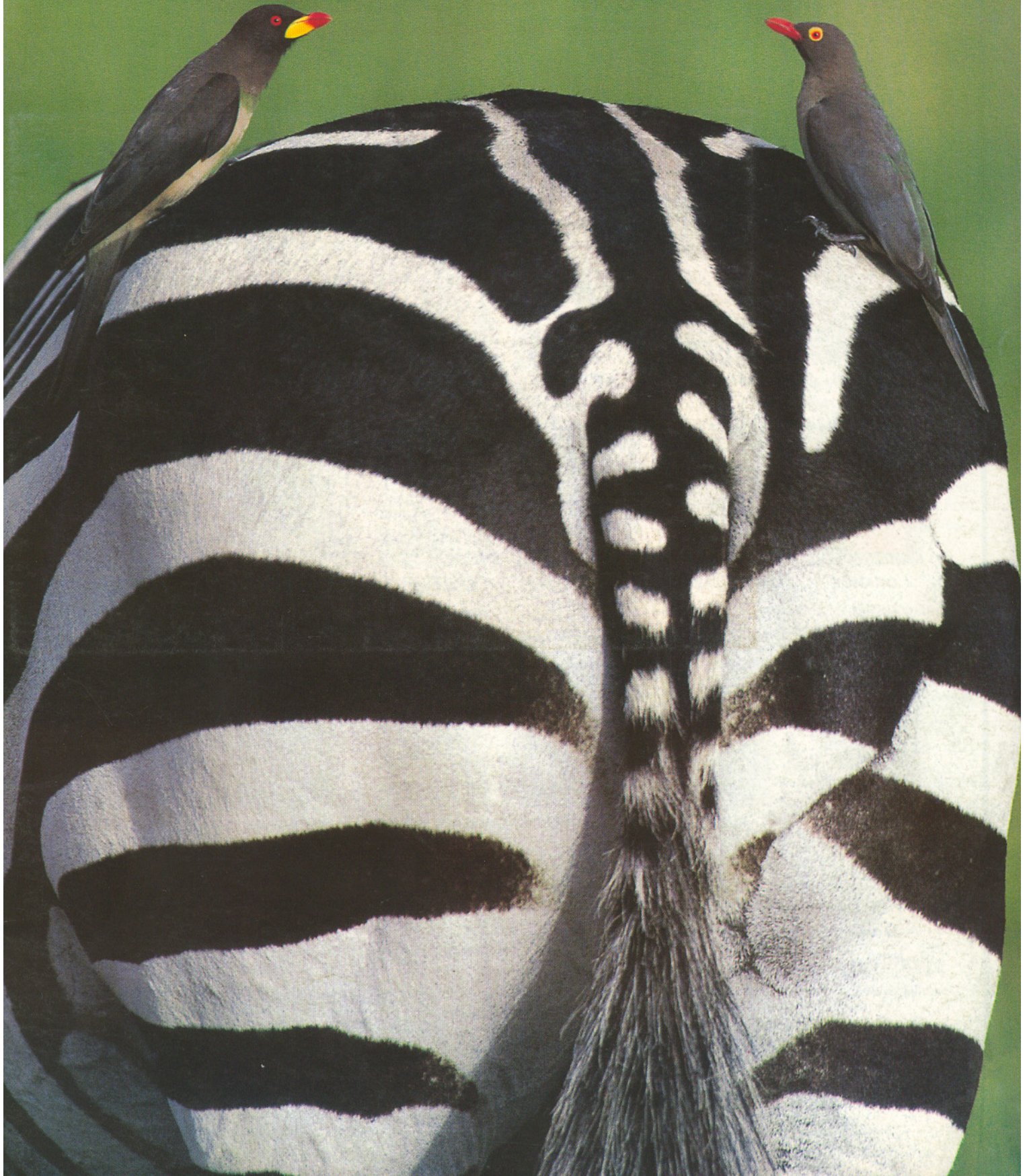


Swara

East AFRICAN WILD LIFE Society

Volume 24:1 January - April 2001



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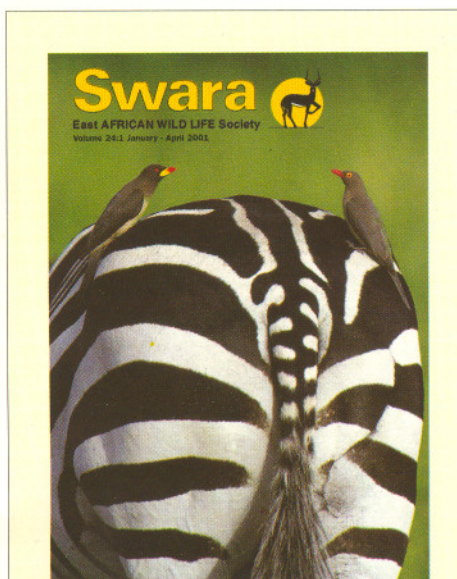
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COVER

Double take: it's unusual enough to see both oxpecker species, the yellow-billed (left) and red-billed (right), on one animal, let alone eye-to-eye – like these two Mara birds – in near-perfect equipoise. This zebra is odd too in having a disfiguring scar on its rump, the result perhaps of a lucky escape from a lioness.

Photo: Jonathan Scott

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47 **Sightings** PECKING ORDER

A rather streaky customer observed in Kenya's Kibwezi Forest has birder **Bernd de Bruijn** scabbling around for possible answers.

60 **Back Window** DOUBLE TROUBLE. **Anne Mugo** counts herself *twice* lucky.

Between the Lines

Regular visitors will know there is usually plenty of parking to be had at the East African Wild Life Society's Kilimani, Nairobi offices. Yet there were times in February and March when this normally ample parking area was crammed with vehicles and milling crowds for days on end. Many, pulling up at the gate then, were asked to go and find parking elsewhere.

But nobody minded in the least; that was the amazing thing. Indeed, most found the inconvenience positively uplifting. For it was a welcome show of the extent of public support for the one pressing cause that had brought them here. All had come to register their protests at the Kenya government's recently unveiled plans to excise large chunks of land from gazetted forests around the country.

Within ten days the Kenya Forests Working Group (KFWG), within the Society, had collected no fewer than 28,148 signatures. The resulting petition was then forwarded to the government, along with formal letters of objection. For KFWG co-ordinator, Michael Gachanja, and his colleagues, the task of channelling such a massive response with all due haste meant many sleepless nights.

The one especially gratifying thing, according to Michael (whose own account of events appears on page 54), was the breadth of the public's response. "There were people here from all walks of life," he says, "— from near and far, and from every level of society." And many of them, as it turns out, had not come by car at all. They had walked in from bus-stops along nearby Ngong Road.

Gordon Boy, Editor

Swara

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The impala is the symbol of the East African Wild Life Society. 'Swara' is the Swahili word for antelope.

Here come old flat face

Fossil remains dating back 3.5-million years betray the existence of another major player at the dawn of human evolution.

Meave Leakey and colleagues from the National Museums of Kenya have unearthed fossils belonging to a new genus of human ancestor, *Kenyanthropus platyops*, that could have profound implications for the understanding of early human evolution.

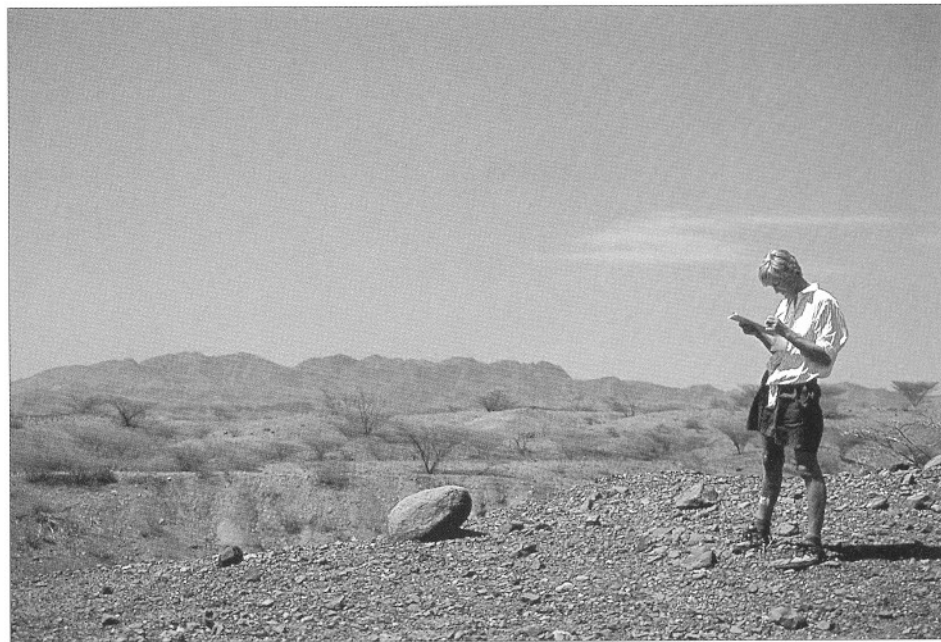
The new finds, described in the March 22 issue of the scientific journal *Nature*, are between 3.5- and 3.2-million years old. They were recovered in 1998 and 1999 during field work sponsored by the National Geographic Society.

Since the early 1980s many scientists have believed in the idea of a single common human ancestor that gave rise to successive species within the past 3-million years. That ancestral species, *Australopithecus afarensis*, is best known from the partial skeleton discovered in Ethiopia in 1974 and popularly known as 'Lucy'.

The newly discovered Kenyan fossils, which include jaws and teeth in addition to a skull, while from the same time interval as *Australopithecus afarensis*, are remarkably different. *Kenyanthropus* has a much flatter face, for instance, than *Australopithecus*. This is reflected in its name, *Kenyanthropus platyops*, which literally translated means 'the flat-faced human from Kenya'.

"*Kenyanthropus* shows persuasively," says Meave Leakey, "that at least two human

The *platyops* skull (below), seen undergoing preparation (below right), heralds a new line of thinking on early human ancestry.



Pictures: © NATIONAL GEOGRAPHIC SOCIETY

Remains of the day: Meave Leakey in northern Kenya, near the site of the *platyops* finds.

lineages existed as far back as 3.5-million years; hence the early stages of human evolution are more complex than we previously thought."

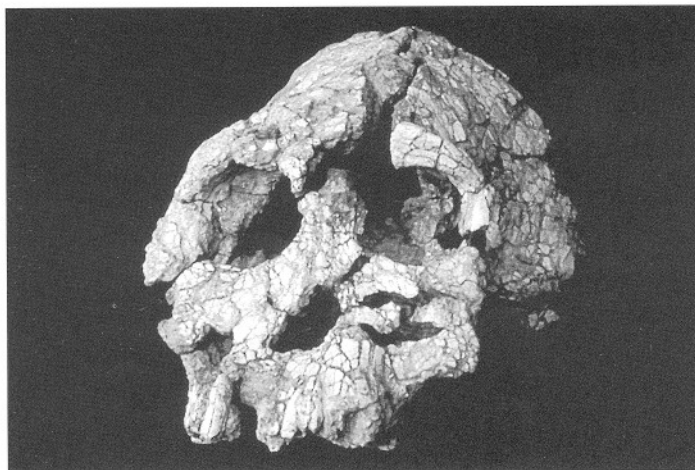
Of particular scientific interest among the new finds is the near-complete skull. This was discovered by research assistant Justus Erus while working with Meave and Louise Leakey near the Lomekwi River in northern Kenya. Flat face aside, the *Kenyanthropus* skull has especially small molar teeth.

Both tooth size and face shape relate to how a species chews its food. So the differences between *Kenyanthropus* and *Australopithecus* may signify that they had different diets and so could have existed side by side without direct competition over food resources.

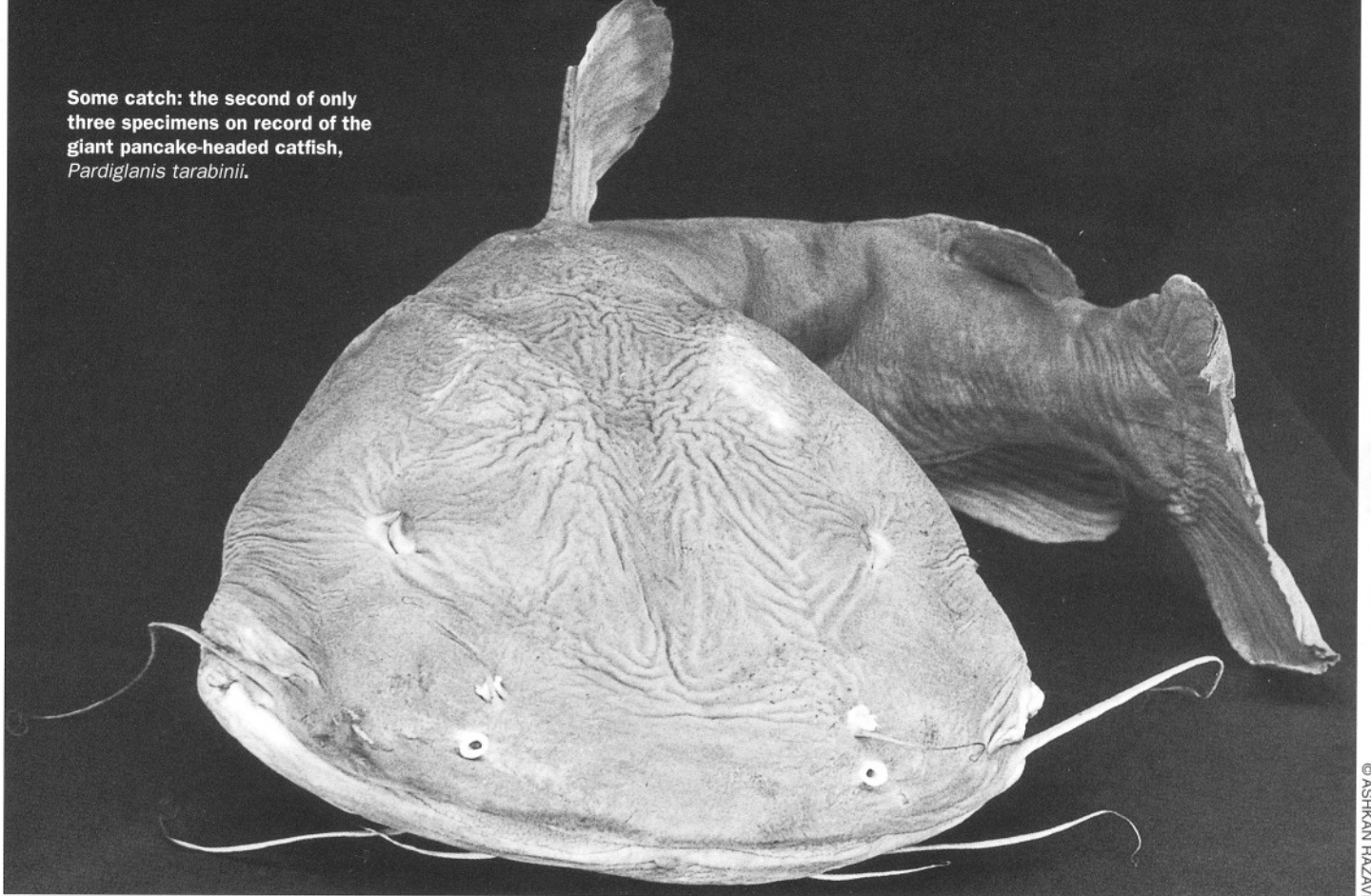
The team working on the new finds included Christopher Kiarie, who carried out the painstaking laboratory preparation

of the fossils; Frank Brown and Patrick Gathogo, of the University of Utah, who studied the earth layers in which the fossils were found, and Ian McDougall, of the Australian National University, who isotopically dated these layers. Analysis of the fossils was conducted by palaeontologists Fred Spoor, of University College, London, and Meave and Louise Leakey.

The National Geographic Society has sponsored palaeontological field work done by the National Museums of Kenya in the Lake Turkana basin since 1968. Geological studies relating to these new finds were supported, in addition, by the US-based Leakey Foundation. The isotopic dating was supported by the Australian National University.



Some catch: the second of only three specimens on record of the giant pancake-headed catfish, *Pardiglanis tarabinii*.



© ASHKAN RAZAVI

A freshwater ‘Coelacanth’

Rediscovered after nearly thirty years in the wilderness, the giant pancake-headed catfish really is something to behold ...

It looks decidedly odd, even for a catfish. Its monstrously wide head, for one thing, seems out of all proportion to its body, which is puny by comparison. Its eyes, tiny and set far apart, look strangely inadequate amid the folds of tough, rubbery skin lining its brow.

Its mouth looks grotesquely wide; so wide that only a head of such prodigious bulk could possibly accommodate it. Flat and pancake-shaped, this massive head accounts for nearly 40 % of the fish's body length and is more than twice the width of even the broadest portion of its abdomen. Only the characteristic whisker-like barbels around its mouth, four pairs of these in all, are relatively slight.

No ordinary catfish, this is *Pardiglanis tarabinii*, now commonly being called the giant pancake-headed catfish. And the specimen before us – a whopping male, 88 cm long and weighing more than seven and a half kilos – is one of only three such fish ever to be brought to the notice of science.

Two of the existing trio of specimens came to light only last year. Both are now

among the Nairobi collections of the Ichthyology Department of the National Museums of Kenya (NMK). As the only fresh evidence of *Pardiglanis* to surface in the 28 years since this species was described (from a single male specimen caught in the lower Juba River in southern Somalia in 1972), the two new finds are – not surprisingly – attracting great interest.

Both fish – and one is apparently a female, which would make it the first of its species on record – were caught in the lower reaches of the Tana, Kenya's longest river. Both were brought in by local fishermen from the Baomo area who have been working with NMK scientists on a comprehensive survey of the Tana's freshwater fish types. This survey is itself part of an ongoing GEF (Global Environment Facility) project in the Tana River Primate National Reserve.

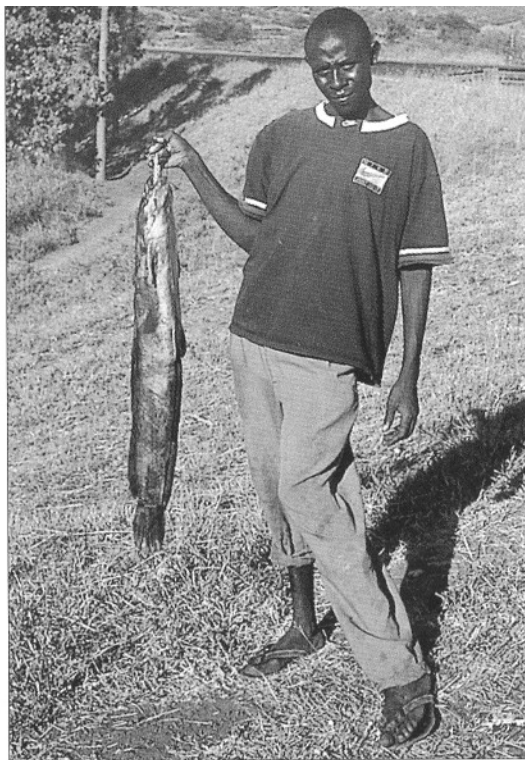
Early last year some of the Baomo fishermen bluntly informed the scientists that their inventory of fishes for the area was incomplete. “There's one fish you don't have,” these fishermen insisted, “and that

fish is the one we [in the Pokomo language] call *mpumi hwahwa*. It's not a common fish, but it is sometimes caught – usually at night. It's very ugly and it doesn't have much flesh on it. So, nobody here eats it; and, whenever one *is* caught, it is simply thrown away – or used as bait.”

The scientists, under chief Museum ichthyologist Dr Luc de Vos, nevertheless succeeded in eliciting a promise from the fishermen that, when next one of these mysterious fish was pulled out of the river, it would be kept for them – intact and in a drum of formalin.

They didn't have to wait long. For, come March 2000, one of the fishermen – Michael Israel Omara – did manage to land one of these giant fish. It was caught in the shallows during the extended recent drought when water levels in the river were exceptionally low. The monster was hooked on the river's sandy bed using another dead fish as bait. This suggests that the species may, in part at least, be a carnivorous scavenger. The stomach of the landed fish was empty. Its identity, though, was obvious from the moment De Vos set eyes on it: a second specimen of the elusive *Pardiglanis*.

Until then, this monstrous catfish was known only from the solitary type-specimen housed in Italy's Florence University



© Susannah Goss / STORM

More familiar fare: roadside vendor with 'sharptooth' catfish, *Clarias gariepinus*.

Zoological Museum. That specimen is the one collected near the Somali town of Gelib in 1972 by the Italian zoologist Prof Tarabini Castellani. He in turn had acquired the fish from a local fisherman on the lower Juba River. His specimen was subsequently described as a new genus and species by a team of scientists headed by the eminent Belgian ichthyologist Prof Max Poll.

From the Baomo area, De Vos and his team have since taken delivery of their second specimen, the presumed female *Pardiglanis*, which – at 81 cm long – is rather smaller than the male presented to them by Omara. The NMK scientists are eager, now, to get their hands on a live specimen, as this would enable them for the first time to study the fish's habits. They hope, before long, to be able to put such a specimen on public view – in the aquarium section of the Nairobi Snake Park.

The habits of *Pardiglanis* are still something of a mystery. That it frequents the same waters as, and apparently lives in close association with, the common wide-headed catfish, *Clarotes*, is well known.

Local fishermen on both the Juba and the Tana rivers have echoed this view, adding that both species appear to live side by side in the thick mud on the riverbed.

The puzzling aspect is that none of the fishermen has ever – yet – knowingly seen any of the fry, or juveniles, of the giant pancake-headed catfish. "This is surprising," concedes De Vos, "in that these fishermen are all very familiar with *Clarotes* young, which of course they are seeing all the time."

This could mean one of several things. "Either," says De Vos, "the *Pardiglanis* adults could have migratory habits, which would explain the reported absence of juvenile fish from where the adults are found. Or the juveniles could be very cryptic, and so escape detection by fishermen."

"Alternatively, the fry and juveniles could so closely resemble those of *Clarotes* as to be virtually indistinguishable. Or else," he adds, on a highly speculative note, "this giant fish could simply be a monstrous phenotype, or perhaps even a special morph, in the life cycle of *Clarotes*, with which it is known to cohabit."

The latter theory seems improbable, however, given the extremely solid and well-developed cranial bone structure evident in the two Museum specimens. "But nothing can be ruled out as impossible," cautions De Vos, "until we've had the chance to study this fish properly."

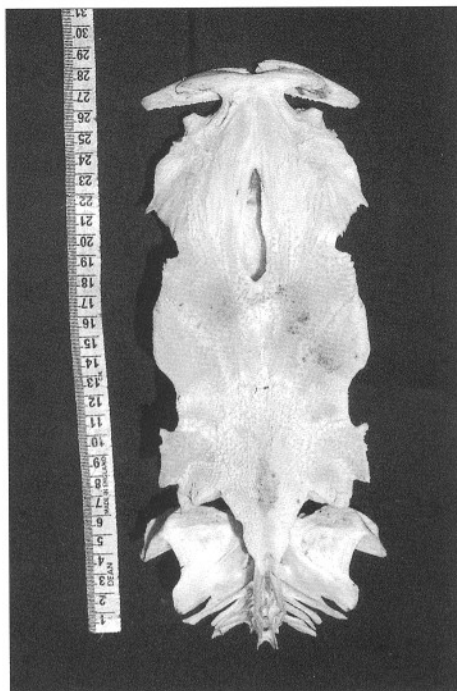
Rare instances of head widening have, he says, been reported in some other claroteid catfish species of the genus *Chrysoichthys*, among the older adults of both sexes. But this phenomenon, where it has occurred (and it has never been observed in *Clarotes*), has not been on anything like the kind of scale that could explain the huge discrepancy in head size between *Clarotes* and *Pardiglanis*.

In the meantime, De Vos and his team have dredged up a fascinating link suggesting that *Pardiglanis* – while apparently now restricted to the Tana River systems of Kenya and Somalia – may once have enjoyed a very much wider distribution.

The cue for this hypothesis is the 3.4-million-year-old fossil of a complete 96-cm claroteid fish unearthed in East Turkana. That fossil, now among the collections in Nairobi's NMK Palaeontology Division, seems to correspond in every detail with *Pardiglanis* – the giant pancake-headed catfish.

It suggests that *Pardiglanis* may have been around for a very long time, and that – like that other, rather better known marine 'living fossil', the coelacanth – it has changed little over the intervening millennia. Little wonder, then, that De Vos and his team have taken to referring to their rediscovery of this long-lost catfish as a "Coelacanth story for freshwaters."

– reported by Gordon Boy



PICTURES: © LUC DE VOS



The jaws of the common 'wide-mouthed' catfish, *Clarotes* spp. (left), are dwarfed by those of the 3.4-million-year-old *Pardiglanis*-like Claroteid 'fossil fish' (right) from Kenya's East Turkana area.

Further information can be obtained from Dr Luc De Vos at the National Museums of Kenya, Department of Ichthyology, Box 40658, NAIROBI, Kenya. E-mail: < nmk@museums.or.ke >

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A force to conjure with

Your musings (SWARA, Vol 23:2) on the whirlpools that move in opposite directions north and south of the Equator (anti-clockwise in the northern hemisphere, clockwise in the southern) may benefit from a correction and a clarification.

The phenomenon is the **Coriolis effect**, also known as the **Coriolis force**, so named after the French mathematician Gaspard Gustave Coriolis (1792-1843).

You are correct, though, in pointing out that this effect is impossible to demonstrate as 'simulated' by our clever countrymen to entertain tourists wherever a trunk road crosses the Equator. In such settings the force is, indeed, so weak as to be very easily overcome by perturbations.

No doubt it is our equatorial physics teachers themselves who impart the desired momentum. How they do this is their closely

guarded secret. But they do deserve some credit. For they can recreate the semblance of this phenomenon unfailingly, over and over again, in a funnel where some straw can be seen whirling about dramatically in the intended direction.

Impossible though it may be to demonstrate the force with funnels and pots on the Equator, the importance of the Coriolis effect in determining the directional flow of air and water currents is overwhelming. That cyclones rotate clockwise in the south, and anti-clockwise in the north, for instance, is due entirely to the Coriolis effect.

So, what then is this mysterious force? When the earth rotates west to east on its axis, the resulting centrifugal force is greatest on the Equator and zero at the poles. So imagine two parcels of air, or water: one north, and the other south, of the Equator. The closer the two

Tricks of the trade

I was intrigued by the letter (in SWARA 23:2) concerning the people at Nanyuki's Equator signboards who contrive to demonstrate the Coriolis force (not *Coriolis*, as you have it) by getting the water draining from two basins to flow in opposite directions, depending on the hemisphere in which each is placed.

Clearly some trickery is involved, as the basins are too close to each other to have any effect on flow direction (even in the unlikely event of these signposts' standing exactly on the Equator in the first place!)

SWARA confessed to being in the dark about this. Yet, in your accompanying extract - from *National Geographic World* - the answer is clearly given: "The Coriolis force is far too weak to see enacted in a bathtub.

It is easily overcome by other factors, such as the *shape of the tub*, [or] the *position of the drain or plug* [my italics]."

All that our intrepid entrepreneurs on the Equator have done, it seems, is to find themselves two basins, the structure of one's ensuring that its contents will always drain in a clockwise direction, and that of the other's ensuring that its contents will always drain anti-clockwise. By making sure always to position the former in what is supposedly the southern, and the latter in the presumed northern, hemisphere, they have been able to come up with what amounts to a highly effective, very low-budget tourist attraction!

**John Dawson
Hillcrest School
P O Box 24819
NAIROBI**

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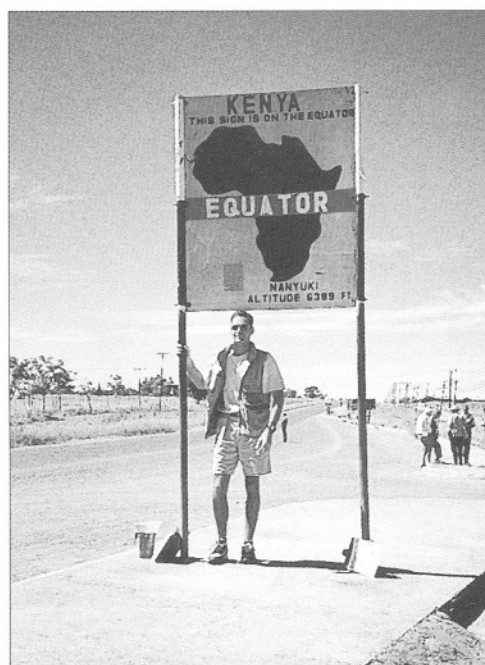
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parcels are to the Equator, the greater is the momentum of their particles.

The differential between the faster-accelerating particles near the Equator and those slower-moving particles further away creates a swirling, rotational movement that is always clockwise for the southern parcel and anti-clockwise for the parcel in the north.

The Coriolis effect manifests itself in other fascinating ways. One – precession – is especially important for pilots who, when flying in a north-south or south-north direction, must continually reset the direction indicator. This is because the inertia of the gyro will point in a direction that was south, or north, a little while ago but is



EWMS File Picture

no longer so because the surface of the earth has moved.

Because rotation and circulation in relation to motion around other bodies are the basis of celestial movement, the Coriolis effect is as important as any one of Kepler's laws.

Demonstration of the effect to gullible tourists has a long

history. Sailors used to revel in showing passengers how the vortex of water draining from the bathtubs in their cabins would change direction the instant the ship crossed the Equator. How they contrived to make this happen in a tub on board a ship pitching and rolling over the waves was also a closely guarded secret.

Of course, neither the sailors nor our roadside scientists on the Equator can cheat physics. All they *can* do is to cheat tourists. One might suppose that at Nanyuki, where the distance to the centre of the earth is nearly 2,000 metres greater than at sea level, it might be possible to demonstrate the Coriolis effect. But, whereas the force there is indeed greater, it is not demonstrably so.

Instead, it would be easier – and could even vouchsafe a better income – for these scientists to show tourists how, on the Equator, they *weigh less* than they do at home in Europe or America. For on the Equator a kilogramme mass pans out at less than a kilogramme weight. This is not due to the Coriolis effect *per se*, but is because the centrifugal force counteracting gravity is greater on the Equator.

Equator-adjusted scales, then, could enhance the trading positions of our *jua kali* scientists. "Ewe bibi," they might now start proclaiming, "Wacha nikuonyeshe kwamba, hapa nchini Kenya uko na uzani mchache kuliko unapokuwa nchini mwako." (Hey madam: let me show you that here in Kenya you weigh less than you do in your own country.)

Anonymous e-mailer
<.co.ke >

Spin doctoring

In response to your challenge (SWARA 23:2) concerning *faux* demonstrations of the Coriolis effect at the Equator sign-board in Nanyuki, Kenya, I can report that I experienced this impressive little trick in July 1999. On parting with the worldly sum of US\$ 2.00, I was even given an 'Equator Crossing' certificate into the bargain!

I later became involved in an interchange with friends on this effect, which results from the earth's rotation in relation to its curvature. The bottom line: one might expect a maximum Coriolis spin of just a single revolution per day at either pole; much, much less near the Equator.

Multiplying this single revolution by $(1 - \cos \{\text{latitude}\})$ results in a spin of just 0.00015 of a revolution at one degree latitude, which is 11 km from the Equator! So,

while opening a spigot should theoretically produce some amplification, random effects will normally outweigh any Coriolis spin component so overwhelmingly as to nullify the effect entirely.

I have observed bathtubs and water closets in the northern hemisphere draining in either direction. I have also noticed washbasins in the tents at Sweetwaters Camp (set right on the Equator) drain with equally impressive spin in either direction. As one friend put it: "If the water had any initial rotation before the valve was opened, then that rotation would be amplified as the water moves towards the centre, as happens for example when ice skaters fold their arms."

George Wysup
Alta Loma
California, US

Fancy footwork?

The Coriolis effect (SWARA 23:2) has, it is true, been seen to affect the draining of basins under carefully controlled conditions. As an infinitesimally small force, it is very difficult to demonstrate, however. And it certainly has no discernible bearing on the direction of rotation observed in such everyday situations as the draining of sinks or lavatory bowls.

One must therefore think of another way in which the demonstrators at Nanyuki, and at other places on the Equator, might impart the required direction of rotation.

One possibility suggests itself. To begin with, the demonstrator may stand on the Equator facing south. Filled basin in hand, he may take a few strides to his left [i.e. due eastward], turn

abruptly left again for another few paces [northward], and then left again [westward], before turning left on his heels so as to be facing south again.

By proceeding now to give his demonstration, he might have imparted sufficient counter-clockwise momentum to the water in his basin to satisfy his audience. By following the reverse procedure, he might go on to induce the semblance of clockwise cyclonic rotation in the southern hemisphere.

Never having observed the Nanyuki tourist attraction, however, I stand to be corrected, and am of course open to alternative theories!

Simon Rycroft
Pembroke House
GILGIL
Kenya

For the crater good

As a consultant and strategist to Conservation Corporation Africa (also known as Conscorp or CCA) involved in the skills development of some 200 permanently-employed guides, I should like to come to the defence of the company's new Ngorongoro Crater Lodge.

Melanie Finn's article *Inspection Tour* (SWARA 23:2), specifically about the Serena Hotels chain, made what I believe to be an unjustified remark. Her throwaway comment: "... where Conscorp has defaced the Ngorongoro Crater with its new hotel ..." cannot be allowed to go unchallenged.

While the avant-garde architecture of the new lodge may not be everybody's cup of tea (even if a good many *are* enthralled by its blend of Maasai and Zanzibari styles), it must be said that it is – in terms of bed numbers – half the size of the original lodge it replaced. This alone – in terms of reduced vehicle impact on the Crater floor – is praiseworthy.

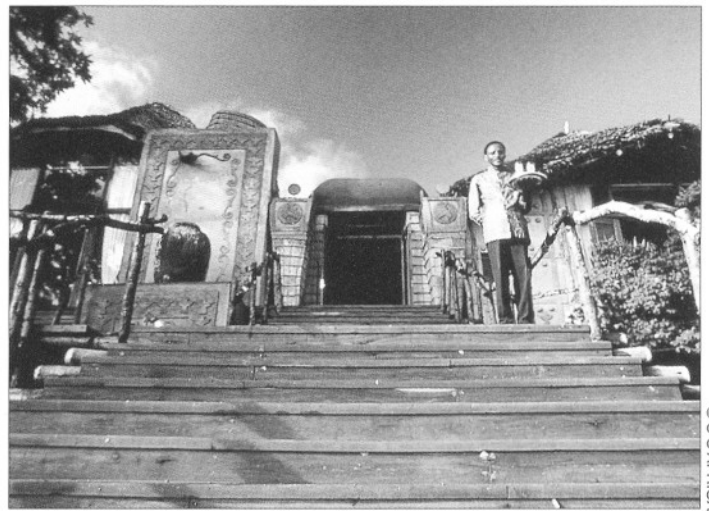
As for the thatched rooms and buildings: these are all but invisible from the Crater floor. Only the administrative block – located near the well-used rim road – juts out to the eye. Closer inspection, however, will reveal a host of indigenous trees, shrubs, and climbers which have been planted so as eventually to screen it from view. A large

number of other trees native to the Crater rim have been planted all around the lodge premises.

SWARA readers may be interested to know that CCA is also deeply concerned about the over-use of the Crater floor and is actively involved with the NCAA (Ngorongoro Conservation Area Authority) and other parties in helping to establish better means of control by operators. In addition to this, Ngorongoro Crater Lodge promotes greater exploration of the Conservation Area – taking guests to other localities – so as to lessen the impact on the Crater floor.

Later in her article, Finn is clearly concerned about the dearth of information for guests at the East African lodges she visited (none of these CCA properties). Lest the impression be created that this situation pervades the industry, your readers may be interested to hear of CCA's endeavours in this regard.

As a company we are committed to developing skills among our staff and to providing our guests with a highly interpretative experience. To this end, CCA supplies guests with information – in the form of a complimentary *EcoGuide* – on the ecology of every locality where it operates (more than 25 lodges in five countries). Up-to-date checklists for each locality



© CCAFRICA

on the birds, mammals, plants, and other life-forms are also readily available.

Our guides receive advanced training and many take part in networking schemes allowing them to visit other CCAfrica properties in Zimbabwe, South Africa, Botswana, and Kenya. Ongoing inputs for our guides include newsletters, workshops, and grading in relation to safety and walking trails. To the best of my knowledge, CCA is the only safari company on the continent that not only encourages its guides to gather data for field projects (while going about their jobs) and to document unusual wildlife observations, but that also provides them with a forum to have their work published with full recognition and acknowledgement.

Our annual publication *CCAfrica Ecological Journal* presents the work of our guides and is distributed on a compli-

mentary basis to more than 100 environmental organisations and libraries in Africa, Europe, the US, and Australia. It is also available for purchase by guests and the general public. The *Ecological Journal* is not a marketing ploy but a genuine effort to add to the body of knowledge on African ecosystems.

In addition to our ongoing commitment to providing the most informative and enthralling guest experience, CCA is developing an integrated conservation strategy which aims to demonstrate that ecotourism can make a significant contribution to the long-term conservation of wildlife in Africa, and to the sustainable advancement of local communities. I look forward to being able to outline the company's progress in future issues of SWARA.

Duncan Butchart
Nelspruit, South Africa
< dbnature@iafrica.com >



© J A CAVANAGH

Not the half of it!

I thought SWARA readers might be interested in the accompanying photograph (*left*). Alas, though, it captures fewer than half of the 26 vehicles I saw massed phalanx-like before a single wildlife spectacle in early February.

The spectacle in question: a small herd of elephants in Kenya's Amboseli National Park. In future I shall have to remember to use a wide angle lens when trying to do justice to such amazing concentrations of humanity.

J A Cavanagh
Symbion International
P O Box 70577
NAIROBI



Buffalo lion with lioness near Sobo Rock in Kenya's Tsavo East National Park.

© SARAH LANSING

The crush on Zawadi

Your last issue (Vol 23:2) is magnificent. In particular, I welcome the inclusion of more letters from readers and the interesting follow-up on so many of the articles from your previous issue.

As an avid birder, I especially liked the sequels on the frigatebird and, depressing though it is, on the lammergeiers. I have worked with sea turtles off Florida, the Virgin Islands, Mexico, and elsewhere. So I was glad to read of Kenya's interest in preserving turtle numbers.

While in the Mara last July I saw Zawadi in Leopard Gorge. Unfortunately she was surrounded by numerous vans that had been driven right up underneath where she was trying to rest in a sausage tree. The vans were red with white lettering. But the tour firm's name, alas, escapes me. That safari operator, whichever one it is, should be reported not only for driving off-road but also for needlessly harassing the area's wildlife.

Nancy Freedman, US
by e-mail

Half-Tail, full marks

I loved the article in SWARA about Half-Tail the leopard. Over the past four years I have enjoyed regular photographic safaris with Eberhard Brunner. I remember seeing Half-Tail a few years back and was saddened – during my most recent trip – to learn of her death.

I should very much like to send Jonathan and Angela Scott some pictures I took in October 2000 of Angela with a lion resting underneath her vehicle. I shall mail them to SWARA, in the hope that you will be kind enough to forward them for me to the Scotts.

Marjorie Anderson, US
by e-mail

Very like a *nunda*

Congratulations on another fine issue of SWARA (Vol 23 No.2). It contains several excellent articles. Of particular interest to me was the editorial section on page 2 with its references to the *nunda*, or *mngwa*, and the quotation from twelfth-century Swahili hero Lioango Fumo.

The days when the "great and mysterious *nunda* was feared by every village on the coast" may be long gone. But not all is mythology. Indeed there are tales enough of deaths and injuries inflicted by some huge grey cat along the Tanzanian coast in the 1920s and 1930s as to be quite

convincing. In support of your suggested explanation for this mystery I should like to offer the following comments:

Many of the adult male lions of Kenya's Coast Province are maneless but for a cheek ruff, and some have a distinctive gunmetal grey colouration on their backs and sides. They also tend to be rather tall and 'rangy', standing somewhat higher at the shoulder than your average male lion. For a while, these lions were even accorded sub-specific status, as *Panther leo sabakiensis*.

I have observed many such specimens in the Lake Jipe area.

I venture to suggest that, if the above-mentioned characteristics extend to the lions of far south-eastern Tanzania, then the terrible *nunda*, feared for 1,000 years, may very well have been a race of large, grey, maneless lions.

It is perhaps worth noting that at Mikindani in south-eastern Tanzania, a single lion (documented in *Through Forest and Veldt*, by Donald I Ker, 1957, p. 33), is known to have killed 380 humans.

J M Cheffings
Bateleur Safaris
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NAIROBI

Dividing lions

I very much enjoyed the article (in SWARA 23:2) on 'buffalo' lions, which I confess I hadn't heard of before.

Many male lions in southern Tanzania do indeed have sparse manes and large tail tufts, and appear physically larger, al-

though smaller-headed, than either Serengeti or Ngorongoro lions. I don't remember seeing any belly flaps, however. I shall have to examine them more carefully on future trips.

My only criticism is that the picture on your cover isn't very

sharp. But then, I don't suppose there are many people who – knowingly, at least – would have photographs of 'buffalo' lions to submit!

Graham Mercer
International School
of Tanganyika
DAR ES SALAAM

Uncharted territory

As an overseas member I very much look forward to receiving my quarterly SWARA. Though very good, I feel that many of the articles would be improved by the provision of a map.

With reference to Vol 23:2, I think that maps might usefully

have been included in the features on the hirola (pp. 4-5), the Amani Nature Reserve (pp. 16-18), and West Kilimanjaro (pp. 39-42).

Alternatively a single large map, reproduced on one page in each issue, could be used to show

the locations of all the principal places featured in that issue.

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Dorset, UK



Become a colobologist

Exactly how many Angolan black-and-white colobus monkeys, *C. angolensis*, are there today along the Kenya coast? The answer, it seems, is anybody's guess. Some informed estimates, however, put the number at possibly as many as 2,100.

If so, this would represent a significant increase on the fewer than 1,500 animals enumerated by the last census, taken in 1996. But can such a recovery – which would be of the order of seven per cent per annum – really have been achieved?

It is questions like these that the Diani, Mombasa south coast-based conservation charity, Wakuluzu, Friends of the Colobus Trust, hopes to answer with a new and wider-ranging census to be carried out between June and September this year.

Due to begin on 4 June, the census will take in all 180-odd km² within Kenya over which the beleaguered East African race of Angolan colobus, *C. a. Palliatus* (pictured above), is known to occur. This will include not only Diani, home to the highest concentration anywhere of this colobus subspecies, but will also extend southward to Shimoni and Lunga Lunga, on the Tanzanian border, and to other coastal forests north of Mombasa and inland to the Shimba Hills.

Only the scattered and relatively little known Tanzanian populations of this colobus will not be counted. The 2001 census is expected to end on 25 August. Its findings will later be published in SWARA.

Hard-working volunteers are needed for this census to be conducted effectively. All such volunteers will be expected to work Mondays to Saturdays from 6:00 a.m. to 5:00 p.m. for the census's entire 72-day duration, spending at least 58 days camping out at counting sites in the field. Volunteers are also expected to come equipped with their own camping gear, including sleeping bags, water bottles, torches, disinfectants, insecticides, and other personal effects.

Prospective 'colobologists' can apply to
The Project Coördinator;
Wakuluzu, Friends of the Colobus Trust;
P O Box 5380, DIANI BEACH, Kenya;
Tel + 254 (127) 3519;
E-mail < colobus@africaonline.co.ke >.

Not always a turtle disaster

I should like to add to the debate begun by Alan and Kate Riley (SWARA 23:2) on the tourism industry's involvement in participatory turtle conservation schemes.

I am not able to comment specifically on the scheme operated by Serena Hotels that the Rileys wish to see re-evaluated. But from personal experience I disagree in principle with their contention that it is wrong to "interfere with the natural process where nesting turtles are concerned," and that turtles' eggs "should on no account be disturbed except in a life-threatening situation."

Recently I visited Selingan Turtle Island off Borneo's Sabah coast, which is run by the national parks of Malaysia. There I witnessed what appears to be an exemplary scheme combining the needs of both turtle conservation and tourism.

Each night up to 50 green turtles arrive at the small islet to lay their eggs. Human access is by boat and visitor numbers are strictly controlled. Once there and settled into the basic yet comfortable on-site accommodation, tourists are free to roam the island and snorkel among the coral until sundown, whereupon all access to the beach is strictly prohibited until after dawn. After dinner, served in a communal canteen, the island's guests sit down to await the first turtle arrival.

The beaches are patrolled by rangers who are in radio contact with their base. Their job is to monitor turtle arrivals and to collect *all* the eggs that are laid. The first turtle on to the beach is the one that tourists are privileged to witness laying. The call comes in by radio and the guests are escorted to the beach where their guide educates them while ensuring that they do not disturb the turtle. As the eggs are laid they are collected. Then, once the process is finished, everyone leaves the beach and proceeds to the hatchery where the eggs are deposited.

At the other end of the nursery hatchlings are emerging. Again under close supervision, guests are able to handle the tiny turtles before being invited to participate in the beginning of the epic journey facing these mysterious creatures. The rangers and guests, standing in the surf with torches, having made sure there are no lights anywhere on land, see to it that the hatchlings set out on their journey in the right direction. The demonstration over, the beach is off-limits to all but the turtles and their guardian rangers.

Turtle numbers world-wide are diminishing. Under ideal circumstances, non-interference would of course be a preferable option. But our world is far from an ideal one. So, to preserve turtles I believe that protecting them where we can from all predation, whether human or natural, is justified. The work I saw in Malaysia ensured the highest possible levels of return to the oceans of turtle hatchlings. Also important, I feel, was the quality of experience accorded to the island's human visitors.

The Rileys point out that there are many wonderful videos and pictorial aids to teach tourists about turtles and their conservation. These are valuable tools. But they are no substitute for first-hand experience. What I witnessed in Malaysia will stay with me for the rest of my life in a way that no video or poster ever will.

If Mr Jan Mohamed can emulate the success and sensitivity of the Sabah turtle programme, then I think he will not only be providing his hotel guests with an unforgettable, moving, and – hopefully – motivational experience, but he will also be making a significant contribution to turtle conservation in East African waters.

David Simpson
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KERICHO
Kenya

Elgon's up side

May I through SWARA just say how very much I appreciated a trip on Mount Elgon, through the game park, recently.

In particular, I should like to congratulate the warden, park staff, and all the committee members who had a hand in organising the many obvious improvements. These include the repair and re-opening of old roads and even the

opening up of some new tracks that, thankfully, boast adequate drains. Several well-appointed walking trails have also been established. The supervisory committee has, through judicious spending, put what funding it received for this work to refreshingly good use.

Helen Mayer
KITALE
Kenya

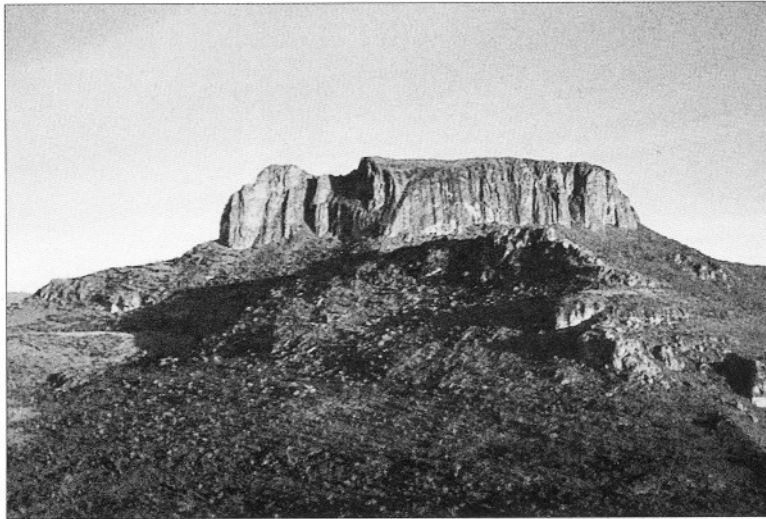
On a slippery slope

Recently I spent three weeks hiking on Mount Elgon, sticking mainly to altitudes of between 2,600 and 4,200 metres. This was, as ever, an exhilarating experience. For, as an ex-Kenya resident born and raised in Kitale, I have always had a particular love for this mountain.

On this occasion I had with me three excellent local guides who knew the mountain very well and who showed me many interesting caves – and lots of buffaloes. In the caldera I got to spend time at, and around, the source of the Suam River and the hot springs, which I found to be much visited by game, particularly buffaloes.

The latter seem to be in the habit of coming to the springs at night. On leaving their cover far below in the late evenings, the buffaloes appear to make the marathon ascent of perhaps 20 kilometres up into the caldera, before walking back down the mountainside just before day-break.

The disappointing aspect of my trip was the amount of poaching evident in the area. In all, we came upon no fewer than seven buffalo carcasses – and a great many snares. All the carcasses were within the Mount Elgon National Park at altitudes



Koitobos peak, 4,222 metres above sea level, dominates views of Mount Elgon from the Kenya side.

of 3,000 metres and above. At one point we saw a gang of eight Ugandan poachers armed with AK47s. Fortunately we saw them before they could see us, for – clearly – we should have been no match for them. We later followed their tracks into the Park. The fact that we saw no sign anywhere of Park staff was very disappointing.

I was surprised at how Elgon's remaining buffaloes appear to have taken to the moorlands, where presumably they can see the poachers coming. The only sizeable buffalo herd we saw outside the Park was in the Kaptega Valley where the vegetation is extremely thick, and where there was also evi-

dence of giant forest hogs. We saw no sign at all of any elephants outside the Park.

My conclusion is that not nearly enough is being done by the Park's staff. All the indications are that most of the poachers come across from the Uganda side of the mountain, using only a couple of well-plied routes that could very easily be monitored from hilltops and ridges. There should be a squad of scouts based high up on the moorlands, where there are plenty of good vantage points providing for excellent visibility. It would also make sense if these scouts were local people familiar with the area.

We noticed that the forests on the western side of the

Malakisi Valley were being extensively cleared. Elsewhere, though, most of Elgon's forests are still in fairly good condition, although the game within them continues to be heavily poached. What game remains must now be protected, and there should be redoubled efforts put into preserving the area for the sake of Kenyans and visitors alike.

The guides who accompanied us were not only extremely knowledgeable; they were also genuinely concerned about the poaching – and angry that far too little was being done to conserve what they consider to be their heritage.

I return to Kenya whenever I can to marvel at its wildlife, mountains and forests. Mount Elgon is a treasure far too valuable to squander. Its priceless wildlife and habitats can be saved, and can bring benefits to all who live around the mountain. I am looking forward already to my next visit, when – hopefully – there will be some cheering signs of progress to assess.

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CORRECTION

The wrong caption inadvertently appeared under the picture – of impalas – in Vanessa Ezenwa's report, *The Buck Drops Here* (SWARA, Vol 23:2, p. 19).

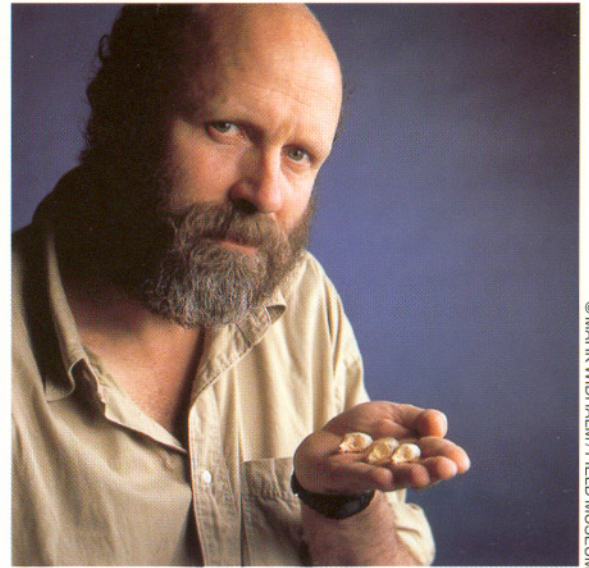
The caption, describing the animals as Grant's gazelles, belonged to another of the pictures lined up for this story, and one that SWARA had originally intended to use. The late substitution was, unfortunately, made without at the same time effecting the necessary alteration to the caption text.

While apologising for this oversight, SWARA deeply regrets any embarrassment that Ms Ezenwa may have been caused. Ms Ezenwa's picture of impalas is reproduced here – this time with the correct caption text.



Take that! There's more than meets the eye, it seems, to instances like this of synchronous excretion by impalas.

FINDINGS



© MARK WIDHALM / FIELD MUSEUM

And three makes eight

The number of different mouse lemurs – the world's smallest living primates, all from Madagascar – is doubled in a single leap, as three new species come to light and a fourth is 'rediscovered'. Peter von Buol reports.

Scientists working in the dry forests of western Madagascar have announced the discovery of three previously unknown species of mouse lemur. They have at the same time revived another species designation, bringing to eight the number of mouse lemur species on record.

Somewhat resembling miniature forms of mainland African bushbabies, or galagos, these small forest-dwelling primates have piercing round eyes, pronounced ears, rounded skulls, short snouts, long hind limbs and elongated bushy tails. They generally have soft fur.

The three new species, *Microcebus berthae*, *M. sambiranensis*, and *M. Tavaratra*, are described in the *International Journal of Primatology* (Vol 21, December 2000) by a team of Malagasy, German, and American scientists. The reinstatement of *M. griseorufus* as a separate species is also explained, as is the reclassification of a previously resurrected species of 'pygmy' mouse lemur, *M. Myoxinus*.

"It's incredibly rare to find any new species of primate. To have three on our hands at once is just about unheard of," enthuses the article's co-author Steven M Goodman, a wildlife biologist with the Field Museum of Natural History in Chicago.

Specimen skulls from Madagascar's three newly classified mouse lemur species (top) fit easily in the palm of one hand – in this case that of Chicago Field Museum's Tanzania-born mammals collections manager, Bill Stanley (top right).

The adults of one of the newly described species, *M. berthae*, average just 30 grammes in weight and can fit snugly rolled up inside a wine glass. Named in honour of Berthe Rakotosamimanana, one of Madagascar's foremost primatologists, this diminutive species now ranks as the world's smallest living primate.

The scientists examined individual animals found at various sites along the western flank of the island and compared these with specimens in museum collections around the world. Marked differences were found in the skulls and teeth of the five species examined. Other distinguishing physical traits were also detected. Independent genetic testing then confirmed the three new, and the one resurrected, species to be "specifically different" from the four previously classified mouse lemur species: *M. murinus*, *M. rufus*, *M. myoxinus* and *M. ravelobensis*.

All mouse lemurs spend much of their time foraging for food. Their omnivorous diet includes buds, flowers, fruits, leaves, and small invertebrates. They also spend a lot of their time eluding ground predators in the shape of small carnivores. Aerial predators include raptors, which will attack them during daylight given the chance, and both barn owls and Madagascar long-eared owls, which hunt them down at night.

Owls have been seen to pose an especially deadly threat to these tiny arboreal primates. Goodman and his colleagues found one pair

of barn owls in south-western Madagascar that struck often at mouse lemurs. "This pair of owls, alone, ate close to 60 mouse lemurs in one year, and these are just the ones we know about" says Goodman, who is also co-ordinator for the Ecology Training Programme based in the World Wide Fund for Nature's Antananarivo office.

Mouse lemurs generally feed alone at night. Field observations point to complex social networks based on overlapping male and female ranges. The range of any single adult male tends to overlap the home ranges of several females. Detailed observations were made at 12 deciduous forest and spiny bush sites by Malagasy biologist Dr Rodin Rasoloarison, who is Madagascar co-ordinator for the German Primate Centre in Göttingen, Germany. Rasoloarison co-authored the study along with Goodman and Jörg Ganzhorn of the University of Hamburg.

Mouse lemurs seem able to tolerate high distribution densities. At the German Primate Centre's Kirindy Forest study site, no fewer than 712 individuals were found to be living within an area of just one square kilometre.

While primatologists believe mouse lemurs to be the most numerous of all Madagascar's lemurs, Goodman is not surprised that some species have remained undiscovered until now.

"Many of the sites are still relatively remote and little known from the point of view of resident fauna," he says. "The presence of marked variations in western *Microcebus* populations has been noted for some time," he adds, "but it wasn't clear until now whether the variations were inter- or intra-specific."

Goodman points out that several researchers working in the western parts of Madagascar had noticed the co-occurrence of two seemingly different mouse lemur types. There was a red form appearing alongside a grey form (presumed to be *M. Murinus*). "The differences in these morphs were consistent," he explains, "and no hybrids were ever found. Hence the prevailing notion that there were probably some undescribed mouse lemur species waiting to be discovered."

Less than ten years ago, scientists recognised only two species of mouse lemur, *M. murinus* and *M. rufus*. A third species, *M. myoxinus*, originally described in 1852 but subsequently forgotten, was re-confirmed as a distinct species in 1993 after work by Rasoloarsion and his colleagues. A fourth species, *M. ravelobenis*, was described much more recently – by a research team from the University of Hanover in Germany.

Previous assessments of mouse lemur taxonomy, says Goodman, had been based on remarkably few museum specimens collected from widely scattered localities. Some of these specimens are 150 years old and have become badly discoloured. In addition, he says, previously collected data was inadequate for any detailed assessment of variation *within* a population.

"It was long held that only one species of mouse lemur lived in western Madagascar, although it went by many different names. All of these names – other than *M. murinus* – came to be treated as synonymous," explains Goodman, adding that the new discoveries complicate the conservation status of *M. murinus*, a species once thought to be safe from any immediate danger of extinction. "The consensus before was that *M. Murinus*, thanks to a broad distribution in the west, was not endangered. If one forest block was cut down, the feeling was that there would always be another block where this species could be found," says Goodman.

"But, now we know that there are really several different species, each with its own very limited range," he continues. "We also know that if any one forest block in which they live is destroyed, an entire species could be wiped out."

While Madagascar continues to boast one of the greatest concentrations of unique animal and plant species on earth, all these species face an increasingly uncertain future, due in part to an exploding human population. Pressure from subsistence farmers, say researchers, continues to result in losses of between one and two percent annually from the island's remaining forests. Sadly, less than 10 percent of this island nation's forests remain intact.

Once part of the super-continent Gondwanaland, Madagascar attained its present geographical position about 100 million years ago. Scientists had once assumed that nearly all of the island's endemic fauna, including the lemurs, was made up of "primitive African relics" from an earlier period. Most scientists now discount this theory as simplistic. And, while some of the island's endemic animals and plants are indeed descended from species which occurred in Africa more than 100 million years ago, lemurs are not among these, as they did not exist that long ago.

The oldest fossil lemurs have been dated to the Eocene epoch, about 58-million years ago. Many primatologists believe the founding ancestors of Madagascar's present-day lemur populations arrived from continental Africa on a sort of 'raft', possibly of floating vegetation. Their arrival in Madagascar may have pre-dated the appearance of the 'higher' primates (apes and monkeys).

Mouse lemurs are members of the Cheirogaleidae family, one of five existing families of lemurs. Madagascar is home to all 40, or so, of the lemur species currently known to science.

The medium-sized Coquerel's dwarf lemur, *Mirza coquereli*, meanwhile, though once thought of as a species of mouse lemur, is now deemed the sole member of its genus. Some primatologists have suggested that mouse lemurs and dwarf lemurs may actually be more closely related to the strepsirhine primates of Africa – galagos, bushbabies and pottos – than they are to any of their larger fellow lemurs of Madagascar.



© PAUL JOYNSON-HICKS / In The Dark

Gorilla update

The mountain gorilla population of the Virunga Volcanoes has been found to have increased by at least 11 % over the past eleven years. Today's head count, according to a census completed in January this year, is 358 – as against a low of just 320 in 1989, when the last such survey was undertaken.

The increase is surprising in that it coincides with a period of sustained human conflict and turmoil on and around the volcanoes, which straddle the convergent frontiers of the Democratic Republic of Congo (DRC), Rwanda, and Uganda. Criss-crossed over recent years by armies, guerilla groups, fugitives, and refugees, the troubled eastern sector of the DRC's Parc des Virungas forms – along with Rwanda's contiguous Parc des Volcans and Uganda's Mgahinga Gorilla National Park – one of only two remaining habitats on earth of the mountain gorilla (pictured above).

The race's only other stronghold, that of the Bwindi-Impenetrable Forest in far western Uganda, was not included in the most recent survey. But this forest was, at last count, found to be home to at least another 300 animals. This would bring to roughly 660 the total known mountain gorilla population – up by about six per cent overall on the figure arrived at in 1989.

Both the Virunga head count and its heartening findings are the result of redoubled cross-frontier efforts by several conservation bodies. These have included the respective parks authorities and the International Gorilla Conservation Programme, as run jointly by the African Wildlife Foundation, Fauna and Flora International, and the World Wildlife Fund, with help from both the Dian Fossey Gorilla Fund and the Karisoke Research Centre.

But, while mountain gorillas may – against all odds – be benefiting from such close collaboration, the outlook for the eastern lowland gorillas living on the eastern DRC's Kahuzi-Biega massif, some 100 km south-west of the Virungas, looks bleaker than ever. For these gorillas have reportedly been decimated for consumption as bushmeat by mining groups now based within what is nominally still the Parc National de Kahuzi-Biega.

Peter von Buol is a journalist and author who also works as an independent consultant to the Chicago Field Museum, in the US, where he specialises in translating historical and scientific texts published originally in German.

Molluscs in Meru

JUST CURIOUS

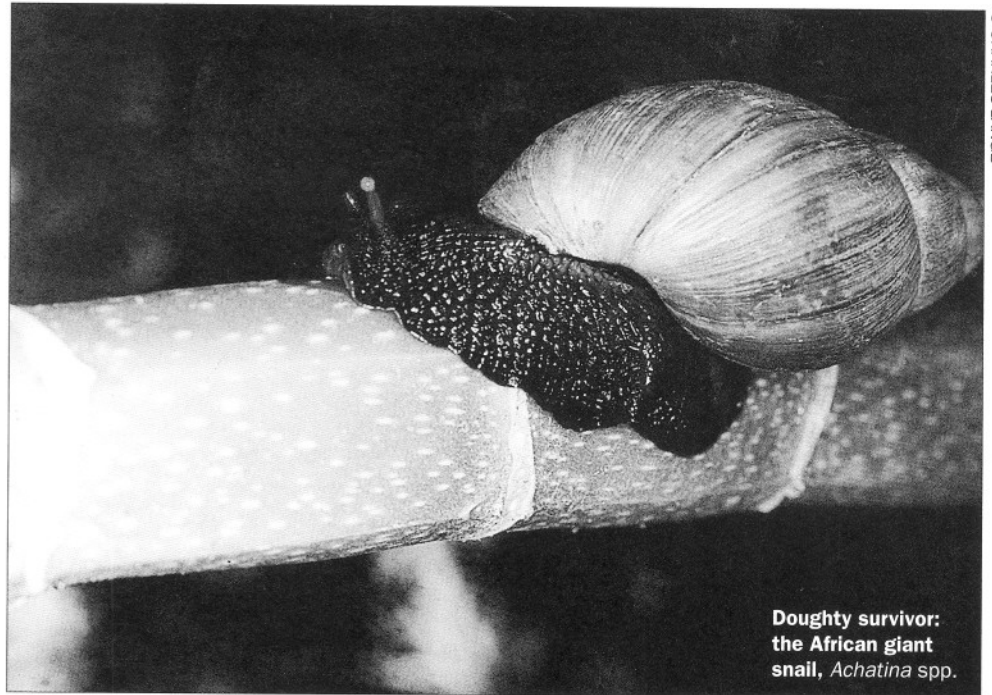
For each of the past two years, I have – between the months of April and June – been involved in carrying out field research into the behaviour of naked mole-rats in Kenya's Meru National Park.

During my last such visit I was puzzled by another phenomenon altogether. I kept noticing, scattered about the place, vast numbers of mollusc shells. All appeared to belong to the same species, differing morphologically only in respect of size.

Could SWARA shed any light on what species this might be, and if possible also give a little of its life history? For it does seem kind of odd to me that a mollusc of this size – and it is a relatively large species – could survive in such a dry habitat.

ROSIE KOCH

Washington University
St Louis, MO 63130
US



© CHARLES LANGE

**Doughty survivor:
the African giant
snail, *Achatina* spp.**

For answers, SWARA contacted the Department of Invertebrate Zoology at the National Museums of Kenya. There, we were fortunate in being able to pass on this enquiry to **Charles N Lange**, who has been studying East African terrestrial molluscs since 1997.

Charles N Lange comments as follows:

The mollusc shells in question will, almost certainly, have been those of the *Achatina* species, from the family *Achatinidae*, the largest group of land snails in tropical Africa. Such is their size relative to other terrestrial molluscs that they are also the most conspicuous of African snails. Indeed, their common name – African giant snails – stems from their comparatively large size.

Their distribution as a group extends over much of the continent and across an uncommonly diverse range of habitats. Records from Kenya include the tropical rain forests of western Kenya, as well as much of the central highlands, and many of the dry, semi-arid, and desert regions to the north.

This wide distribution stems from a remarkable ability to adapt to different environments and to changing conditions within those environments, and is helped by prolific breeding when times are good – and a prodigious growth rate.

The snails are hermaphrodite, laying numerous eggs in forest litter, typically in dark recesses under logs of fallen wood. Most of the laying occurs during the wet seasons. The young snails hatch within a few weeks and attain adult size in a matter of months before reaching senescence. Morphological variation is common and has been known to confuse some taxonomists!

The growing snails feed principally on vegetation: whether in the form of green material like mosses, herbs, or even grasses, or as detritus from decomposing plant matter. Their feeding activity, like their breeding, is at its most rapacious during the seasonal rains. They are perfectly capable, however, of withstanding the long, dry periods that are a feature of some of their more arid habitats.

With the onset of a drought, they suspend all but their most basic bodily functions and enter into a state of dormancy, or aestivation. At such times, they generally seek refuge in accumulated leaf falls, beneath fallen logs, or in the crevices of rocks, where the dangers of death through desiccation are minimised.

They further contract within their shells, sealing the shell openings with a clear mucous that soon hardens and so further reduces water loss. In this state they can survive for several months until more favourable conditions return. A dry season snail hunt will turn up many shells that, from their bone-dry exteriors, appear to be

empty and lifeless, when in reality they are anything but.

Of course, these molluscs have many predators to contend with, in the shape of birds and rodents. And they are, at times, killed in their thousands by parasitic diseases. But the usual cause of such a massacre is a forest, or bush, fire – or the persistence of a drought so severe as to be beyond even their survival capacities in the dormant state.

The aftermath of such a die-back becomes very obvious when – after a few months – the exposed shells, bleached by the sun, lose all their camouflage. Often it is only at such times that one gets to appreciate just how many of these snails there really are, living unobtrusively in one's midst!

The molluscs seen in Meru Park will, in all likelihood, have been casualties of Kenya's protracted recent drought.

Further information can be obtained from Charles N Lange; Department of Invertebrate Zoology, National Museums of Kenya; Box 40658; NAIROBI, Kenya; E-mail: < nmk@museums.or.ke >.

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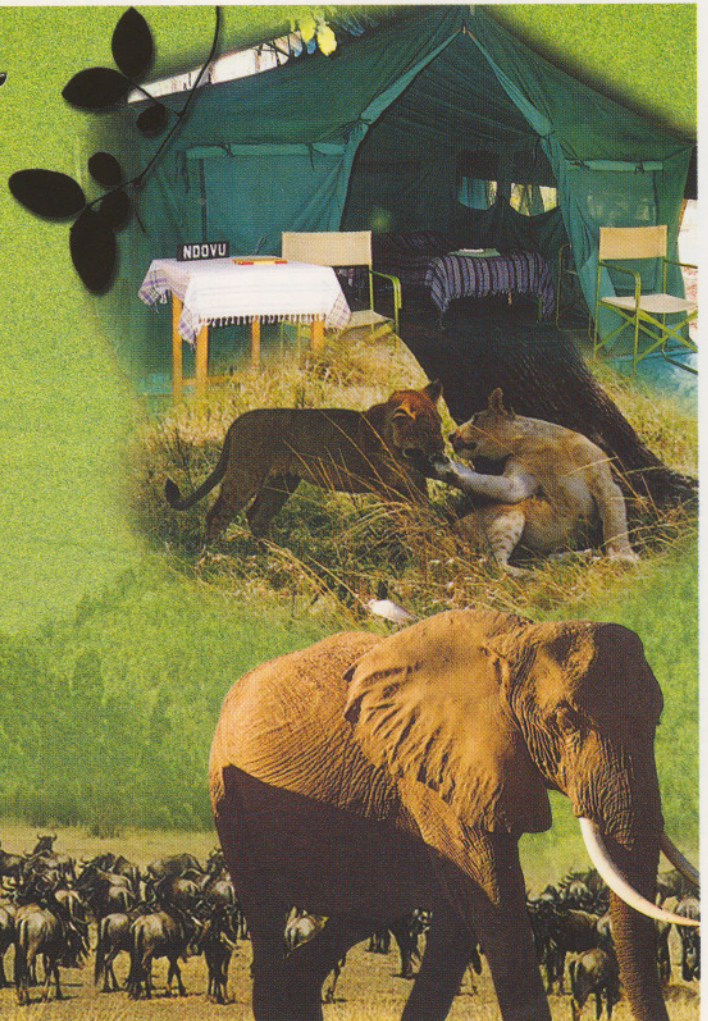


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Denizens of the Dust

*From their unsightly, pit-trapping larvae to their exquisite, gossamer-winged adults, antlions are nature's true marvels of specialised adaptation, says **Dino J Martins**.*

The sun shines hazily through a thin veil of dust. A single foraging ant scuttles across the surface of the parched, almost lunar landscape that is the eroded edge of the Kiserian gorge. She clammers over a gentle rise. Then, suddenly, the ground beneath her feet gives way.

She scrambles frantically, trying to gain a foothold. But showers of tiny pebbles and sand grains pelt her like shrapnel. Amid another blast of sand she plunges to the bottom of the crater. A pair of sickle-shaped pincers close over her in one snapping motion. Through their hypodermic tips they inject a lethal dose of digestive venom. The ant twists, seeking vainly to bite her tormentor. But the venom acts swiftly. Soon she is curled up in an embryonic position, head folded and legs tucked in. Dying slowly, her body fluids are sucked out.

Minutes later, with a surprisingly sharp flick, the empty shell of the ant is ejected from the pit. The ground around this desolate inverted cone is littered with the perfectly dried, feather-light chitinous exoskeletons of other dead ants. She was not the first victim. Nor will she be the last. Back in the pit a tiny, almost spherical creature – as ugly as sin – shuffles out to repair the damaged sides of its crater-trap. This is the resident antlion.

Antlions are the insects responsible for excavating the minefields of little inverted-cone pits found just about everywhere in the bush. Wherever there is soft, dry sand or soil – whether under hedgerows, or alongside rocks; beside paths, or on overgrazed savannahs – antlions make their homes, and lay their traps. Yet these tiny pits, familiar to anyone with even a glimmer of interest in the natural world, are just one remarkable stage in the life-cycle of an amazing group of insects – the antlions.

Along the Kiserian gorge, certain dusty stretches are pock-marked with craters and sinuous trails. In some places these are so evenly spaced that one might mistake them for impressions of the moon's surface drawn in the dust by children at play. Most, if not all, of these circular pits will have at their bottoms, cunningly buried to one side, an antlion.

Antlions are the larval stage of a winged insect belonging to the Order Neuroptera, meaning 'nerve-winged': a reference to the fine, lacy venation of the four wings of the adults. The Order Neuroptera encompasses

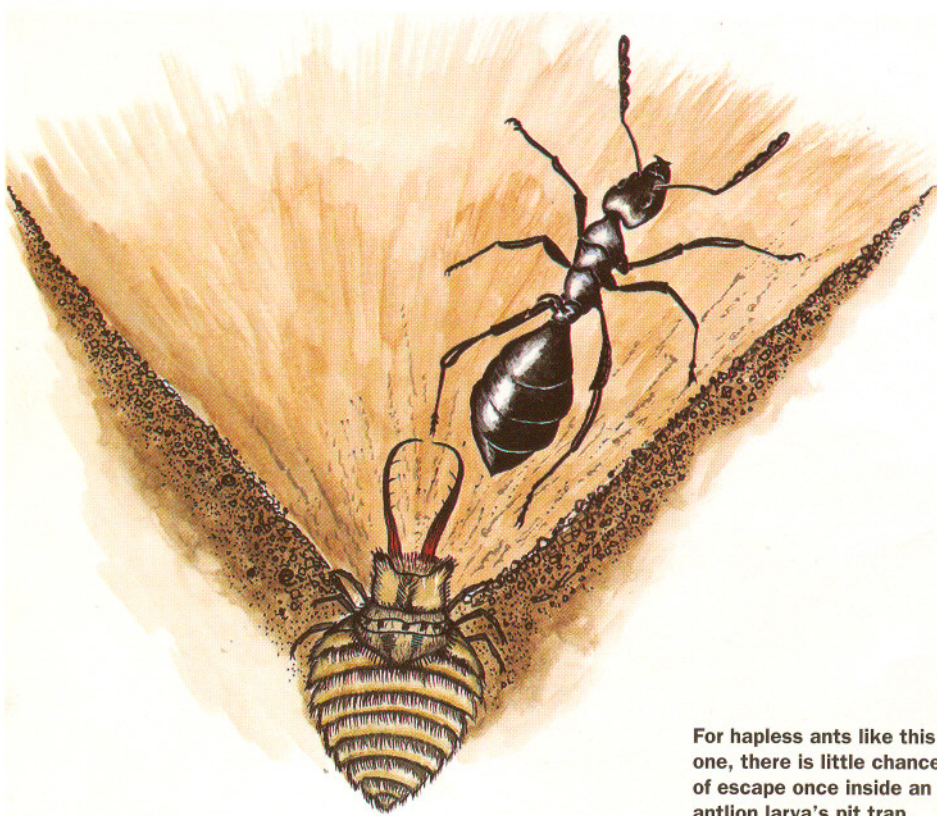
both the antlions and the lacewings. Antlions are classified as members of the Family Myrmeleontidae (ant-eating lions). Like all insects, they undergo a complete metamorphosis, passing through all four stages of an insect's life-cycle: egg, larva, pupa, and adult, or imago. But it is with the larval stage that we are most familiar. For it is the larvae that excavate the tiny pits so characteristic of the drier parts of eastern Africa.

The antlions of Kiserian gorge are models of patience, efficiency, and resilience. Indeed, from the point of view of strike-rate they are probably the most successful of all Kiserian's predators. Even the infamous leopard, Phantom, that regularly honours us Kiserians with his presence, succeeds in taking prey on only about five percent of all his attempts. Coöperative hunters, such as lions and hyenas, fare rather better, but still fail more often than they succeed. Success rates among modern human hunter-gatherers, such as the Hadza of Tanzania, average only around three percent, notwithstanding the use of some formidable modern tools – like pangas, even rifles.

Antlions, which – like Phantom – await their victims in stoic silence, hardly ever lose prey once it has stepped into their trap. In terms of evolutionary adaptation, the antlion pit-trap is a marvellous example of specialised adaptation. (Ecologically, adaptation includes any characteristic – anatomical, behavioural, or physiological – that allows an organism better to survive and reproduce.) Antlion pit-traps were successfully deployed millions of years before the advent of similar pit-trapping systems among human groups such as the Batwa and Efe pygmies of the Congo.

The antlion's successful niche is readily apparent on the dusty plains, where there is plenty of loose, dry soil of a texture suitable for pit construction in that it will allow a pit's walls to collapse in mini avalanches under the slightest pressure from an unwitting ant. What, though, of antlion species that live where there is no soft, grainy soil? How do they manage to survive?

One remarkable answer comes from Brazil's Amazon rainforest. Along the Machadinho, itself a tributary of the



For hapless ants like this one, there is little chance of escape once inside an antlion larva's pit trap.



Madeira, the largest tributary of the River Amazon, the daily river tide alternately exposes and swamps banks of eroded sand and silt. Here, on the exposed stretches of river bank, there are – astonishingly – numerous clusters of antlion pits.

These antlions show an amazing degree of behavioural adaptation. When the river falls in the morning, the sun dries out the sand enough for the antlions to be able to

construct their pits. The countless foraging insects that venture out on to this sunny, nutrient-rich river strand provide more than enough food for the antlions in the few hours during which they can sit in their pits, until the river rises again. The next day, the routine is repeated. These antlions not only survive but clearly thrive in this narrow window of opportunity between unpredictable river tides. Sometimes, it seems, you *can* have your cake *and* eat it.

Antlions have always been able to thrive in environments where other creatures struggle. The pit-trapping group, though, represents only a small minority of the 600, or so, known antlion species. Most of these do not construct pits at all. Indeed, the vast majority spend their larval stages as solitary hunters – as I discovered recently in Kenya's Arabuko-Sokoke forest.

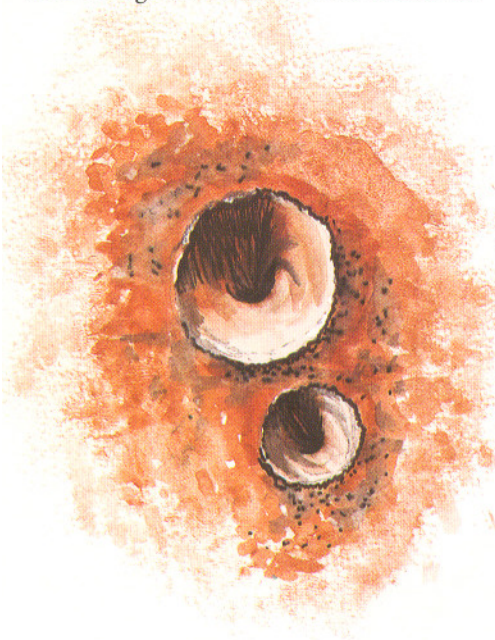
Observing the antics of butterflies along a sun-dappled path of soft, white sand in the Arabuko-Sokoke, I was startled to see a *Charaxes* beating its wings frantically against the ground. These strong-flying butterflies are most often glimpsed sweeping through the canopy. The cause of this butterfly's distress soon became apparent. Two long pincers,

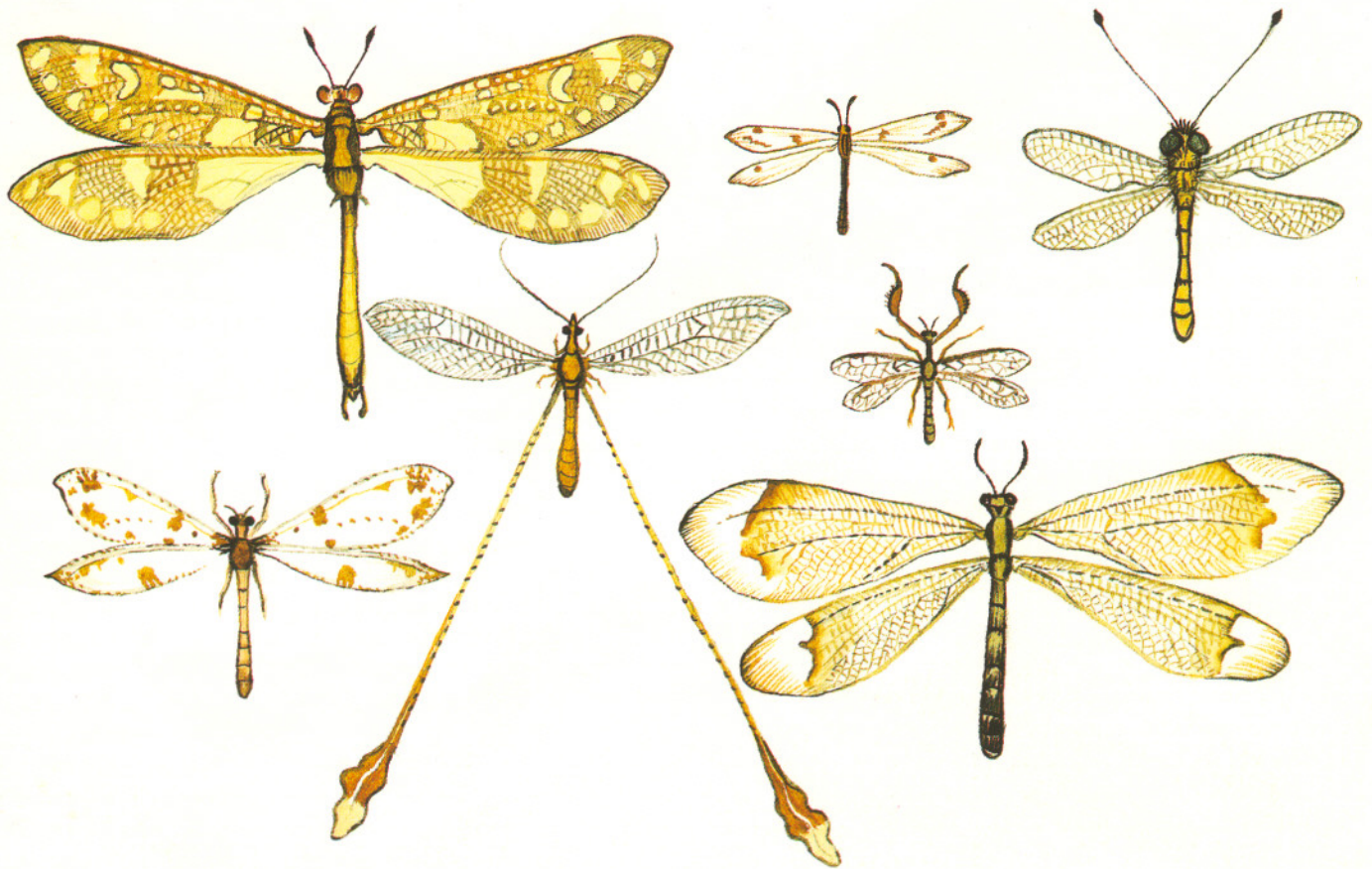
slender and barbed, had closed in behind its head. The pincers in question belonged to the larva of *Palpares inclemens*.

The *Charaxes* put up a brave fight. But it was all over within a few minutes. The antlion poked its head out of the sand as if looking around before shuffling its body back underground, leaving only its deadly jaws sticking up into the air, waiting for the next opportunity. The winged adult form of this species is perhaps one of the most striking insects found anywhere on the East African coast.

Antlion larvae, after they have had their fill of insect blood, spin cocoons of silk coated with sand grains. Several years may elapse between the time a larva hatches from an egg and when it spins itself a cocoon. Several weeks or months after this event, the winged adult emerges.

Some larvae I had collected in cut away bottles disappeared one day. I suspected the mischievous Sykes monkeys. But, on sifting through the sand, I found several cocoons, glistening like miniature inlaid jewels with crystalline grains of mica and silica. A few weeks later, on noticing something scrabbling about inside one of the bottles, I removed the netting cover and tipped the creature out.

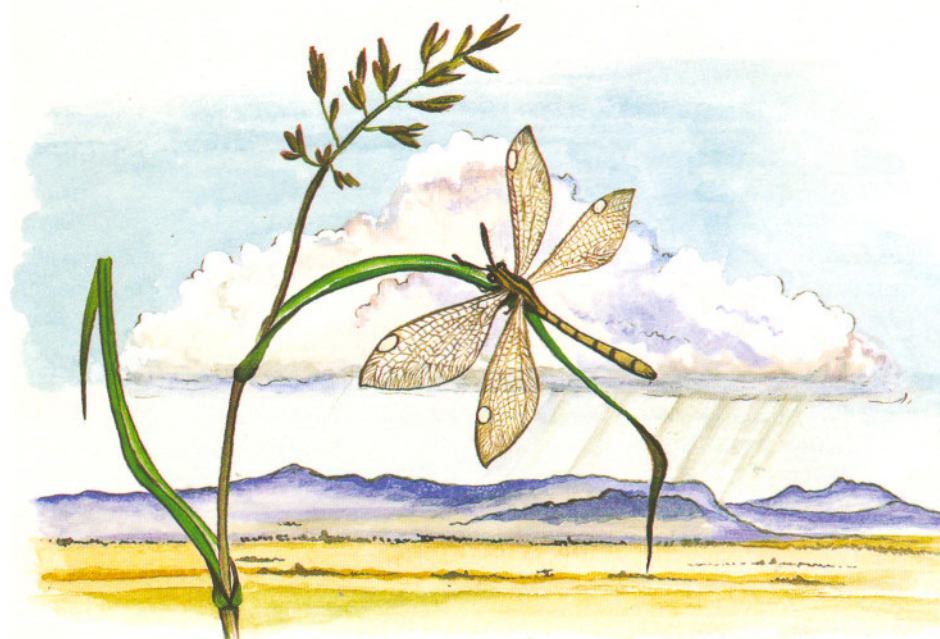




No uglier duckling could have fledged into something of such grace and exquisite beauty. Lifting the adult antlion up to the light, I could see the truth of the Order's name, Neuroptera, or 'nerve-winged.' For so intricate were the veins in her shimmering wings. On letting her go, she flew weakly out over the plains, before settling on a blade of grass. Now, perhaps she would go on to mate and to find soil soft enough in which to lay her eggs.

The fascination with antlions is practically universal. Their strangeness has penetrated even the special effects studios of Hollywood. One of the monster-villains in the film, *Star Trek II*, is simply an enlarged antlion. In some societies antlions are even worshipped, it seems. On a hot, late-summer birdwalk in the Midwestern United States, I witnessed a strange ritual. Chancing on some antlion pits, several of the hitherto reserved birdwatchers prostrated themselves

East African Neuroptera species include (clockwise from top left): *Palpares rothschildi*, from Tsavo East in Kenya; *Myrmeleon* spp., from Durukusi, Somalia; *Bankisus oculatis*, from Olorgesaille in Kenya; *Dicolpus volucris* (extreme top right), from western Uganda; *Dendroleon fuscolimbata*, from Jinja, Uganda; *Nemopterella imperatrix*, from Amani in Tanzania, and *Cymothales exilis*, from Kenya's Maasai Mara area.



on the ground and began chanting: 'Doodlebug, doodlebug, come out of your hole, / Doodlebug, doodlebug ...'

To my consternation, this 'doodlebug' – or antlion larva – duly shuffled out and even gave, with its pincers, what its admiring public took to be a little wave of acknowledgment. Of course, Midwestern antlions don't respond to the name 'doodlebug' – or to any other name for that matter. But there is a perfectly sound scientific explanation for this behaviour.

The act of bending over a little crater and speaking into it dislodges tiny grains of sand. The resident antlion, sensing this motion and thinking some hapless insect is trying to escape, emerges. Try this for yourself when next you are surrounded by antlion pits on the hot, dry, dusty African plains. And be prepared to meet a truly amazing character!

Cat eats cat

This seems to be the way of things at Kenya's small Ol Jogi Game Reserve, with cheetahs very much on the receiving end. The phenomenon could hold important lessons for the future conservation of this vulnerable species, argues Kimani Kuria.

As the fastest terrestrial mammal, it is capable of speeds of more than 110 kilometres an hour. But the cheetah, it seems, is rapidly losing its own race for survival. Today, there are fewer than 3,200 cheetahs in East Africa. And about 2,000 of these animals are in Kenya.

Poaching, loss of habitat, competition from other predators, and livestock farmers are all playing a part in driving this superbly honed running machine to extinction. All these factors have been widely documented. Less widely appreciated, perhaps, is the alarming extent to which cheetah mortality can today be attributed, either indirectly or directly, to intraspecific competition from other cheetahs.

That cheetahs may, under some circumstances, appear to be their own worst enemies is borne out by recent observations in Kenya's Ol Jogi Game Reserve, near Nanyuki, where until recently there were six wild cheetahs inhabiting an area of little more than 50 km².

Cheetahs are normally not thought of as aggressive animals. Their territories, traditionally anyway, are vast, spanning anywhere between 800 km² and 1,400 km². So fights to the death involving rival males, or male coalitions, while these have always occurred, are not on record as frequent events.

Yet, faced as cheetahs are today with ever diminishing home ranges, and correspondingly higher densities, the frequency of such fights appears to have increased dramatically. The outcome, if not immediately fatal, is nearly always so in the end. And this, given the dearth of suitably large habitats over most of the cheetah's traditional range, raises worrying questions for the future conservation of the species.

Take the events of the morning of 2 December 1996. Three Ol Jogi game

In-fighting: the cheetah's already threatened status is being further compromised by heightened intraspecific rivalry, as home ranges continue to shrink.

rangers, half a hour after going out on patrol, come across two male cheetahs fighting tooth and claw. Both combatants have blood-stained coats. Both look exhausted. Yet they continue – between bouts of all-out fighting – to circle and torment each other with high-pitched, whining growls. Another pair of cheetahs looks on, meanwhile, from beneath the shade of a tree not 100 metres from the battlefield. Both fighters limp off at the approach of the rangers; one is hobbling so badly that it is barely even mobile.

The rangers radio headquarters and an intensive search for the injured cheetah begins. But when, after four hours, the animal has not been found, the search is abandoned. Then, five days later, the same three rangers observe fresh leopard spoor near the scene of the fight. And before long they are on to a bloody trail leading to the foot of a nearby rocky hillside. Half way up the hill they find the half-eaten carcass of an adult male cheetah, stowed away among the boulders.

We then visit this grisly scene. The victim's viscera are missing. Half its thorax has been torn out. There are deep puncture marks in the neck. There is also an old

wound on the upper flank of the left hind limb. And there are many other superficial cuts, only partially healed, both on and around the face. The rangers positively identify this cheetah as the one that was injured in the fight.

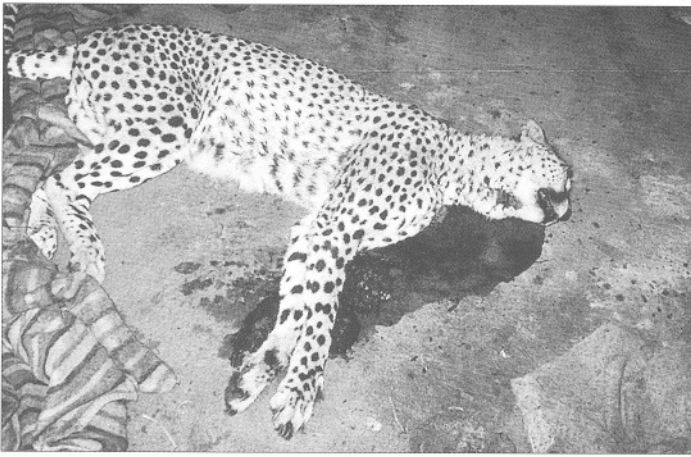
Clearly, this animal was so severely incapacitated as to have made an easy catch for a leopard. Not only that: it will undoubtedly have been weakened further through having eaten nothing since the fight. For the effect of injury on an animal so highly dependent on exceptional speed and mobility to obtain its food and to evade predators cannot be over-emphasised. Denied the advantage of its speed and agility, the cheetah – with its blunt fore-claws – is a very poor fighting machine.

Six months before, the rangers found the half-eaten carcass of another of Ol Jogi's adult cheetahs, this time in the upper branches of an acacia tree. Clearly, it too had been killed by a leopard. Could this cheetah's fate have been sealed by injuries picked up in another intraspecific fight? This we shall never know. But, as more and more evidence comes to light of aggression among range-restricted cheetahs both on Ol Jogi and elsewhere, this does – with hindsight – seem a distinct possibility.

That leopards are themselves a major direct cause of cheetah mortality cannot be denied. Most of the cheetahs killed by leopards, though, are generally assumed to be cubs. The high incidence on Ol Jogi of adult cheetahs falling prey to – and being eaten by – leopards is unusual, to say the



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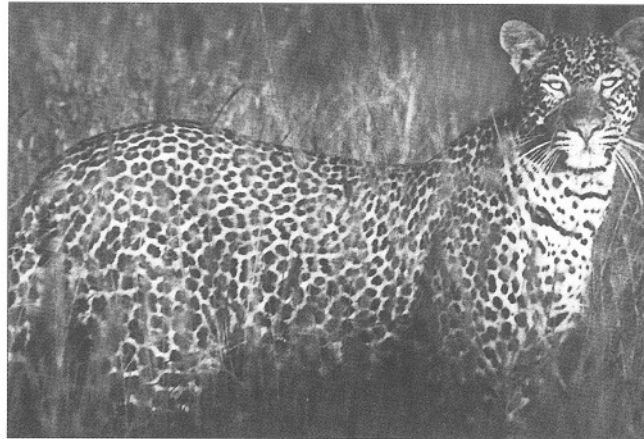
least. And the lengths to which some of Ol Jogi's leopards will go to prey on cheetahs seems extraordinary.

Take the events of one night in 1995. The head warden, awakened by shrieks from the night guard, rushes outside to investigate. A leopard, having scaled a three-metre fence and smashed its way into the wire-reinforced wooden 'night' shed within, is attacking Ol Jogi's then-resident pair of orphaned cheetahs. These orphans, a brother and sister, are both being hand-reared at Ol Jogi headquarters.

The male orphan manages to escape, through the hole the leopard has made to get into the enclosure. But the female – already dead, her skull neatly punctured by the leopard's fangs – is on the point of being dragged away when the leopard, taking fright, drops her corpse and vanishes into the night. The traumatised male spends the remaining hours of darkness holed up in the warden's own bedroom.

Since 1996, another three – at least – of the healthy wild adult cheetahs on Ol Jogi

have ended up being killed by leopards. These additional casualties, while exasperating our best efforts to conserve the cheetah, have left us with several questions to ponder. Are we trying to accommodate too many cheetahs within so limited an area? Is this, in turn, heightening intraspecific



© EAWLS File Picture

aggression among the cheetahs? Do we have too many leopards? Are there sufficient prey animals for Ol Jogi's different predators? And, on a much wilder tack: Could we have a leopard, or leopards, that might somehow have acquired a taste for cheetah flesh?

Ol Jogi is a cattle and camel ranch in Laikipia that encompasses a fenced game reserve. The fence was constructed 22 years ago in 1980, when the reserve became a designated sanctuary for black rhinos. Starting with a group of three individuals, 23 rhino offspring have since been produced. The reserve also hosts many other species, including white rhinos, reticulated giraffes, Grevy's zebras, common zebras, greater kudus, mountain reedbuck, impalas, gerenuks, elands and Grant's gazelles.

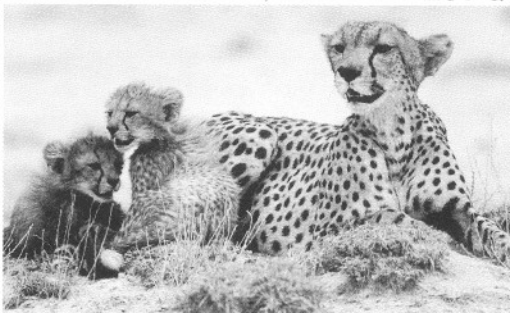
Animal censuses, carried out regularly both on the ground and from the air, provide for exact head counts of the reserve's larger prey species. So we know that, at present, we have more than 600 impalas, along with some 350 Grant's gazelles, 200 gerenuks, and 200 dikdiks. Predator numbers, though, are much harder to ascertain. So, on these, we have only estimates to go by.

We know that predators do occasionally move in and out of the reserve – through holes made in the boundary fence by water flow or warthogs. This fence was,

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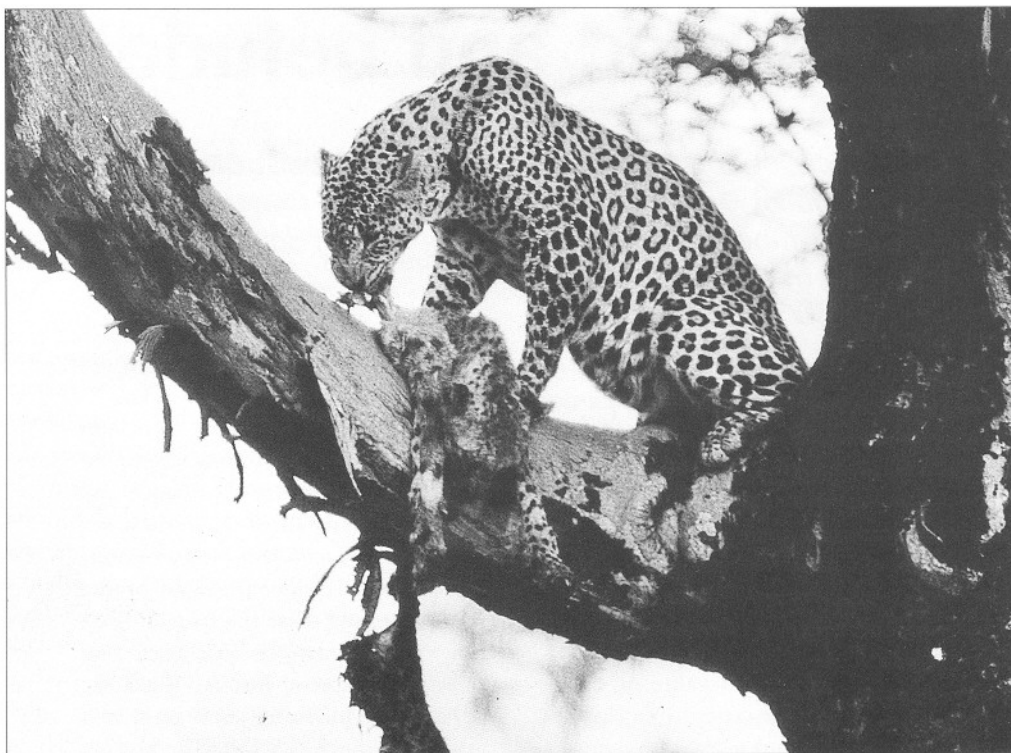
Cheetah casualties: orphaned female (far left) killed by a leopard while in her 'night' shed on Ol Jogi. Half-eaten remains (near left) of an injured wild male killed by a leopard. Reports of leopards feeding on cheetah kills was considered unusual when this picture (right) was taken in 1979.

after all, designed primarily to contain rhinos while at the same time preventing elephants from entering. The predators, though, are viewed as pests on the communal ranch lands north of the reserve, where their presence is not tolerated. The reserve, then, with its large biomass of mainly sedentary prey species, has become a safe haven for these predators.

The relative abundance of easy prey makes it difficult to understand, let alone explain, the reserve's seemingly unusually high incidence of cheetah kills by leopards.

Cases of lions, and of leopards, occasionally killing – and feeding on – adult cheetahs are of course well documented. But the consensus, at least in the existing literature, seems to be that it is mainly by killing cheetah cubs that these more powerful carnivores, along with hyaenas, succeed in restricting cheetah numbers. Could it be that leopards and lions may be exacting a generally heavier toll on adult cheetahs in the wild than has previously been supposed?

The events at Ol Jogi may, if nothing else, be instructive in providing a microcosm for determining what may be happening to



© EDIE KER

wild cheetahs elsewhere in Africa, as their traditionally vast home ranges continue to diminish in the face of relentless human encroachment.

The fence around the Ol Jogi reserve magnifies the effect of such pressure on the hapless cheetah. Extrapolate this effect on to a national, regional, or even continental scale, and the outlook for the cheetah's continued survival looks bleak indeed. Already, of East Africa's fewer than 3,200 cheetahs, only about 1,000 survive in Tanzania, and barely 200 in Uganda.

Numbers, then, are already so small that a deficiency in genetic diversity must now be added to the cheetah's lengthening list of woes. Given that cheetahs have been shown to encode DNA at levels of homogeneity comparable with some in-bred strains of laboratory mice, the signs are that the

cheetah may already have depleted its genetic arsenal.

Such remarkable homogeneity in the genetic material of cheetahs has been ascribed by scientists to what is known as a genetic 'bottleneck'. Sometime in the past, it seems, some calamitous event, or combination of events, reduced the cheetah to the point of near-extinction. The few surviving animals eventually recovered, and were able – from that small residual gene pool – to increase in numbers and to re-colonise the African and Asian continents.

Now, however, that bottleneck appears to be looming again. Only this time, we must ask ourselves: Is the cheetah going to be able to survive another such calamity? Unless efforts to save the cheetah are stepped up exponentially, the sad answer has to be No. Very sad this is; but true.

Kimani Kuria is an Assistant Game Warden at Kenya's Ol Jogi Game Reserve, near Nanyuki.

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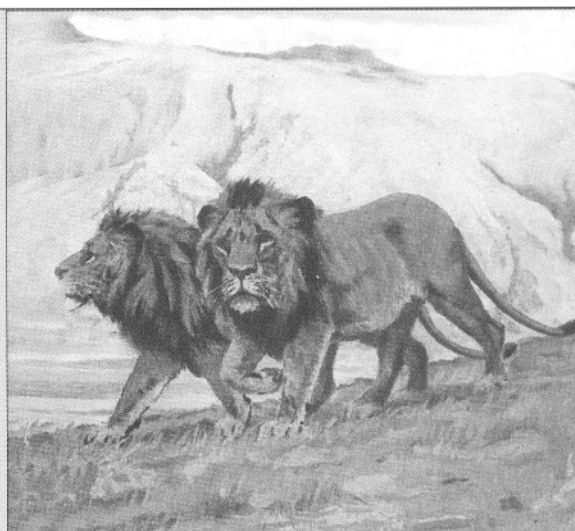
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Ill-informed and befuddling

Such is the verdict of both the Kenya Section of the IUCN/SSC Primate Specialist Group and the Kenya Primate Conservation Group, on Dr Kimberley Medley's 'puzzling' recent comments on the predicament of the lower Tana forests.

In SWARA/April-June 2000 David Mborá presented a detailed, well informed account of the recent destruction of large tracts of forest within the Tana River Primate National Reserve (TRPNR). Such cutting and burning of protected forests has stemmed largely from disagreements between the Kenya Wildlife Service (KWS) and local people over the best way to go about conserving the forests.

The high conservation value of the TRPNR forests and the crucial role these forests play in the local subsistence economy underlines the need for an open and informed national debate. The urgency of the situation makes it critical for this debate to focus on specific issues of immediate concern. Against this backdrop, we were disappointed and puzzled by comments made by Dr Kimberly Medley (SWARA/July-December 2000) in response to Mr Mborá's article.

Not only does Dr Medley appear totally to miss the point of the article; it worries us that by raising many irrelevant points she

may also divert attention away from the immediate issues threatening the forests.

Mr Mborá's information is based on nearly two years spent recording vegetation composition and primate abundance and distribution in nearly 30 forests on the lower Tana River. His account of recent events there clarifies the challenges faced by the KWS in protecting these forests and offers specific recommendations on actions that could help to improve matters. That the KWS has been pursuing such actions is confirmed by the KWS Director himself (SWARA/July-December 2000).

For some reason Dr Medley sees fit to disregard these critically important issues, electing instead to dwell on the importance of flood-plain dynamics and other changes that occur over long periods of time. While such events are undeniably important in the context of the historical problems faced by the TRPNR and other forests, the current crisis described by Mr Mborá is grave. It involves short-term dynamics, and should on no account be trivialised.

Dr Medley argues that there is little basis for predicting the effects on the primates of forest clearing or other environmental transformations. Recent research by Mr Mborá and Ms Julie Wiczowski on the red colobus and the crested mangabey, however, has yielded ample evidence of how the well-being of these primates is being affected by the changing forest conditions and by the amount of forest cover available.

This we can safely generalise from the abundant data on other primates in other areas – if not from common sense and a basic understanding of what limits the abundance and distribution of primates. The red colobus and the crested mangabey are clearly highly dependent on the unique forest of the lower Tana River for food and shelter. Once this forest is gone, their food and shelter too are gone. Once their food is gone, they will starve, raid crops, or move to another, possibly unsuitable forest.

Dr Medley appears not to have familiarised herself with the large body of data collected since the early 1970s on the primates of the lower Tana River forests – the red colobus and crested mangabey especially. She also demonstrates a surprising lack of understanding of basic animal ecology and behaviour, and of elementary conservation biology. Her viewpoint also violates two of the most important principles of environmental management: 'duty of care' and the 'precautionary principle'.

Given that disturbed environmental systems may be impossible to restore, these two fundamental principles underline the need to think through the likely consequences of actions – or of inaction. It is not appropriate to wait until damage levels are overwhelming by using the excuse that "more evidence is needed". The effects on primate populations of reducing, or of completely removing, their habitats are obvious. Is Dr Medley seriously suggesting that no one can predict the effect on forest-dependent primates of clearing 497 hectares of a 500-hectare forest?

Critically endangered: the forest-dependent Tana River crested mangabey.



The endemic Tana primates act as powerful flagship species for the conservation of the Tana River forests. They are the primary reason why the TRPNR was established. As such, they provide a good focus for the conservation of the Tana ecosystem, while increasing our ability to raise support for both conservation and human development assistance in the area. It is therefore logical to maintain our focus on the primates but at the same time not to lose sight of the area's pressing human needs. We know that the endangered primates, as the area's most studied species, are an important indicator of the condition of the ecosystem. Consequently, it is easier to detect stress and changes in their populations than in any other set of species.

Regardless of how much we care about the endangered primates of the lower Tana, or the region's biodiversity, we must also address the welfare of local people. Conservation should not be achieved at their expense. We are convinced that the conservation of the Tana forests and of the primates holds the key to promoting the economic well-being of those living around the forests, which are the local subsistence economy's most important economic resource.

Conserving the primates means that the forests have to be conserved, thus preserving and retaining a vital source of sustenance for the local people. There also exists enormous potential for direct income from ecotourism with only a modest investment in publicity, marketing, infrastructure, and security. Let us not forget that the Tana area is now the beneficiary of a World Bank/GEF project amounting to more than KSh 500-million (the equivalent of about US\$ 6.2-million), most of which is going to community development – and all because of the primates and the forests.

In setting aside protected areas for conservation we are conceding that we cannot protect all species everywhere. In any such protected area there has to be a bottom line. Wildlife protection laws must be enforced strictly. Otherwise there would be no need for the protected area in the first place. In the case of the TRPNR, allowing illegal forest

destruction and plunder of other resources is tantamount to signing an extinction warrant for the primates and for all the lower Tana's other forest-dependent species.

It should also be pointed out that some of the resource exploitation activities advocated by Dr Medley threaten other peoples' livelihoods. A good example is the exploitation of the wild date palm, *Phoenix reclinata*, whose fronds are used to make handicrafts for sale, providing an income. This palm is also tapped for *mnazi*, a local alcoholic beverage. But, while the wine-tapping involves topping the palm, and so killing the tree, the removal of fronds for handicrafts does not kill the plant. Effective law enforcement, by eliminating the destructive activities, would save jobs for people whose use of the resource is sustainable.

Dr Medley seems to be unaware of recent studies showing that law enforcement within protected areas is the single most important factor in ensuring the success of biodiversity conservation in the tropics. One such study, by Bruner *et al*, published recently in the journal *Science* (Vol 291/January 2001), covers 93 parks in 22 countries and shows that parks are a successful means of protecting biodiversity in the tropics against anthropogenic threats. The effectiveness of the parks was best correlated with basic management activities, such as the density of guards (rangers) and the levels of deterrents to illegal activities in the parks (that is, by swift arrests followed by stiff sanctions). We therefore strongly endorse increased law enforcement in protecting the Tana forests.

Perhaps the fact that Dr Medley conducted research on vegetation communities (and not on primates) in the TRPNR, and that this was ten years ago, has led to her confusion about present conditions in the reserve. This may explain why she misses all the clearly stated points made by Mr Mboru. We hope, through our comments here, to refocus discussions on the immediate issues highlighted by Mr Mboru as being paramount to the conservation of the TRPNR's endangered primates. 🐵

– Dr Deborah L Manzolillo Nightingale
IUCN/SSC Primate Specialist Group
Kenya Primate Conservation Group

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Photographs: © RUPERT WATSON

The mingled destinies of Baobabs and Elephants

The long-term survival of these two giants in their respective kingdoms may be inextricably linked, argues Rupert Watson.

Baobabs are natural monuments, the oldest living things in Africa. In size they dominate their landscapes, not only because they are almost always the biggest trees where they grow but also because essentially they grow alone. Elephants are the largest land mammals on earth, and the longest-lived. They once wandered freely all over sub-Saharan Africa, and almost everywhere a baobab grew there were elephants.

While the extent of their co-existence is drastically reduced, baobabs and elephants still survive together today. The animals extract great goodness from baobabs, often at great cost to the trees, which they damage to an extent that would easily kill other tree species. To have survived for so long in the African savannah, and yet to have continued to appeal to some inner elephant craving, these pachyderms of the plant kingdom have needed unique resilience and powers of

recovery. Elephants eat the twigs, young leaves, and occasionally the fruits of baobabs – although with nothing like the relish they reserve for doum palm nuts. They also eat the bark and chew the wood of the trunks with what may appear, for the trees, to be potentially disastrous consequences. Yet because of the baobab's extraordinary strengths, elephant damage is seldom fatal.

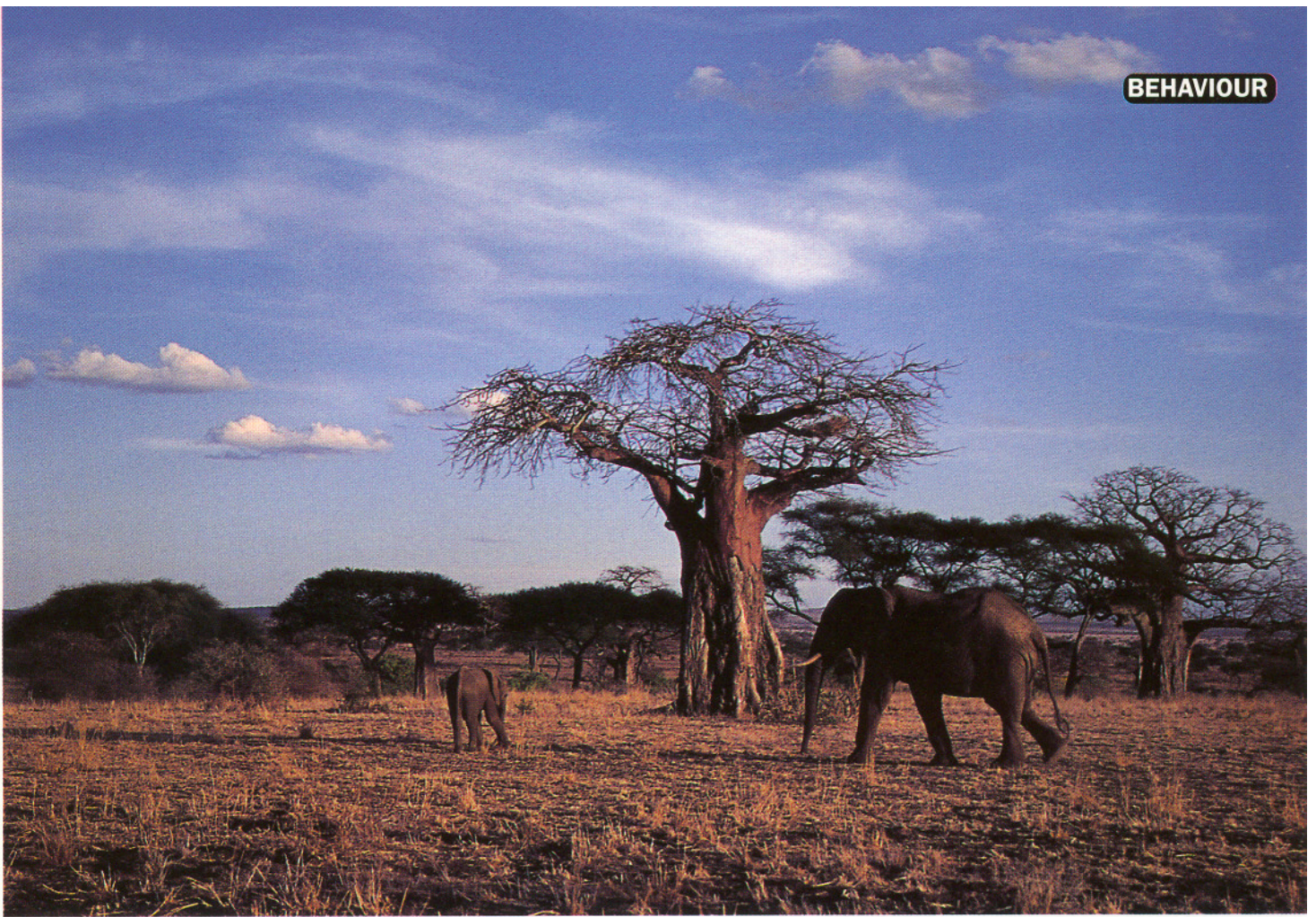
Baobab bark is exceptionally rich in calcium. This may be one reason why elephants are so attracted to it. They first dig into a tree with their tusks, tearing the bark into strips and then ripping these off with their trunks. Not content with the bark alone, elephants may then start to gouge out

the wood, which is soft and very moist. Chewing it for whatever moisture or other goodness can be extracted, they then spit out the stringy fibre – just as they do after chewing the fleshy leaves of the sisal-like *Sansevieria*.

Perhaps the best place in Africa to look at elephant-damaged baobabs is Tarangire National Park in northern Tanzania, where the perennial river attracts legions of game



Holed trees like this one (right and facing page) in Tanzania's Tarangire National Park bear striking testimony to the damage routinely inflicted on baobabs by excavating elephants.



in the dry seasons. On the lightly bushed plains and rocky hillsides to either side of the river valley are baobabs that show the whole spectrum of elephant damage. Scarcely a tree has been left untouched.

Least affected are those trees whose bark was stripped off years ago, leaving scars far up the trunks as the only evidence of elephants' attentions. Other trees, lacerated much more recently, have tattered strips of

grey and chestnut-brown bark hanging off their trunks, in stark contrast to the lighter shreds of inner wood. Trees at which elephants have spent more time may be badly wounded, with great wedges of wood gouged out of their trunks. Most spectacular, though, among the survivors of elephant excavations are the hollow trees that have been attacked from both sides, leaving holes right through their middles.

Timeless association: baobabs and elephants, seen together at dusk (top left) or bathed in late afternoon sunlight (above), are archetypal symbols of Africa itself.

The baobab's powers of survival are vastly superior to those of almost any other tree, particularly in respect of its ability to live on after being completely ring-barked, whether by man or beast. Around Africa, the bark is fashioned into baskets, mats, fishing lines, ropes, and instrument strings. It was once used for paper and still is for cloth. Local people have long appreciated how the bark, after being peeled off in a complete circle, will regenerate from within the trunk – to such an extent that six years later it can be harvested again.

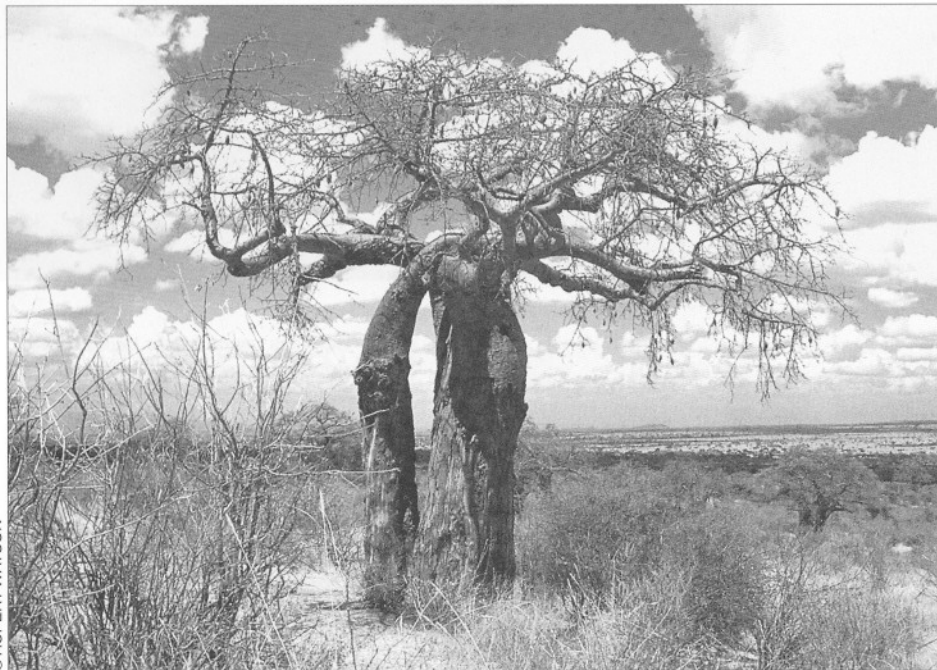
Elephants often strip all the bark off a baobab, and those baobabs that survive with more than half of their trunks gouged away appear to be defying nature and its laws of gravity. Just so long as a baobab remains standing, it seems to stay alive. With even a few of its roots intact, it may continue flowering and fruiting long after it has fallen or been pushed over.

Younger baobabs targeted by elephants are gouged away on all sides until they are supported by no more than a thin central cylinder of wood that, like the waist of an hourglass, will eventually prove just too

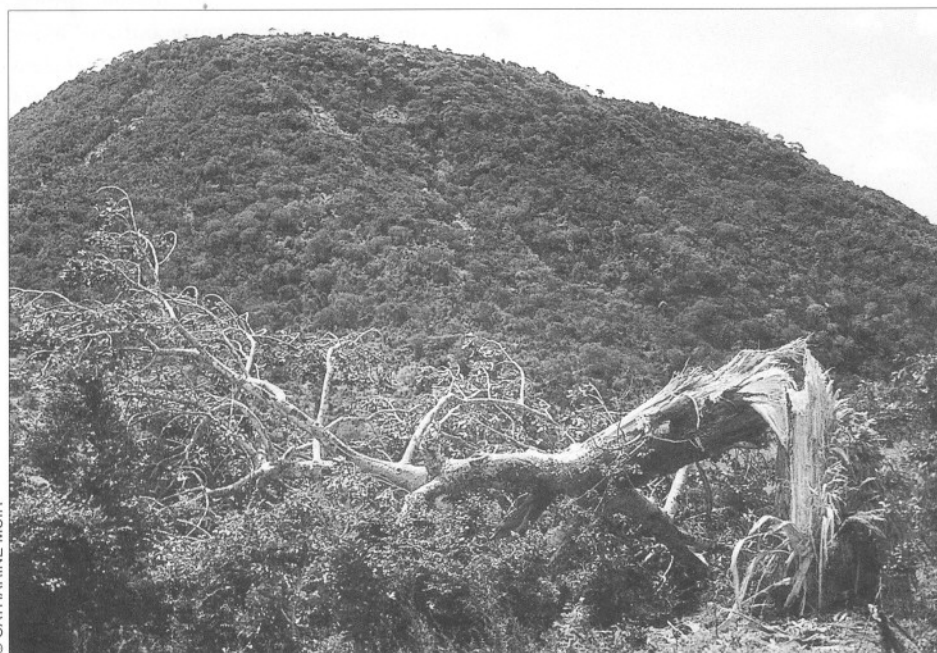




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slender. For older, hollow baobabs the mechanics of support and collapse are different. It may be hundreds of years before their hollowness naturally begins to manifest itself as chinks in the bark, or as a small hole down near the ground. Yet when elephants start to excavate such a tree, the void in its middle may be revealed very much sooner.

Having lost their heartwood centres, hollow trees depend for support on outer sapwood walls that may be anywhere from a few centimetres to a metre thick. But, if the elephants gouge out too much from one side or the other, the tree will topple over – very occasionally, and in a final act of retribution, crushing its attacker as it falls.

Elephant attacks on baobabs are sometimes so sustained as to appear driven by some inner frenzy of frustration, particularly when attacks culminate in a tree's collapsing. It has been suggested that the animals may be reacting to pressures of overpopulation. Research shows that other tree species are most often pushed over by young or solitary males. These males may have reasons for their destructive behaviour besides simply wishing to feed on otherwise unreachable fruits, branches, or leaves. The crashing of a falling tree certainly has the effect of attracting other elephants.

Several of Africa's national parks have provided suitable laboratories for studies of the effects of elephants on baobabs. Ruaha is huge chunk of southern Tanzanian wilderness with a single rainy season from December to April. There, baobabs are common among the *Acacia* and *Commiphora* scrub. Also common were the elephants whose behaviour formed the basis of the research carried out in the 1970s by R F W Barnes.

The Ruaha baobabs start flowering in October. By the end of November leafy shoots are showing on the ends of their branches. Where there hasn't yet been any rain, these shoots may be the most succulent mouthfuls elephants can find – and are well worth a balancing act on the back legs to try to reach. Once the rains come, however, and grass and scrub begin to regenerate, elephants start feeding closer to the ground. With so much other food at their disposal, they have little impact on the baobabs. Only when the grass dries, and the leaves shrivel, may the elephants again become destructive to the tree trunks.

Nemesis (top left): an elephant lies crushed under the weight of a baobab it has just brought down. Young trees – like these scarred 'twin' baobabs in Tarangire (centre left), or this smashed Tsavo baobab (bottom left) – are hammered particularly hard by elephants.



Photographs: © RUPERT WATSON

Barnes took note of the respective feeding habits of bulls and cows. He found that in Ruaha bull elephants spent far longer at work on a particular tree than cows – 26 minutes versus just two. While conceding that the aggressive nature of his study subjects and the thickness of the bush restricted the accuracy of some of his observations, he suggested that this distinction was the result of a different social organisation of the sexes. There is usually room for only one elephant at a time to feed

at a baobab cavity. In the meantime the rest of a group has to do its eating elsewhere. Cows tend to live in tight family groups. So, if one of their number spends too long gorging herself at a tree, she may quickly find herself separated from the others who have wandered off looking for other food.

Bulls are less social, and are either loners or members of looser aggregations. As such they are not so concerned with staying in constant touch. So they dig away for far longer, and may even carry on until the tree

Balancing act: such feats are called for if an elephant, in its search for dry season browse, is to reach a baobab's succulent young leaf shoots. Below: A baobab tree in flower.

collapses. Then several elephants can feed at once and cows take the opportunity to feast, until either very little is left of the trunk, or the rains arrive and other sources of food tempt the elephants away.

In dry seasons, trees closest to permanent water tend to be most damaged, while those further away, out of range of the daily feeding forays, are little affected. Trees attacked during one dry season and then abandoned as the elephants move on or the rains come, are not always revisited the next year, and so often get a chance to recover.

Tree size may also influence the partiality of elephants to visiting particular baobabs. The rather conflicting evidence seems to indicate that they prefer smaller trees. However, many researchers concerned with monitoring the effects of elephant damage on baobab populations, have focused on trees that are damaged to death. As these are likely to be smaller ones, which are more easily killed, some of their conclusions may be tilted into inferring that elephants prefer to feed off smaller trees.

Any census of baobab numbers is constrained by the difficulty of spotting young trees. While this can be said of many



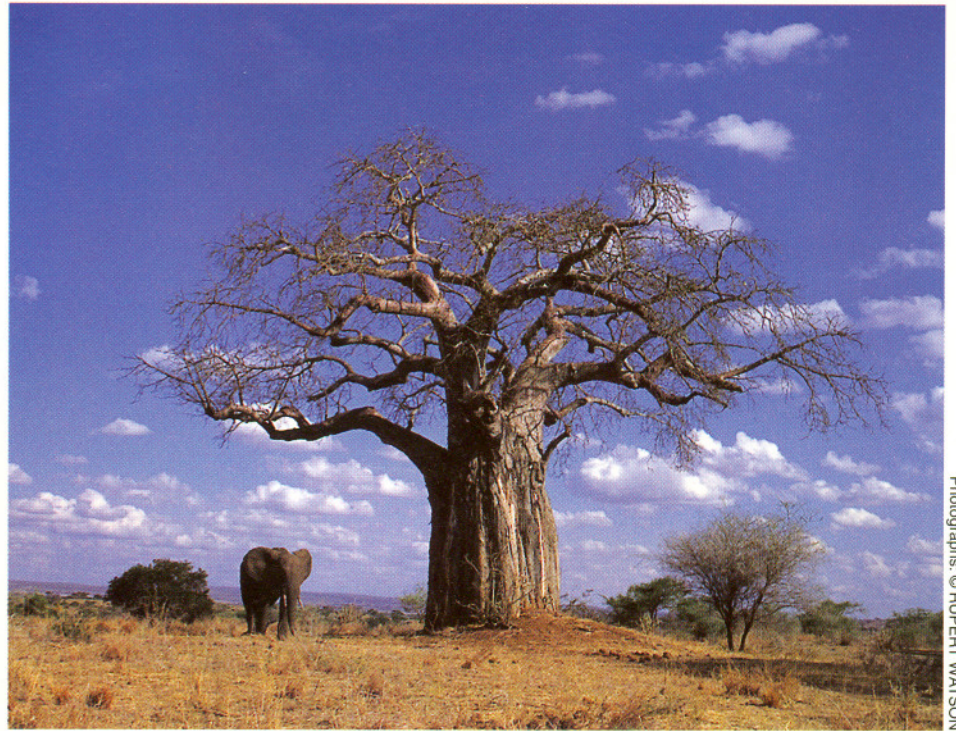
tree species, it really is no surprise that many Africans believed baobabs were born fully grown, appearing and disappearing overnight. The leaves of the seedlings are paired, one opposite the other, and elliptically shaped, quite unlike the (generally) five-fingered leaves of the older trees, from which *digitata* takes its name.

Being leafless for two thirds of the year may help the trees to conserve their moisture. But this doesn't make them any easier to identify. For many years baobab trunks may stand straight and even, before developing the characteristic bulbous spread of later age. Still, despite the ability of baobabs to disguise their identities so effectively, the consensus is that in areas where elephants are artificially confined through loss of their old migration routes or dispersal areas, the trees are suffering.

If baobabs were even moderately fragile by tree standards, they could not have endured for so long in the face of the voracious appetites of elephants. They have needed, therefore, to evolve an ability to withstand abnormally severe damage. This they have done. Had they not done so, survival would have meant gradually developing other defences against elephants, like a foul taste, or much harder wood, or a poisonous sap. In so far as elephants help to spread baobab seeds, the relationship may verge on the symbiotic. Baboons, however, to do most of the serious seed dispersing. Nor is there much evidence of elephants' eating the fruits with any particular relish. So the crucial element of mutual benefit may be missing.

Even in that Utopian age, when elephants moved around Africa wherever they wished, rather than wherever they could, baobab and elephant numbers are likely to have fluctuated continually. With such an unstable climate, could it ever have been otherwise? Indeed, it may be confusing even to speculate on the idea of an optimum balance between the two.

The cycle of rain after drought after rain has sustained life in Africa since long before man stood up. In wet times many baobab seeds germinated and elephants, with plenty of alternative food plants, allowed these trees to flourish. Then came dry years that were



Photographs: © RUPERT WATSON



Arch survivors: That baobabs are able to withstand the repeated onslaughts on them by elephants is thanks only to their great resilience and powers of recovery. Brave new life (left): A young baobab emerges from the shattered stump of a destroyed tree in Tanzania's Lake Manyara National Park.

bad for both elephants and baobabs. Isn't it these short-term imbalances that actually amount to long-term stability? And is the spur to evolutionary change not equilibrium but instability?

With elephants' taking around ten years to reach reproductive age and baobabs 20 or 30, any real recovery takes a very long time to take effect. Once it has, the recovery may be sustained by the fact that both elephant and baobab live so long. Elephants may easily live to ages of between 50 and 65 years, and baobabs occasionally to 1,000 years, or more. (Large baobabs are almost impossible to age. Very old ones are usually hollow, without any original wood as old as

the tree, and thus unsuitable for carbon dating. Growing in the tropics, where the seasons are often indistinct, such rings as may be discernible in baobab trunks are not necessarily annual ones.)

What is unarguable is that, in the context of their long lives, the confinement of elephants has come about frighteningly fast – in no more than two or three generations, which of course is far shorter than a single generation for baobabs. Just how fast this has happened is nowhere more evident than in the elephant-scarred trunks of thousands of baobabs on what are now small-scale farms around the edges of Tsavo, and Ruaha; Lake Manyara, and Luangwa Valley.

'Timeless' with reference to Africa may be a cliché. But as a matriarch elephant leads a chain of young ones away from their evening drink into a darkening landscape of silhouetted baobabs, it is still the word that comes most readily to mind. Long may it stay that way.

Rupert Watson is writing a book about the African baobab (Adansonia digitata) and would welcome any observations or comments on any aspect of the tree or its ecology (P O Box 24251, NAIROBI; E-mail <chinook@nbnet.co.ke >). He is grateful to Cynthia Moss, author, zoologist, and founder of the Amboseli Trust for Elephants, for looking at an early version of this article. He also wishes to acknowledge the work of other researchers, notably that of R F W Barnes, as summarised in The decline of the baobab tree in Ruaha National Park, Tanzania (published in the African Journal of Ecology, 1980).



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Embattled Paradise

Wildlife wonderland it is still; but the Serengeti-Mara ecosystem is beginning as never before to show worrying signs of strain under pressure, caution Jonathan and Angela Scott.

The Serengeti-Mara ecosystem is one of the great natural wonders of the world. It was one of the first areas to be nominated as a World Heritage Site, and together with the Ngorongoro Conservation Area it forms one of the world's largest Biosphere Reserves. Yet since the early 1900s, the Serengeti-Mara has lost over 50 % of its area as a natural ecosystem. Most of this loss in the last 30 years has been within the legally protected boundaries.

'What has occurred in the Serengeti-Mara provides an indication of what is also happening in many other natural areas of world-wide significance. A once vast natural area bordered by undeveloped lands, the Serengeti-Mara ecosystem is fast becoming an insular assemblage of native species in a sea of humanity. As a result, the area is now severely threatened by the detrimental effects of human encroachment, the over exploitation and loss of its wildlife species, and the progressive loss of the natural system within its boundaries...'



These sobering words, from A R E Sinclair and Peter Arcese, editors of *Serengeti II: Dynamics, Management, and Conservation of an Ecosystem*, are enough to make anyone look beyond the mesmerising abundance of wildlife that is synonymous with this incomparable habitat – and take stock afresh. Such thoughts were certainly uppermost in our minds when it came to writing the epilogue to our latest book, *Mara-Serengeti: A Photographer's Paradise*.

Along with an earlier volume, *Serengeti: Dynamics of an Ecosystem*, edited by Sinclair and M Norton-Griffiths, *Serengeti II* provides a staggeringly comprehensive overview of the ecosystem based on more than 40 years of scientific research. So, are the worst fears of those pioneer German naturalists, Bernhard and Michael Grzimek, finally coming to pass? Was their celebrated book and film, *Serengeti Shall Not Die*, that so inspired me 40 years ago all in vain?

Soon after I came to live in the Mara in January 1977, Tanzania closed its border with Kenya. The repercussions were immense. The number of visitors to the Serengeti plummeted from 70,000 a year to just 10,000. The concomitant loss of revenue precipitated a 60 % decline in anti-poaching patrols; so much so that by 1986 only one vehicle was available for anti-poaching in the entire Serengeti.

As far back as 1978, 50 % of the Serengeti's estimated 700 rhinos were dead. Within the space of another three years rhinos were virtually extinct here. But it wasn't just the rhinos. Heavily armed motorised gangs had also turned their attentions to the Serengeti's 2,500 elephants. These had for some time been targeted illegally by trophy hunters both in and outside the park. By 1986 no fewer than 1,500 elephants had perished. The remnant herds were granted a reprieve of sorts by 1989's global ban on the sale of ivory.



At the same time meat poachers using wire snares and pitfall traps were decimating the buffalo herds in the northern Serengeti woodlands. To the west, 50 % of all the buffaloes were being driven to their deaths by poaching gangs using lines of 100, or more, snares.

Meat poaching remains the most serious threat to wildlife in the Serengeti. It is estimated that close to 20,000 poachers are killing upwards of 150,000 animals a year, principally with wire snares. These poachers are providing game meat for a potential market of one million people living within 45 km of the Serengeti's western boundary. Wildebeest account for more than half of the dead animals, but other thicket dwelling species – such as giraffes, waterbuck, topis,

Photographs: Jonathan and Angela Scott

Mass migration: wildebeest (above) on the move across the Mara plains. Left: African wild dogs, decimated by diseases such as rabies and canine distemper, are now scarce throughout the Mara-Serengeti ecosystem.



impalas, and warthogs – are also commonly taken.

The predators have suffered too. Meat poachers have no love for lions, hyaenas, or leopards, and kill them with snares or poison. Both the wildebeest and zebra numbers have remained surprisingly stable over the past 20 years, however, leading some to question the levels of off take by poachers and even to downgrade the total numbers of animals killed by about half.

But this is little consolation. With an ever-growing human population's pressing up against the park boundaries, the demand for cheap meat can only intensify. If the wildebeest population were to crash the effect would reverberate throughout the ecosystem. The migration *is* the Serengeti; it is the great wildebeest herds that pattern the lives of everything else.

While meat poaching threatens the Serengeti's existence in the west, in the east it is the loss of land to agriculture that is

cause for most concern. There were plans afoot to fence off parts of the Loliondo area to grow wheat or barley. So far this hasn't happened. But if it does, it could spell disaster for the migration, parts of which have used this route over recent years in moving directly from the southern plains to the Mara.

Humanity's impact on the Serengeti-Mara has been felt in many less obvious ways. An estimated 100,000 domestic dogs live in the Mara-Serengeti region. These act as a potent and potentially lethal reservoir of epidemic diseases for wildlife.

Between 1989 and 1992 all the packs of African wild dogs under study in the Mara-Serengeti either died or disappeared. Some succumbed to rabies. Others may have been victims of a distemper epidemic then rife among the area's domestic dogs. The distemper epidemic eventually jumped into

the lion population as well, killing hundreds of lions and reducing their numbers by one-third. A programme of vaccinating up to 10,000 domestic dogs against rabies and distemper along the Serengeti's western boundary was initiated in 1996. But the wild dog population has yet to recover...

It was with disturbing facts like these on our minds that, in March last year, we travelled down to the Mara again for one last visit prior to completing our book.

Leaving the Rift Valley behind, we crossed the dry Loita Plains, sparse country stippled in places by whistling thorns. Groups of gazelles shimmered in the heat, staring back at us before bouncing away with that familiar stiff-legged trot. We chatted about the area's future. In the year past we had lost a number of old friends. Half-Tail the leopard had been killed with a wire snare for taking livestock. Three of the Marsh lions had vanished, presumed killed by Maasai herdsmen. Should we, in years to come, find



fences and crops pressed up against the boundaries here, and all the animals gone?

But then, as we drew closer, our mood lifted. The Mara can still soothe the spirit, stifle the tension.

Ironically, the Maasai Mara was – before the border closure – little more than an overnight stop for many of the Serengeti's visitors: one last destination on their homeward journey via Nairobi. Then suddenly it was forced into the limelight as Kenya's premier tourist attraction. Today it is the most visited wildlife sanctuary in East Africa, with up to 300,000 visitors each year.

This new found prominence has been a mixed blessing, however. Unplanned tourist development has resulted in a proliferation of tented camps and lodges. There are now more than 30 in the area, with a number of other sites earmarked for development. A moratorium on any further development was adopted recently by the Kenya Association of Tour Operators, pending the outcome of a new Land Use survey. But still the golden goose continues to be plucked. As the demand for land intensifies, what future can there be for the people and the wildlife living around the periphery of the reserve?

Traditionally the Maasai have occupied areas unrivalled in beauty and rich in soil. They have rotated their use

of the grasslands, moving back and forth between wet season dispersal areas and dry season holding areas with perennial streams to water their cattle herds, and sufficient grazing to sustain them until the advent of the rains. By not staying too long on any one part of their range they have avoided overgrazing the land. Only during the severest droughts did they kill wild animals for food, limiting themselves, even then, to elands or buffaloes – God's cattle. Only



Dawn patrol: the 1,500 elephants that move in and out of the Mara, are the ecosystem's great levellers, flattening nascent woodlands and keeping open expanses of grassland.

when a predator threatened their livestock did they take up arms and hunt it down, with the one notable exception of course of their age-old custom of doing battle with a male lion for the honour of wearing its mane as a war bonnet.

This benign attitude towards wild creatures – standing out in such marked contrast to humanity's depredations elsewhere – can be seen as a form of active wildlife conservation on the part of the Maasai. This is one reason why Maasailand still harbours some of the greatest concentrations of wild animals found anywhere. It is no accident that many of the world's most famous game sanctuaries bear Maasai names – Amboseli, Lake Manyara, Nakuru, Ngorongoro, Serengeti, Maasai Mara – and are part of Maasailand.

Young and vulnerable: these three-month-old cheetahs (left) will survive only if they can evade the attentions of lions and hyaenas, both major killers of cheetah cubs in the Mara-Serengeti. Right: The ecosystem's declining giraffe numbers are ascribed to diminishing woodlands, brought about by fires and by elephants.



In a culture enshrining the central role of cattle for food and sustenance, wild animals could in most cases be ignored, whether as a source of meat or as direct competitors for grazing.

That the Maasai did not kill animals was because they had no use for them. They neither ate them nor used their skins to clothe themselves. Cattle, sheep, and goats provided for their every need. So, sharing the vast open spaces with herds of wildebeest

and zebras was not so much a choice as an incidental fact of life.

Having lost much of their land during colonial times, the Maasai are quite understandably suspicious of any attempts to wrest still more concessions from them for the sake of preserving wild animals. The irony is that the Maasai were the ones living in harmony with the wild animals in the first place. That was long before governments and conservationists, waking up to the profits to

Stranglehold. For lions, which kill mainly by strangling their prey, food is plentiful supply come the arrival of the wildebeest migration.

be made from tourism, decided that the Maasai should move out in order to 'protect' the wild animals so that wealthy visitors from countries that long ago destroyed all their own wildlife could enjoy a luxury safari.

Many Maasai view wildlife – and wildebeest most especially – as a source of disease for their cattle, as competitors for grazing, and as a threat to crops. During the dry seasons up to 600,000 wildebeest move into the Mara from the Serengeti, spilling over into the ranch lands and eating up the precious grass. Because of this, many Maasai feel it is only fair that they should be allowed to graze and water their herds within the reserve when times are tough and drought threatens.

But one long-term Maasailand resident feels that this spells disaster. "If the Maasai are allowed to go on taking their cattle into the Mara without any controls or checks by the administration," he says, "then the vegetation will go, just as it has already in many other parts of Maasailand. The game too will go, and then the bush, the trees, the grass, and finally the streams and the soil itself, which will become brown, bare, and pock-marked with gullies like the Loita Plains."





A eunoto ceremony among Tanzania's Kisongo Maasai (above) marks the initiation to moranhood of a new age-set. Left: Zebras at a waterhole in the Maasai Mara.



Already large-scale wheat fields have replaced much of the forest and grassland north of the reserve. Such agriculture is spreading ever southward, compressing both the wildlife and the people. Loss of habitat and competition for grazing with livestock is constricting the area available for wild animals, threatening traditional migration routes, and leading to a marked decline in wildlife numbers outside the reserve.

The Loita wildebeest population has declined from 100,000 to 20,000 within the past two decades. Meat poachers set hundreds of wire snares along the Siria escarpment and in the acacia thickets bordering the Mara River. Tonnes of meat are ferried out to local human populations. Elephants with parts of their trunks missing, or with suppurating leg wounds, bear stark witness to the problem. On two occasions Queen the cheetah – or Amber as she is known to viewers of *Big Cat Diary* – has been saved from death by strangulation after running into a wire snare.

Compounding the area's problems are the high levels of human immigration into the Mara region, now running at some 7 % per annum. Farmers gaze hungrily at the great tracts of land still roamed by the Maasai and their cattle. Their covetousness is fuelled by Kenya's 2.6 % annual population growth. Elsewhere all the best land has long since been sub-divided, and then divided yet again with each new generation, as it passes from a father to his sons.

While many wildlife sanctuaries are manifestly unsuitable for farming – which

is partly why they were set aside for wildlife – significant portions of the group ranches around the Mara do have high agricultural potential. Now that the old system of communal ownership is being abandoned and land adjudication completed, individual title is being granted to landowners. Clusters of rocks splashed with white paint denote the boundaries of newly sub-divided land on the periphery of the Mara in such places as Fig Tree Ridge and Leopard Gorge – Half-Tail the leopard's old haunts.

Nobody is saying this shouldn't happen. But the fear is that more and more Maasai pastoralists will be persuaded to sell off parts

of their land to agriculturalists who will then fence off the land, sealing the fate of wild animals living outside the reserve and affecting those within. Many of the landowners have banded together into Land Associations, or Wildlife Trusts, to protect the old group ranch areas. But some individuals are unhappy over the inequitable sharing of profits from tourism. Few people make a decent financial return from their land, and many at the grass roots level see no return at all.

There can be no doubting, however, that there *is* money to be made from wildlife. Tourism remains one of Kenya's largest sources of foreign exchange. The Mara is owned by the Kenya government and managed by the Narok County Council for the benefit of the Maasai people, generating 8 % of national tourist revenues, while accounting for 10 % of all tourist bed nights and bringing in some US\$ 20-million annually in foreign exchange.

Part of this sum comes in the form of fees levied on lodges and camps and from daily entrance tickets issued to tourists visiting the reserve. Some of the money is passed on to the Maasai living adjacent to the reserve and goes towards local development projects including schools, medical dispensaries, and veterinary services. The group ranches themselves generate some US\$ 10-million annually in foreign exchange, although the bulk of these profits are made by commercial operators.

Jonathan and Angela Scott's latest book, Mara-Serengeti: A Photographer's Paradise, is reviewed on page 57.



Only if the money accruing from wildlife is used for the benefit of the people – and is seen to be so used – will wildlife conservation continue to be viewed as a valid form of land use within the area. Tourism is a notoriously fickle industry, and in recent years Kenya has seen a marked drop in visitors and revenues alike. There is a salutary lesson to be learned from Tanzania's experience in 1977 when tourism dwindled in the wake of the border closure and its impact on the Serengeti.

Tourism alone cannot secure the future. How much, then, is the developed world prepared to pay to safeguard places like the Mara-Serengeti? Anti-poaching patrols would be much more effective with more vehicles and better surveillance equipment. There would be less demand for game meat if beef were available at an affordable price. Greater funding is needed for extension-education programmes for the communities living in the Mara-Serengeti vicinity. And the Maasai would be less inclined to plough up their land for cultivation if they were paid a fair price for continuing to share this land with wild animals. All this requires massive investment. But there must also be a far greater level of accountability if others are going to be asked to help to foot the bill.

Woes aside, the northern range lands still harbour sizeable wildlife populations. Some species are clearly thriving both in and outside the reserve. Ironically the killing of elephants in the northern Serengeti in the early 1980s forced between 400 and 500 of these elephants to seek refuge in the Mara. Some of these animals have since returned. Until the mid-1980s poaching in the Mara was virtually unheard of.

The large numbers of tourist vehicles criss-crossing the reserve have made it difficult for the poachers to operate. The bans on both trophy hunting and the sale of wildlife products have also played a part. The Mara's rhino population has rebounded from an all time low of 11 in 1982 to 25 today, with a handful of others' having dispersed into the northern Serengeti.

Change is an integral feature of all ecosystems. Humanity's impact is just one of the factors causing it. The 1,500 elephants moving back and forth between the Mara and the dispersal areas to the north and east play a key role in maintaining the area as grassland, particularly inside the reserve. As the elephants move across the plains they unerringly home in on the patchwork of tiny acacia seedlings, wrapping their prehensile trunks around these tasty morsels and deftly uprooting them with a nudge from one of their massive forefeet.

Fires, by inhibiting the regeneration of seedlings and killing some of the mature trees, also play a major part in this gradual transformation from woodland to grassland. The loss of wooded habitat is almost certainly the reason for the reserve's declining numbers of giraffes and elands. The loss of croton thickets, in particular, may also be keeping the rhino population in check. In places outside the reserve there is a noticeable increase in wooded areas. The combined effects of both livestock and resident wild animals, swelled each year by the arrival of the wildebeest migration, keeps the grass short, limiting the amount of fuel for fires and so helping the thickets to flourish.

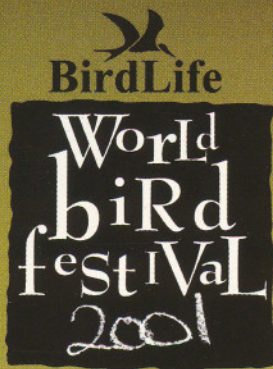
It is the wildebeest, here thundering across the plains at sunset, that pattern the lives of everything else in the Serengeti-Mara ecosystem.

Much has been made of the notion that wildlife must pay its way if it is to survive. Support for its value on purely aesthetic grounds has lost sway. Bernard Grzimek saw tourism not only as a way of creating an awareness of wild animals and the environment but also as a means of raising revenues with which to finance the parks – an alternative to hunting.

Grzimek, though, was also deeply mindful of the natural affinity and awe that we feel for living things. He understood the great psychological importance of this affinity, in helping to bind body and spirit. Nature has a magnetic hold on the human psyche: by destroying our natural world we court spiritual disaster.

Perhaps we are drawn to the wide savannah with its flat-topped acacia trees, winding rivers, and open grasslands because it was the home of our ancestors. Two million years ago a deep understanding of nature, and a reverence for it, had very obvious survival value. You had to understand the rhythms of life, to be a keen observer, to be a good naturalist, if you were to find sufficient food.

Today many of us live in a world of concrete far removed from other life forms. If we are to do any justice at all to the sentiments of Michael and Bernhard Grzimek in their book *Serengeti Shall Not Die*, then our world is going to have to redouble its efforts on behalf of humankind and wildlife alike.



Kenya's is a hard act to follow

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Funds raised go towards established environmental awareness and education programmes

WORLD BIRDWATCH is promoted regionally with the help of SWARA Magazine and the East African Wild Life Society.

Inset photos: PETER DAVEY / In The Dark

How time flies

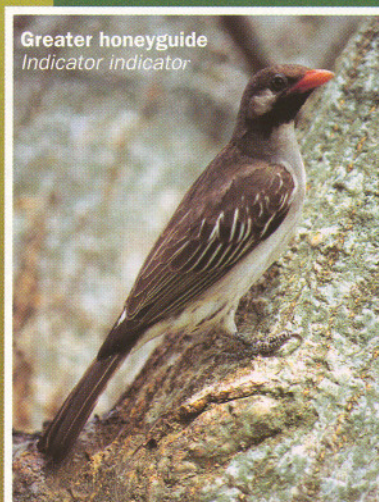
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ENQUIRIES AND CONTACTS

Both WORLD BIRDWATCH and the WORLD BIRD FESTIVAL are co-ordinated by BirdLife International, a global affiliation of conservation bodies with a combined membership of more than 1.5-million people. In Kenya, WORLD BIRDWATCH weekend is organised by BirdLife International's Nairobi-based partner, **Nature Kenya**, in association with the Ornithology Department of the National Museums of Kenya.

Further information on WORLD BIRDWATCH 2001 is posted on the Nature Kenya website, < www.naturekenya.org >. Enquiries and registration details should be directed to either Catherine Ngarachu or Dan Omolo, of Nature Kenya, P O Box 44486, NAIROBI; Tel + 254 (2) 749957 /746090, or E-mail: < eanhs@africaonline.co.ke >.



Yellow-billed stork
Mycteria ibis

Photo: ANDREW NIGHTINGALE / In The Dark

What is man without beasts? If all the beasts were to go, man would die from a great loneliness of spirit. For whatever happens to the beasts, soon also happens to man. All things are connected.

— folk saying

Zimbabwe's silent minority

Zimbabwe, wracked by internal violence for more than a year, is rarely out of the news. Through the government of President Robert Mugabe, the struggles of the landless and the landed have culminated in senseless injustice, falling agricultural production, spiralling unemployment, diminishing medical supplies, power cuts, debilitating petrol queues, brutal intimidation, banditry, torture, and murder.

None of this will come as news to anybody. But there is in Zimbabwe a voiceless minority whose sorry plight amid the continuing political upheavals goes largely unreported.

Wildlife poaching in Zimbabwe has assumed critical proportions since the takeover last year by the so-called 'war veterans' (many of whom are youths still in their late teens) of ranches, farms, and conservancies across the country. One farm alone has witnessed the violent deaths, or maiming, of more than 300 plains animals, as well as four cheetahs, a leopard, an African wild dog, four rhinos, and several elephants. All these victims were either snared or shot using automatic weapons.

Spurred on by Mugabe's rhetoric, lawlessness and wanton destruction have gone hand in hand with the illegal seizures. Properties have been burned to cinders, trees

cut down, tourists tormented and forced out of safari camps by irate gangs of veterans, and ranch scouts disarmed, intimidated, and sometimes severely assaulted as they have tried to perform their duties. Antelopes, of all locally occurring species, have been snared in their thousands. And many of the region's protected and endangered species, too, have suffered immeasurably.

One of the hardest hit areas is the Save Valley Conservancy in the south-east of the country, between the Zimbabwe Ruins and the frontier with Mozambique. At 340,000 hectares, this is one of Africa's largest conservancies, supporting more than 600 elephants. It has, with its black rhinos, achieved an unprecedented growth rate of close to 10 % per annum, making it the most successful rhino breeding programme on the continent. On its land and that of other Lowveld conservancies there are now 200 black, and 50 white, rhinos. Such private farms and conservancies today afford protection to 70 % of all Zimbabwe's rhinos. The 50 African wild dogs on neighbouring Chiredzi River Conservancy, meanwhile, represent the third largest population in Africa of this critically endangered species.

The future for all these animals now hangs in the balance. The land on both conservancies is on the Zimbabwe

government's hit list of 'compulsory acquisitions' for resettlement. Both have been invaded over the past six months by thousands of squatters. In this time indiscriminate poaching has decimated the wildlife. The Save Conservancy, alone, puts its losses so far at more than 3,000 animals. As much as 40 % of Chiredzi's habitat has been destroyed by burning.

Says Rob Style, Chiredzi's vice-chairman: "The worst thing is the deforestation. Our mopani forests, which take many years to regenerate, are being hammered really hard by the slash-and-burn clearing that is going on. Huge expanses of these forests are being cut down and burned, opening up the bush and exposing vast tracts of the soil to erosion. A whole ecosystem is being destroyed."

Ironically, these battles are being fought on land once deemed unsuitable for dry-land resettlement schemes by the same Zimbabwe government that originally gave its blessing to the conservancies, pledging its full support for projects instigated by the World Wildlife Fund, and others, to reverse the declining fortunes of the imperilled rhino. The government protection order placed on rhinos is now being violated by that government itself, which now freely endorses their capture and the destruction of their habitat. The Department of National Parks



A Save Valley Conservancy rhino, immobilised (right) for treatment to a serious leg wound (above) inflicted by a heavy cable wire snare made from a section of dismantled perimeter fencing.



and Wild Life Management, which has lost several dedicated members during its attempts to protect the rhinos, is doing what it can to prevent the widespread snaring. But without government support, its hands are tied.

Outside the conservancies the picture is little better. For eleven years Greg Rasmussen's Painted Hunting Dog Research Project has waged an intensive campaign to protect this gravely endangered species. Since its inception the project has succeeded in doubling the country's wild dog count from 350 to 700 animals: a feat not rivalled anywhere else in Africa. Now, this project too is in danger of being overwhelmed by the effects of indiscriminate snaring.

One of Rasmussen's study packs consisted of three adults and ten pups. The snaring of all three adults resulted in the death of the alpha male and the crippling of the yearling male. The female was saved only because the radio collar around her neck miraculously prevented the wire noose from throttling her. With only one of this pack's adult dogs active, it is likely that all the pups will die.

Rasmussen is determined to fight the effects of Mugabe's land policies: "Just the other day," he recounts, "a male dog got one of its legs caught in a snare and all the tendons were severed. So we had to rush the animal to Bulawayo, a drive of some three hours, to get the tendons stitched up. We then drove back at breakneck speed so as to be in time to restore him, bandaged foot and all, to his pack."



Photographs: © CFU MASVINGO

"Wild dog numbers had been picking up very nicely in Zimbabwe," Rasmussen continues, "— in marked contrast to their fortunes elsewhere in Africa. So incidents like this, now all too frequent, come as a real body blow to us, to the dogs, and to the conservation community at large."

But it is not only the wild dogs that Rasmussen is concerned about. "In the last few months," he adds, "I've had to deal with snared bushbuck, lions, zebras, elephants ... the list goes on and on. And, if anything, the situation is getting worse. It's a nightmare."

The preferred tactic of the poachers is to set a minefield of cable snares made from

Fires started by occupying gangs of 'war veterans' are razing large expanses of mopani woodland habitat on Zimbabwe's wildlife conservancies.

the dismantled fences that once surrounded the perimeters of the conservancies. These act by slowly strangling, and starving, their victims to death. The poachers often resort to sending children in to collect the meat as these kids are too young to be arrested or convicted.

Removal of the perimeter fencing also allows wildlife to disperse from the conservancies. Already four elephants have been shot on community land adjacent to Save. Without fences there is also the risk of disease. Foot-and-mouth carried by buffaloes and other wild ungulates could be allowed to spread to domestic livestock that are normally separated from the wildlife by substantial veterinary control fences.

Under veterinary law any livestock found on conservancy land should be destroyed. This is another blow to local people already crippled by Zimbabwe's moribund economy. Destruction of the fences also has major economic implications at a national level, and already European Union officials are considering a suspension of Zimbabwe beef exports to Europe.

When game guards do apprehend poachers, the enforcement of legal penalties has been negligible. The police, it seems, are no longer able to uphold the law. One senior commissioner has publicly acknowledged as much, saying that the hands of the police are "tied by orders from above".

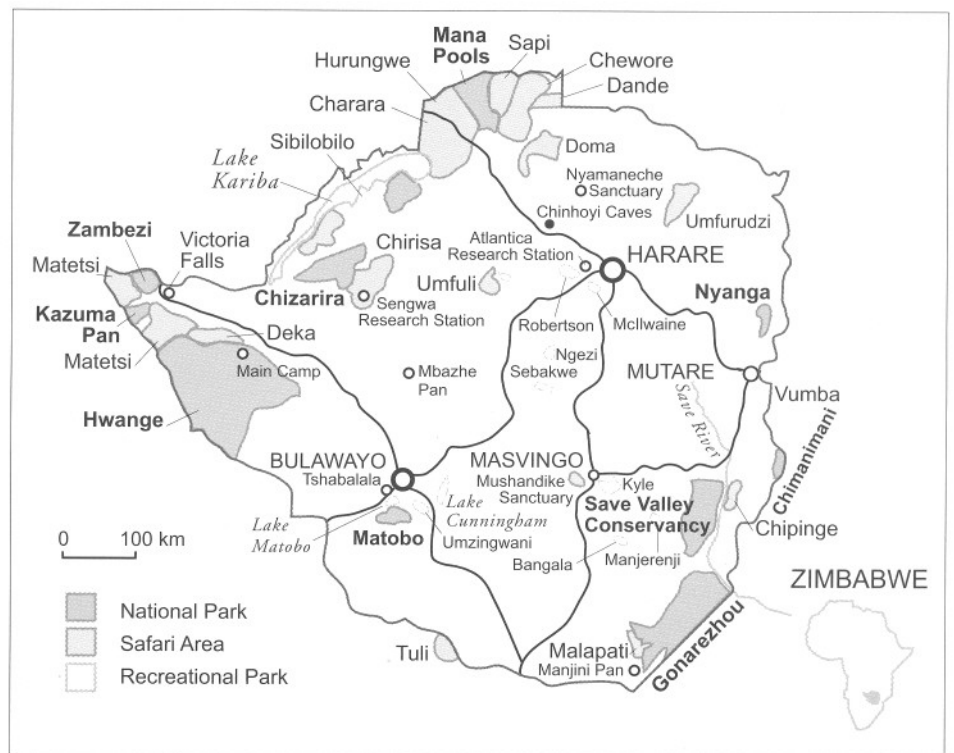


Snared African wild dog. Hitherto successful breeding and protection programmes in Zimbabwe have been set back years by the effects on the imperilled dogs of indiscriminate snaring.

Roger Whittal, owner of a section of land in the Save Conservancy, came home one afternoon last year to find a safari camp of his overrun by illegal squatters. The squatter group was busy skinning an impala. It included several well known poachers who had previously been convicted. Some time after reporting the incident, a contingent of policemen in plain clothes turned up at the camp. They were accompanied by a man believed to be the ring leader of the district's war veterans.

The police informed Whittal that there was nothing they could do, as this was not his camp any more but "theirs" (indicating the invaders). The farm has since been brutalised by poaching, including the killing of some elephants, apparently for their tusks only. Sections of the conservancy have been turned into 'no go' areas for game scouts who have suffered repeated abductions and beatings. One scout received serious *panga* wounds across his back from a war vet calling himself Killer. Despite Killer's crimes, he is one of the beneficiaries of Mugabe's recent amnesty for "politically motivated" violence.

The police operate under provincial governors whose orders come directly from Mugabe. Governor Hungwe is the self-proclaimed "supreme power" for Masvingo District, where many of the worst atrocities have occurred. Both Save Valley and Chiredzi fall under his jurisdiction. To Hungwe, the atrocities amount to a "white conspiracy" to discredit the Zimbabwe government: "All the wildlife poaching," Hungwe claims, "is being perpetrated by the conservancy workers themselves. They want to tarnish the name of Zimbabwe and of our President. The police have arrested many offenders, and all these have been found to be conservancy workers."



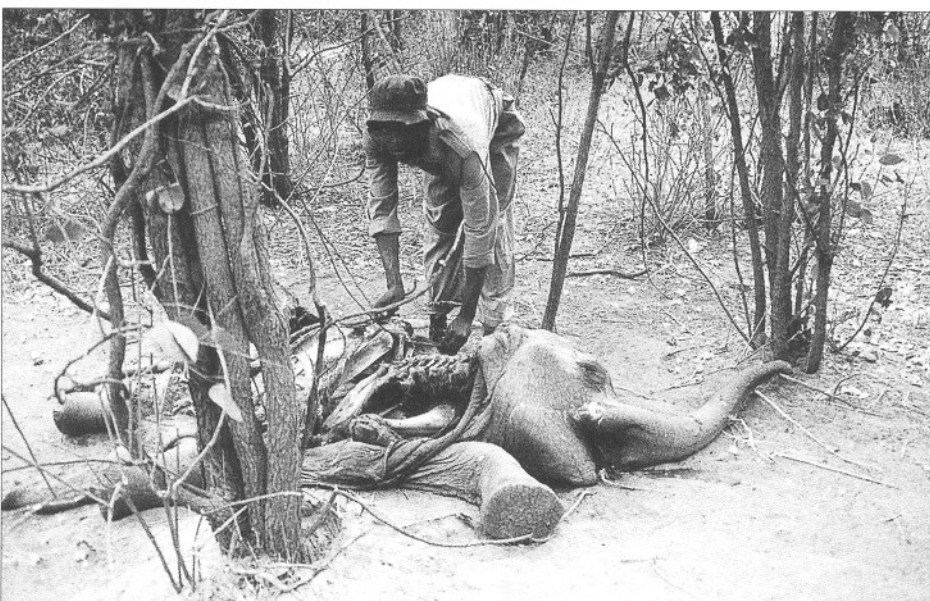
Hungwe has recently visited one of the ranches that has complained of rampant poaching. But the owner, he says, was unable to show him any evidence. Hungwe's verdict: "These people [the ranchers] are lying. They are orchestrating the killing of wild animals by their own workers. They take pictures of the dead animals with snares around their necks. They then show these pictures to the outside world as 'proof' of there being a state of lawlessness in Zimbabwe."

Retorts Willie Pabst, the ranch's owner: "The idea that I might be going about destroying my assets and beating up my staff and workers is too ludicrous for words. Losses over the past year from the destruction of assets alone have amounted to well in excess of Z\$ 15-million (the

equivalent of about US\$ 300,000). Our business is dead! Does Hungwe think anybody is stupid enough to believe that we'd do this to ourselves? It's pathetic!"

In its official report on the conservancy, compiled only days after Hungwe's visit, the Zimbabwe Department of National Parks and Wild Life Management states that "The settlers pay scant regard to land use practice in Save Conservancy ... [We were] faced with the stark reality of unrestrained snaring, the breaching of game fences, and in some cases the indiscriminate killing of animals." The report continues: "The decision to resettle people in parts of Save Conservancy not only defies all logic (particularly under the current economic circumstances) but also undermines beyond redemption the country's credibility and conservation image."

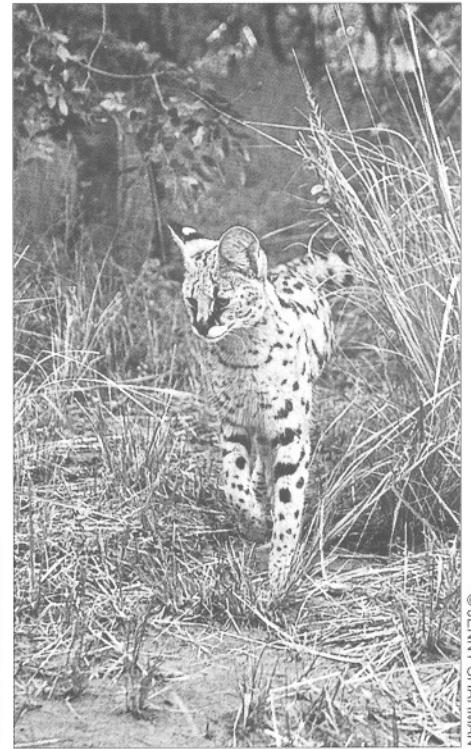
Mike Clark, Masvingo's regional chairman of the Zimbabwe Commercial Farmers' Union, is aghast at Governor Hungwe's claims. "Let us not forget," he says, "that Hungwe has at the same time been stating publicly that the conservancies are to be *taken off* the list of compulsory acquisitions. Yet this clearly isn't happening. Indeed, the situation on the ground is the exact reverse."



Gruesome discovery: baby elephant found dead in a cable snare at Save Valley. Other elephants, seeking refuge outside the conservancies through breaches in the perimeter fencing, have been gunned down on neighbouring community lands.



© LISA HYWOOD BARNARD



© JENNY SHAMMAN

Hungwe still insists, however, that there has been no change in the Zimbabwe government's existing policies safeguarding the autonomy of the conservancies. That squatters now occupy large tracts of their land has been put down to a clerical "misunderstanding" during the drafting of the initial list of properties earmarked for takeover. At least five of the properties within the conservancy *have* since been officially de-listed. The position now, according to the Governor, is that large numbers of war veterans have already been moved off these properties and resettled on other listed farms.

The conservancies, for their part, are adamant that no squatters have left the land. And nor has there been any sign, they add, of the squatters' being asked to leave. Instead, come November last year, the division of land on Chiredzi into 100-hectare plots in readiness for resettlement was being allowed to proceed apace. The squatters themselves brazenly assert that it was the Governor who ordered them *on to* the land. Such mass invasions of de-listed conservancy properties make a mockery of official government pronouncements.

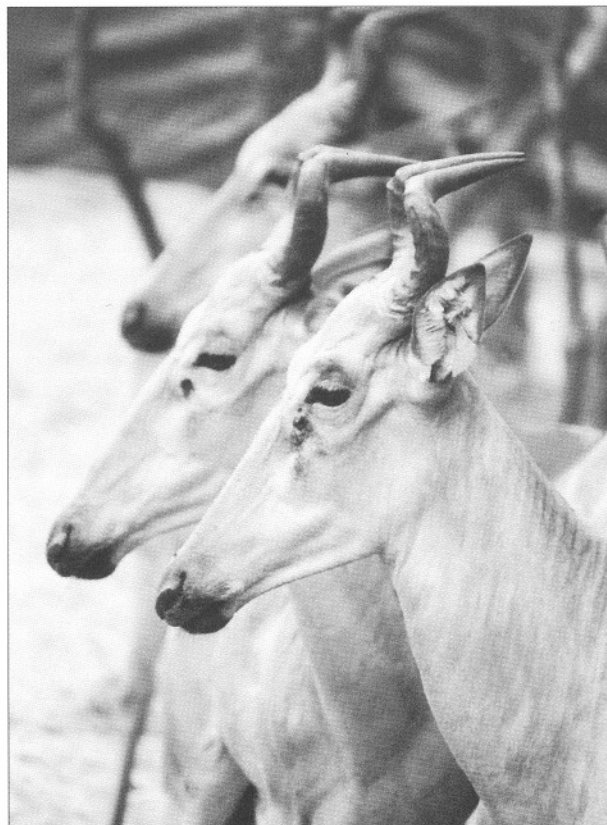
Despite paying lip-service to "amicable solutions," the Zimbabwe government is understood not to want these islands of white-owned land (dubbed "colonial impositions") to continue to exist. Until it gets its way, the squatters will go on being allowed to do as they please – with total impunity. On a more sinister note, there is evidence that these veterans are being paid by government to destroy the farming communities and the political opposition,

the Movement for Democratic Change (MDC).

A document purporting to be the minutes of a recent meeting of war veterans in the Zimbabwean capital, Harare, contains the proposal that "The opposition should be systematically infiltrated with highly paid people to destabilise and cause division and in-fighting within the party". It goes on to state: "Methods should be devised to create negative press reports about the opposition and white farmers regionally and internationally ... Farmers [will be] systematically harassed and mentally tortured and their farms destabilised until they give in, and give up ...

"For some farmers," the document adds, "the 'Pamire-Silencing-Method' should be used." (Pamire silencing means silencing by killing). The document ends with a pledge to the effect that "The State President assures top jobs ... big rewards ... if the opposition and white farmers are brought to their knees," adding the promise of "No more prosecutions for politically motivated crimes."

At the conservancies, there is certainly evidence of there being more to the invasions than just land hunger. For, as Save's Roger Whittal points out: "The crazy thing is that these squatters don't even want the land. Their leaders have told me it's far too dry and rough. "Yet Agritex [the Agricultural, Rural and Extension arm of Zimbabwe's



© LISA HYWOOD BARNARD

Uncertain future. The aardwolf (top), serval (top right), and Lichtenstein's hartebeest (right) are among locally threatened species cared for by the Tikki Hywood Trust on land near Mazowe, north of Harare, that is now listed for compulsory acquisition.

Ministry of Agriculture, Lands and Resettlement] is here now,” Whittal adds, “pegging out 32-hectare blocks that nobody is going to be able to do anything with. They’ll die if they try living off this land. So it boils down to harrassment – a political game.”

Agritex officials are more usually engaged in devising productive land use strategies for intensive farming by Zimbabwean smallholders. Most such officials have been redeployed by the government to oversee the demarcation and sub-division of farms listed for compulsory acquisition. The reaction of some Agritex officials, on being sent to the conservancies, has been one of incredulity over how the smallholders they are supposed to be helping can be expected to survive on such marginal land.

In the meantime, out of desperation, farmers throughout Zimbabwe have been darting their animals and relocating them to ‘safe havens’ (farms not listed for acquisition or in line for possible de-listing). Such is the extent of the land invasions, however, that it is becoming difficult to find secure homes for Zimbabwe’s displaced animals. A planned rescue operation that was to have involved the transfer of hundreds of nyalas on to land leased by the Tikki Hywood Trust – an organisation specialising in the protection of endangered species – had to be aborted when it was learned that the Trust’s land near Mazowe, just north of Harare, too, had been newly listed for takeover.

The Trust concentrates on breeding some of the smaller mammals on the endangered list – animals like the aardwolf, the pangolin, and the black-footed cat. But one of its biggest successes has been in increasing the numbers of Zimbabwe’s most endangered mammal, Lichtenstein’s hartebeest, from 46 animals to more than 200 within just five years.

While salvation may come in the end for the conservancies, since these lie mainly on non-arable land, it is the wildlife on smaller, individual farms, such as the one leased by the Hywood Trust, that stand to lose the most. For Lisa Hywood Barnard, founder of the Trust, the crisis now facing the country’s wildlife is particularly keenly felt. “By breeding endangered animals you become profoundly aware,” she explains, “of how sensitive the ecosystem is. And in Zimbabwe today these animals simply don’t



© JENNY SHARMAN

stand a chance. Even where you can breed species successfully, there is no longer anywhere you can release them – except on farms like this, and now this farm too is on the hit list.”

Of course, it is not just the wild animals that are suffering. Large numbers of people once gainfully employed in the safari industry, Zimbabwe’s primary earner of precious foreign exchange, have lost their jobs in the wake of tourism’s dramatic decline. Community outreach programmes – such as the internationally renowned CAMPFIRE scheme – designed to ensure that local populations can benefit from tourism in Zimbabwe’s conservation areas have also collapsed.


Says Masvingo’s Mike Clark: “We desperately need to get our country back on track. Our safari industry just about got by this year. But eco-tourism, and tourism as a whole, has taken a heavy knock. The damage to the industry is serious, and the exposure of our wildlife to any further large-scale slaughter may very well be the final nail in the coffin.”

In what has become an all-out conservation war, it is significant that none of those actively doing battle on the front line – individual conservationists, farmers, representatives of the National Parks and of

Small though it is, the southern African hedgehog is extensively poached for its meat and quills, and now ranks as a critically endangered species.

the Ministries of the Environment and of Tourism – has given up hope. Amid the unfolding tragedy of death, maiming, and destruction, these dedicated people continue to fight against ever longer odds to find solutions that will preserve priceless aspects of their country’s natural heritage.

The Zimbabwe Wildlife Advisory Council’s chairman, Ed Kadzombe, is a calming influence amid today’s maelstrom of accusations and counter-accusations. “Ninety-nine percent of Zimbabweans understand wildlife,” he says, “because they live with wildlife. Over the years, we have been seen to manage our conservation efforts better than most other nations. So why destroy our wildlife now? The conservancies must be kept together and intact. And we must concentrate, not on trying to meet force with force, but on educating people and building understanding.”

Noble sentiments, though, cannot alter the facts. If this widespread devastation is not halted, the long-term implications will be dire in the extreme. Not only will the environment suffer, but tourism – the lifeblood for so many – may also cease to be an option in any future recovery. The more vulnerable species will become extinct, habitats will be destroyed, and the conservancies will be forced to close. Zimbabwe, take heed: *Whatever happens to the beasts, soon also happens to man.* 

Jenny Sharman is a Kenya-born wildlife film producer and journalist. She is currently working on a series of documentaries set in the Selous Game Reserve in Tanzania.



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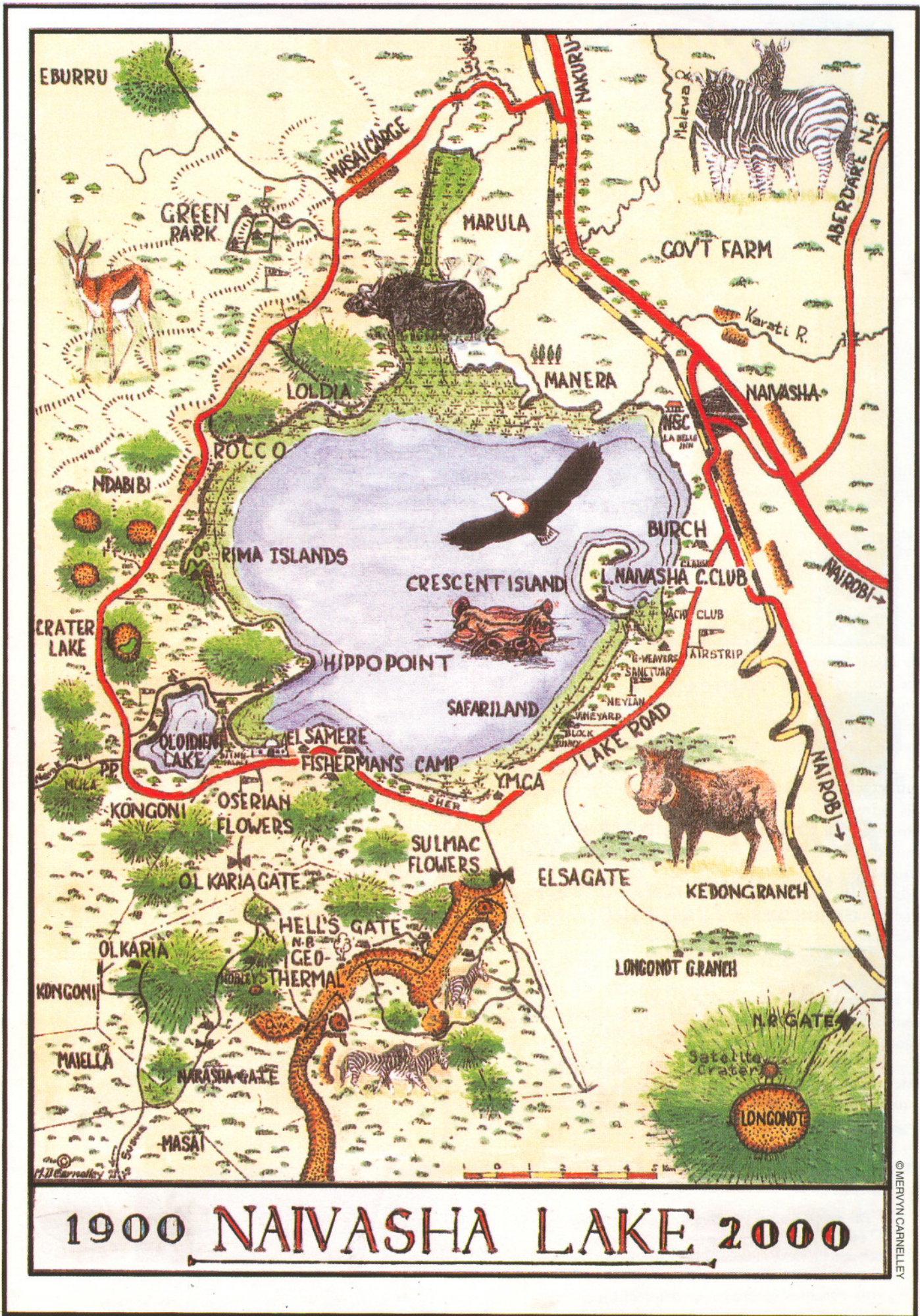
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1900 NAIVASHA LAKE 2000

© MERVYN CARNELLE

'Twixt lake and gorge

MERVYN CARNELLEY (1922 - 2000)

A special foreword to the last of his self-published chronicles, *Naivasha 1900 - 2000*, compiled in 1999 at the age of 77, speaks volumes for the kind of man he was. "I am not going to number the pages," it reads, "so that later additions may be slipped in where appropriate."

Such a preamble would seem odd, coming from anybody else. But for Naivasha's prolific lakeside memoirist Mervyn Carnelley, who died aged 78 on 27 December 2000, there were always going to be additions. The later inserts were duly handed out. Then, once sufficient new material had piled up, the whole *pot pourri* would be re-bound in a new edition. Carnelley's *métier* – that of documenting the affairs of the lake and its Rift Valley environs in all their different aspects – could never be complete.

He it was, more than anyone, who put Lake Naivasha and neighbouring Hell's Gate on the map. This he did quite literally, through a richly varied output, spanning more than 30 years, of charmingly idiosyncratic illustrated maps, all painstakingly executed in either water colours or pen-and-ink.

Some of these delightful maps – complete with soaring fish-eagles and lammergeiers, contented pelicans, herons, swamp hens and other water birds, as well as surfacing hippos, and shore-grazing zebras, buffaloes, gazelles, warthogs and the like – found their way, eventually, into the area's official brochures and guide books. Most, though, were in circulation long before the advent of commercially produced leaflets, and many years before Hell's Gate (always his own particular favourite) became a national park in 1984.

The routine, for visitors wanting to go exploring in Hell's Gate in the early 1970s, was to drop in at Fisherman's Camp, Carnelley's lakeshore base, for copies of his sketch-maps of the gorges. Though simple photostats like all his notes and records, these maps showed not only suggested itineraries and routes, complete with walking distances and times, but were also copiously annotated. "Look out for Mackinder's owls," one arrow would advise; "Beware of bees," another would exhort in warning.

Carnelley's field notes were no less helpful, whether in extolling the virtues of

appropriate footwear and of carrying a "stout stick to steady yourself", or cautionary as in "Beware! The deep pool at the head of the spring is guarded at times by a large black cobra!" Pointers like these – all too frequently vindicated (there very often *was* a cobra at the spring) – have added enormously to the enjoyment experienced over the years by the untold thousands of people who have come here to investigate this infernal landscape.

Perhaps his greatest gift lay in knowing exactly how to communicate natural history to an audience made up not of experts but of schoolchildren, first-time visitors from abroad, or day-trippers down from Nairobi. It is such people, after all, who have long



formed the bulk of the Fisherman's Camp clientèle. His "pamphlet" on birds, as he called it, is limited to just 37 species. Its stated aim was to persuade "picnickers who don't want to have to walk too far" and "fishing widows left behind on shore to look after the children" to take an interest, in spite of themselves, in the wonderful bird life around them.

The Carnelley family association with Lake Naivasha and Hell's Gate goes back a very long way. Mervyn's father, Stephen Carnelley, bought the Muthuri plot, site also of today's Fisherman's Camp, in 1928. In 1930, he acquired Gorge Farm as well, encompassing much of what is now Hell's Gate National Park. This land he used for cattle ranching until well into the 1960s, since which time the original farm has been divided through subsequent acquisitions between the carnation-growing firm, Sulmac, and the Park.

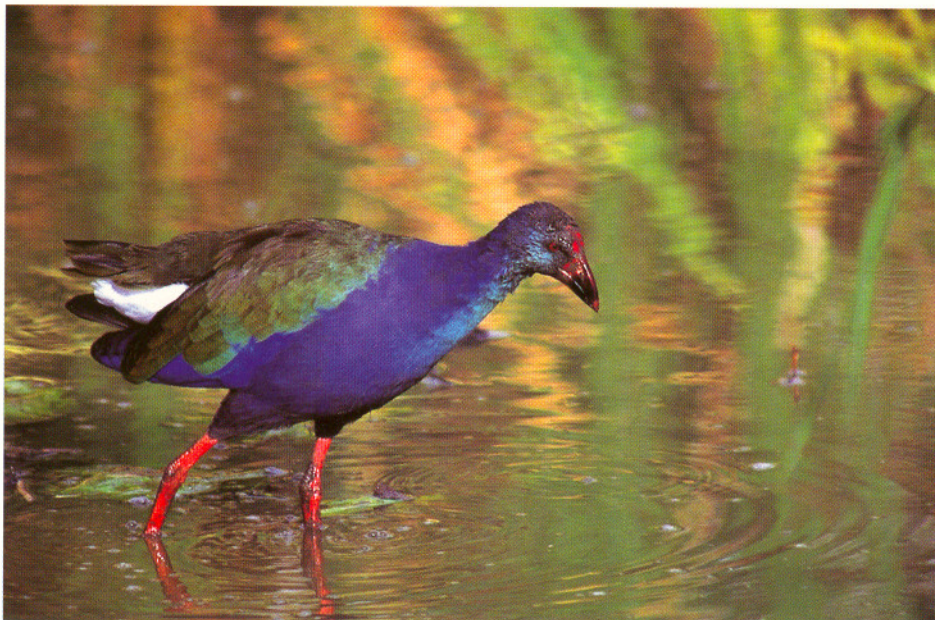
Some of Mervyn's earliest recollections were of outings to Muthuri (which takes its name from the Kikuyu word for the euphorbia, *E. candelabrum*) while he was a preppie at Pembroke House, Gilgil, in the early 1930s. The lake's water level was then a good six metres higher than it is today. And Ol Oidien, referred to as the 'little lake' since its separation from the lake proper by an isthmus of marshland, was then a large bay almost half a kilometre across. There was no papyrus fringe, either, around this part of the lake, and people would simply bathe off the shoreline rocks. There were also many more hippos than there are now – and a much-feared resident lion pride.

In Carnelley's lifetime all this was to change irrevocably. "Who would have dreamed back then," he reflected towards the end of his life, "that by the end of the century there would be flower farms all around the lake? That we'd be driving down a tarmac road plied by honking *matatus* and lined with unkempt 'villages' strewn with windblown plastic bags and with the sound of the 'God-botherers', and their 'music', booming forth from powerful loudspeakers, ringing in our ears?"

Sentiments like these, when occasionally he did voice them, were plain statements of fact, remarkably devoid of any rancour. What did always concern him, though, were the impacts of these unrelenting human pressures on the lacustrine ecology.

"Long before irrigation was ever thought of," he wrote, "Lake Naivasha was very much lower than it is today. How long will it be, even at current levels of off-take, before it is reduced again to the swamp it was in 1882, or to the 'salt' lake it was in 1874?"

The gradual disappearance from the lake of water lilies – and, with them, sightings of one of his favourite water birds: the purple gallinule, or swamp hen (as it is now called) – was cause for particular sadness. "Introduced 'pests' continue to assert themselves," he lamented. "The floating weeds, salvinia and water hyacinth, are choking our lagoons, smothering the beautiful mauve-flowering water lilies. The coypu, or nutrea, a rodent the size of a beaver, chomps away on what water lilies haven't already been devoured by the Louisiana freshwater crayfish. Purple gallinules are hardly seen on the lake anymore."



© DAVID RICHARDS / In The Dark

© PETER ROBERTSON

It was on a similar melancholy note that Carnelley recorded the disappearance from Hell's Gate of the last in the area's long line of indigenous lammergeiers. That was in the early 1980s, and his sense of loss on that occasion was compounded by the fact that Hell's Gate National Park – and potential salvation for the birds – was then just on the point of becoming a reality.

The park was finally gazetted on 4 February 1984 with support, financial and otherwise, from Joy Adamson (1910-1980), of Elsa and *Born Free* fame. She had been the owner since 1967 of Elsamere, the lakeside property (now a research and education centre funded out of her legacy, the Elsa Conservation Trust) bordering on Muthuri and Fisherman's Camp.

Carnelley's contributions as a founding member of the fledgling park's Management Committee were immense. It is his paintings of the local birds that hang today in the Information Centre at the park's main Elsa Gate. And it is his distinctive maps, route guides, line drawings, field notes, commentaries, historical asides, and checklists of the fauna and flora that still form the basis of all the park's official brochures, promotional handouts, and educational aids.

Carnelley was, at the time of his death, also an Honorary Game Warden to Hell's Gate National Park. In this capacity he was active to the very end, perhaps most notably in spearheading anti-litter and clean-up campaigns aimed at ensuring that none of the "windblown plastic" that he found so offensive would find its way into the park. He even had the satisfaction, come April 2000, of witnessing the lammergeier's reappearance in the shape of the two young birds introduced from Ethiopia's Bale

Mountains. He wrote, movingly, of returning – often – to the site of the new Hell's Gate cliff-top vulture hide to watch these majestic birds.

In his memory, and in recognition of his tireless work in developing the park, the Hell's Gate and Longonot Management Committee has since named the viewing platform the Mervyn Carnelley Raptor Hide. At the hide's opening on 23 November 2000, he shared guest-of-honour billing with another of his life-long favourite birds: a Verreaux's black eagle (brought in specially to mark the occasion). That the hide should now bear his name is entirely fitting – and is certainly no less than he deserves.

Always an engaging raconteur, Carnelley was – among other things – also an inveterate cartoonist, with a wicked sense of humour. Many of his cartoons are directed, predictably perhaps, at tourists, on whom his camps depended for their bread-and-

The purple swamp hen (left). Its declining numbers on Lake Naivasha deeply saddened Carnelley, seen (at right) testing out some rubbish bins newly installed at the entrance to Hell's Gate National Park. Below: That Carnelleyian favourite, the marabou stork.

butter but whose manners and foibles – clearly – never ceased to astonish him. The commentator *cum* dispassionate bystander in all his cartoons is none other than a worldly-wise marabou stork. That the marabou, of all the birds on earth, should have been his absolute favourite again speaks volumes for the kind of man he was.

Mervyn Carnelley lived permanently here, between lake and gorge, for some 34 years. Before his return in 1966 to these, the haunts of his childhood, he had led a peripatetic and adventure-packed life. This included stints of active service during World War Two, first with the Kenya Armoured Car Regiment on the Abyssinian Campaign of 1939-1941 and then, from 1943 to 1946, with the King's African Rifles in Burma and Ceylon.

Inevitably, his wartime memories became – like his records of life and conditions around the lake – the subjects of yet more exhaustive and uniquely Carnelleyian hand-bound chronicles.

He lived and worked in many different parts of Kenya after the war, notably on coffee estates in the Ruiru area, between Nairobi and Thika. Along the way, he found time in which to marry not once but three times. He leaves his wife of the last 20 years, Fay, and three sons: Brian and Tommy, who now run Muthuri and Fisherman's Camp respectively, and Nigel, who resides in Devon, in the UK.

– by Gordon Boy, with reporting by Peter Robertson



© WILLIS OKECH / In The Dark

Pecking order

A rather streaky customer observed in Kenya's Kibwezi Forest had birder **Bernd de Bruijn** scrabbling around for possible answers.

It may be 250 kilometres from the coast, as the proverbial crow flies. But the Kibwezi Forest, south-west of Kibwezi between the Mombasa Road and the Chyulu Hills, is a fascinating convergence zone for species, coastal and inland, of plants and birds alike.

In the forest, rain water percolating down through the Chyulu's porous lava rock wells up, forming the many swamps, forest pools, and streams that make this not only a strikingly scenic place, but also one with a comparative abundance of bird species.

One January weekend at Umani Springs Camp, still the only accommodation to be had inside the forest, yielded a tally of no fewer than 77 species. This included some less than expected birds such as Levaillant's cuckoo and the Alpine swift – and one species that came as rather a surprise. Umani's own impressive checklist, started in 1996, now runs to more than 230 bird species.

From the camp, walking trails leading into the forest and around the expansive swamp in front, provide good access – buffaloes permitting – to a variety of sub-habitats within the forest. Baits put out in the evenings attract large-spotted genet and thick-tailed galagos. Elephants sometimes come to the swamp at night for a bath and a drink. But they seem to go about this very discreetly, as we slept right through a visit from a group of ten that were splashing about within 60 metres, or so, of our tents.

Here, birds that are mainly eastern and coastal – like Peter's twispot, the yellow-bellied greenbul and the eastern bearded scrub robin – occur alongside central highlands species, some of which have more or less isolated populations in Kibwezi and the Chyulu Hills. This is a particularly good place to see – or just hear, as we did – Narina trogons and purple-crested turacos. Other interesting species, like the hornbills, trumpeter and crowned; the ashy flycatcher; the brown-hooded kingfisher; and the weavers, African golden and golden palm, are fairly common and easy to see.

In January there were also plenty of Eurasian migrants about: nightingales, willow warblers, Eurasian golden orioles, and spotted flycatchers. The Umani checklist mentions spinetails, mottled and Böhm's, along with the Madagascar bee-eater, the Zanzibar sombre greenbul, and Retz's helmet-shrike.


Our one surprising find came to light on January 10. Within the camp grounds, I noticed a woodpecker that at first sight looked rather like a Nubian. A closer inspection, though, revealed underparts that were heavily streaked, rather than spotted like a Nubian woodpecker's. A flick through Zimmerman *et al.* (1996) turned up two species with such markings: the golden-tailed and Mombasa woodpeckers.

As neither species is mentioned as occurring in the Kibwezi Forest, I examined the Umani bird more closely and took some notes. The bright red crown and nape indicated an adult male. The heavy dark streaking covered all the visible underparts: breast, upper belly, and flanks. The ground colour of the underparts was creamy – not so white as in the golden-tailed's plate in Zimmerman, but then not as yellow either as the female depicted in the same book.

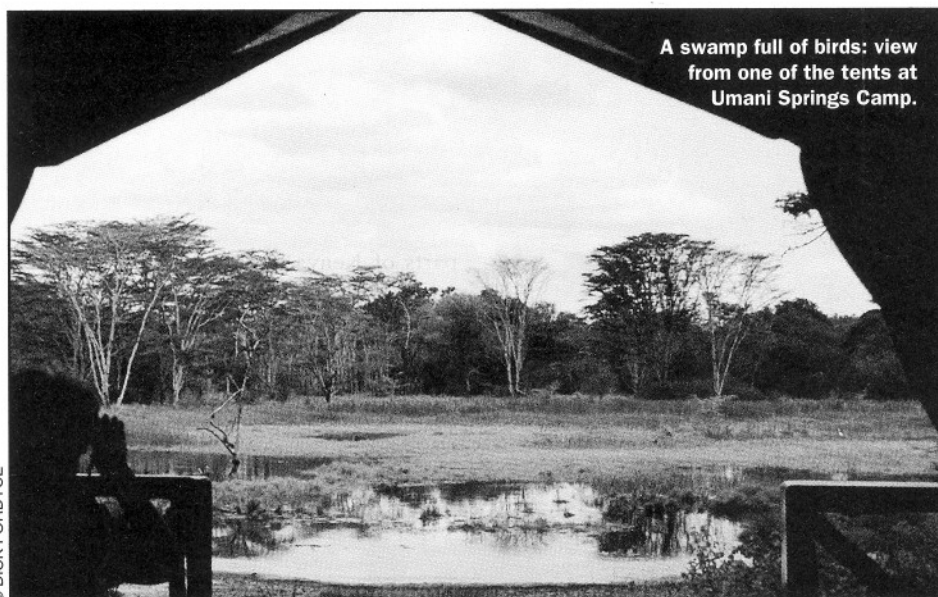
On the Umani specimen's olive-green back were round, yellowish spots joining into rows only on the flight feathers (primaries and tertials) visible on the folded wings. This appeared to signal yet another difference from the Nubian, which has fewer yellow spots and scales, forming into rows on the coverts and upper back and into bands on the flight feathers. Moreover, the Nubian woodpecker is more of an acacia scrub and savannah species, whereas the golden-tailed types are forest dwellers. The bird could not be relocated the next day.

Golden-tailed woodpeckers (of the little known race, *suahelica*) occur in the Arusha area of northern Tanzania, which is just about as far from Kibwezi as the coastal haunts of the Mombasa woodpecker. On studying my notes, the Nairobi-based ornithologist Don Turner suggested that the extensive streaking would appear to fit the Mombasa woodpecker rather better than the golden-tailed.

Given Kibwezi's coastal affinities, the presence here of a Mombasa woodpecker is perhaps not totally unexpected. The owners of Umani Camp, Jim Simons and Dick Fordyce, keen birdwatchers both, had not seen a woodpecker like this before in Kibwezi. Of course, it may simply have been a wanderer up from the coast. But if there does turn out to be a Kibwezi population, then it could very well be a new sub-species.

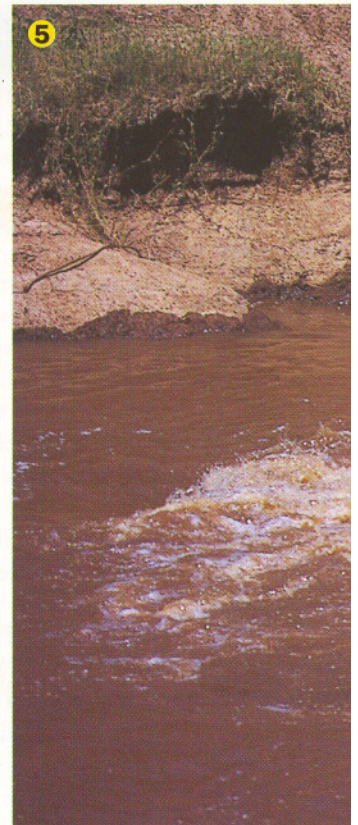
Only further reports – preferably with photographs – will ultimately determine this bird's status. So if you're visiting the Kibwezi Forest – and visit it you should, as it's great! – then do be sure to keep an ear out for any pecking sounds and an eye open for streaky woodpeckers. 

A swamp full of birds: view from one of the tents at Umani Springs Camp.



© DICK FORDYCE

Records of further sightings can be forwarded to Don Turner, on < eaos@africanonline.co.ke >. Additional information on Umani Springs Tented Camp can be obtained from Jim Simons, on Tel + 254 (2) 520883; or from Dick Fordyce, on Tel + 254 (154) 73045. E-mail < dl@iconnect.co.ke >.



CLOSE ENCOUNTER

Hippo Charge

Unflinching composure in the face of enormous danger? Or reckless folly? Either way, the guy in the brightly coloured plastic dinghy appears to have some nerve.

Coasting down Kenya's Mara River, motionless on board his flimsy craft, our madcap hero is being filmed from the bank, drifting between pods of hippos. The females and young take surprisingly little notice of the intruding vessel. But then, as the dinghy nears a solitary old male, all hell breaks loose.

The enraged hippo, snorting loudly, launches himself at the craft (Pictures 1, 2, and 3), upending it, puncturing it, and tearing it to pieces (4, 5, and 6). The occupant, too, is dismembered in the process. A few shreds of



Photographs: © PETER DAVEY, ARPS

clothing, a pair of sunglasses, and a hat, are later retrieved from the murky water.

Thankfully, the victim of this rashly provoked attack was a film-maker's dummy, and not a sentient human being. But things could have been very different. The director of the Canadian television crew whose idea it was to film this journey down-river by dinghy as part of a series on feats of derring-do performed by a pair of intrepid young actors, had agreed only very reluctantly to carry out the dummy run.

Needless to say, neither the director nor either young star could be persuaded – after witnessing this – to go ahead with filming the journey for real! Let this be a lesson to other foreign film crews whose creative impulses sometimes make light of the risks of meddling with African wildlife. 🐘

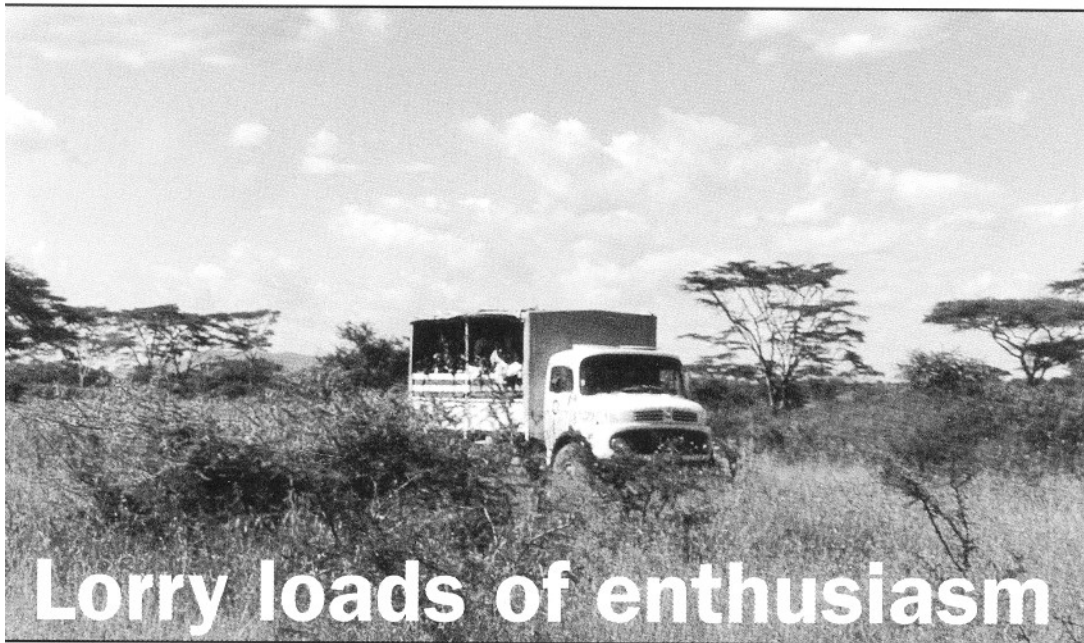
Figure it out
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www.eawildlife.org

The website of the East African Wild Life Society



Photo: courtesy Karl Ammann / STORM



Photographs © NCA AUTHORITY

Lorry loads of enthusiasm

Community conservation education for children is enjoying something of a boom in Tanzania, reports **Melanie Finn**.

An old diesel truck lumbers across the dusty floor of the Ngorongoro Crater and slumps to a stop beside a pride of lions. Amid gasps of fear, awe, and glee, dozens of excited faces peer out of the windows.

This isn't just another load of American, British, or German *wageni* come to see the wild animals of Africa but a group of Tanzanian schoolchildren on an educational outing. None of them has ever seen a lion in the flesh – or a cheetah, or a buffalo; a warthog, or a giraffe.

The philosophy underpinning many new conservation initiatives in Tanzania is that if these children can be taught that this land and everything on it is theirs they might take care of it. For this is their *hifadi za taifa*, their national heritage.

About 50 schools, mostly from northern Tanzania, regularly visit the Ngorongoro Conservation Area (NCA). Each group of children is between 50- and 75-strong. Crater fees are free; schools need only contribute 100 litres of diesel per trip. Before their excursion, the children receive a lecture about the NCA and its wildlife and geology. A question-and-answer session takes place afterwards.

The NCA Authority also runs monthly conservation workshops in two schools in the area, reaching more than 650 children. The hour-long sessions introduce the children to critical issues such as the protection of water resources, and the effects of charcoal burning, woodcutting, and meat poaching (now on the increase among the Maasai). There are plans to start tree-

planting schemes at these and other local schools, and to purchase a mobile film unit for the screening of wildlife videos.

The Authority has taken its lead from the Serengeti National Park (SNP), which launched its Community Conservation Programme in Loliondo in 1988 and now reaches six districts around the park. Conservation education for children is a major component of that programme.

In addition to hosting school trips in the park, the Serengeti programme supports 76 wildly popular wildlife clubs in schools around the park, providing maps, teachers' manuals, and newsletters, as well as sponsoring competitions and tree-planting bonanzas. There are more than 100 children in each club. As few of the schools have textbooks, or even sufficient furniture, the programme's slick inter-active materials are eagerly embraced by what amounts to a totally captive audience.

The various art, essay, and song-writing competitions (all on conservation themes, of course) are inundated with entries, according to Cecilia Nkwabi, the SNP's energetic community conservation officer. The winners receive T-shirts and free trips into the park. Nkwabi's Seronera office brims with drawings and letters. "This is my feedback," she says proudly. "It's how I get to know what's going on with the children: what's working, and what isn't."

One competition asked children to produce maps of the park. One resourceful wildlife club made its giant map in the schoolyard, complete with clumps of rocks for kopjes, a cluster of stick buildings for

Seronera, and with all the principal roads and rivers clearly demarcated in the dust. The result was a work of art, a product of extraordinary elaboration and inventiveness.

At its best, the Serengeti programme's education drive is a two-way street for information exchange, helping the park management ascertain what local people need and want, while also helping the ever expanding local population better to manage its own precarious resources, including out-of-park tourism.

Emily Kisamo, the SNP's community conservation warden, says the local people are struggling with issues such as erosion, extensive livestock disease, and meat and wood poaching. Rather than simply telling these people what to do, the programme opens discussions with them on what they *are* doing – and offers them alternatives.

It is usually the children who are most interested and receptive. Says Kisamo. "I remember talking about erosion with one group of kids who thought at first that the wind was to blame, not the impact of not having any trees." Now, tree-planting schemes are springing up all over the area. Last year the wildlife clubs planted no fewer than 1,356 seedlings, which they continue to nurture today.

Films have proved invaluable in disseminating information. Last year, with the aid of two film vans outfitted with VCRs, the SNP programme showed Swahili-version films contributed by Hugo van Lawick, Alan Root, and others, to an estimated 30,000



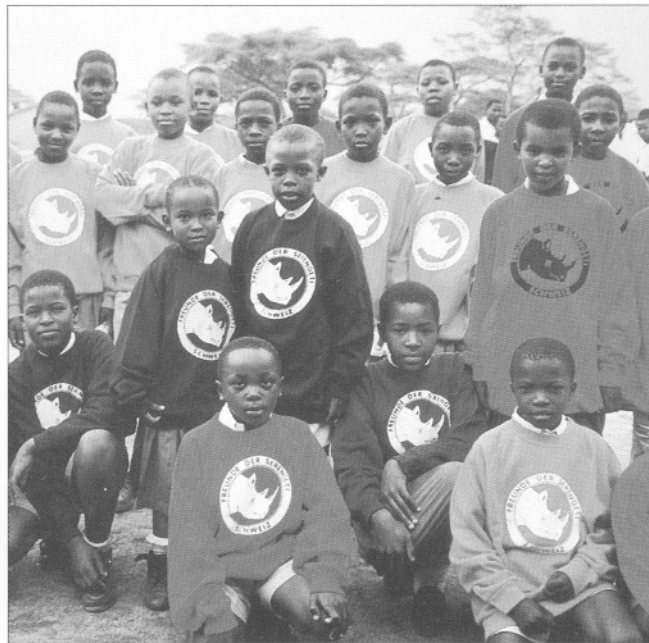
people in 74 villages around the Serengeti's borders.

So enthusiastically attended were the screenings that the programme was persuaded to make a film of its own: *Karibuni Serengeti*. The 20-minute video, neatly filmed and edited, explains what goes on in the park, showing how the revenues from tourism, backed by conservation efforts, can bring tangible benefits to local communities.

This film also does something else: it introduces role models to young villagers with little or no access to the outside world. On screen, for instance, is Tanzania National Parks' charismatic chief vet, Titus Mlengeya, darting and ministering to a lion. Growing up only 30 km from the park's western edge, Mlengeya was like most other local children: he had no notion of the 'endless plains' on his doorstep, nor of the legions of animals. Nor had it occurred to him that he might have a stake in the park's future prosperity. Indeed, it was not until he was 30 that he even got a look inside the park.

Tanzania National Parks has used the SNP education programme as its model for similar efforts in other parks. These include an ambitious new project in the Udzungwa Mountains National Park. Like Serengeti, Udzungwa is under serious pressure from a growing, resource-hungry population on its boundaries.

According to Martin Loibooki, community conservation coördinator with the Tanzania National Parks Authority (TANAPA), the accent now is on developing new materials for use in school programmes.



An expanded film library is envisaged, along with provision for more school trips into the parks. Last year alone, Loibooki discloses, TANAPA spent TSh 219-million (about US\$ 270,000) on community development projects, including conservation education. This was all TANAPA-generated money, he explains, not donor funding. "Our target now," he adds, "is to be able to allocate 10% of our future budgets to these community projects."

A host of international organisations has also jumped on to the conservation education bandwagon. The World Wildlife Fund (WWF), for one, is pushing to have environmental studies incorporated into the national syllabus for primary schools. But as Mary Shuma, the WWF's environmental education programme coördinator, points out, the teachers themselves must first be taught. WWF-sponsored teacher-training manuals are now in all 45 teachers' training colleges nation-wide. She says teachers have been "extremely receptive, very keen."

Shuma's programme also supplies more than 200 local primary schools with books on conservation and the environment. "Getting through to children at a very tender age," she says, "is the best way, not only of changing their attitudes, but also of reaching parents, who are going to have to listen to what their children have to say."


The Wildlife Awareness Foundation (WAF), meanwhile, has handed out 550 videos. In conjunction with the Arusha Children's Trust, WAF has also purchased a film van and a VCR.

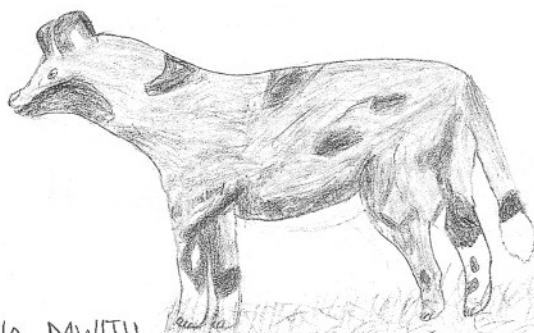
WAF's founder, Howard Frederick, says all the films have found wildly enthusiastic audiences. Most encouraging, in his view, is the fact that when he started out, people at all levels in Tanzania's wildlife management sector were "incredibly receptive to the idea of education."

This may have something to do with the importance attached to wildlife and education by Tanzania's first president, Julius Nyerere, in his Arusha Manifesto of 1961. With 14% of its territory given over to game reserves, national parks, and game controlled areas, Tanzania boasts the highest percentage of protected land of any country in the world. If the intention to conserve wildlife has always been there, then conservation education is just another attempt to make that intention manifest.

Gauging the success of such efforts can be difficult, however. The Serengeti's Cecilia Nkwabi claims that local teachers have told her that school attendances at the Standards Five, Six, and Seven levels have improved markedly since the inception of the Community Conservation Programme's education initiative. It is these kids, she points out, who used to go out poaching with their parents and elders.

Martin Loibooki points to another measure of success: the growing number of children from around the Serengeti who are named after Emily Kisamo, and after the park's Chief Warden, Justin Hando.

What is abundantly clear is that Tanzanians, especially children, are receptive to all the films and other ideas coming their way. Maybe, just maybe, some of the children on that bus trundling through Ngorongoro Crater will understand the responsibilities that go with safeguarding their *bifadi za taifa*. 



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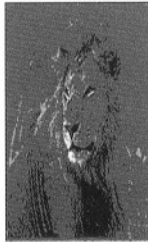
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Not yet out of the woods

Opposition to the Kenya government's proposed excisions of land from gazetted forest areas is now before the courts.

Michael Gachanja reports.

The furore over Kenya government plans, announced earlier this year, to excise a whopping 67,185 hectares – that is, nearly five per cent – of the country's remaining gazetted forest areas shows no sign of letting up.

Notices of the proposed excisions were posted in the *Kenya Gazette* of 16 February 2001. Under the government plan, no fewer than 13 forests are to be affected. Fifteen per cent of the Mau complex of forests west of Nakuru, which encompass the watershed for nearly all of Kenya's major rivers west of the Rift Valley, are listed for degazettment.

Other forests cited for excision include the Hombe and Ragati tracts on Mount Kenya, along with several lesser forests that are no longer wholly indigenous, having already been partially encroached upon. The stated rationale behind the proposed excisions is to "settle landless squatters."

The announcement and its public face – that of Kenyan Environment Minister, Francis Nyenze – have been greeted with a barrage of public outrage in the local media and at gatherings around the country, on a scale quite unprecedented in Kenya. An environmental award that Kenya was to have received in March from the international conservation group Action for Endangered Species (for its stand last year against a resumption of the global trade in ivory) was hastily withdrawn.

The East African Wild Life Society's Nairobi headquarters, which houses the secretariat of the Kenya Forests Working Group (KFWG), has been inundated with visitors from all walks of life who have come to register their protests. Within ten days, a KFWG petition had collected 28,148 signatures from individuals opposed to the excisions. This petition, along with formal letters of objection, one for each of the proposed excisions, was handed to the Government in early March.

Other concerned parties have since instituted legal proceedings. Suits filed to date include those of Eldoret-based

environmental lawyer, Mr Nixon Sifuna, and the Ogiek community, descended from the aboriginal inhabitants of one of the forests in the Mau complex that is targeted for excision.

Another suit has been filed jointly by five non-governmental organisations, including the Green Belt Movement, the Kenya Human Rights Commission, the Mazingira Institute, the Forest Action Network, the National Council of Churches of Kenya, and the acclaimed environmentalist, Prof Wangari Maathai.

Until these three suits are heard and determined, the Kenya government is prohibited by a High Court order from degazetting, altering, diminishing, alienating, clearing, or allocating to any private developer, or to any body, any part of any of the forests cited for excision. The hearing of the first of the legal suits, that of Mr Sifuna, is scheduled for 4 May this year.

The consequences, were the excisions to go ahead, would be especially dire for two of the country's five principal catchment areas: the Mau Escarpment and Mount Kenya. The tracts of forest cited for excision on these two 'water towers' account for some 7 % of the forest left on all five 'towers' (the others' being the Aberdares, Mount Elgon, and the Cherangani Hills). As it is, forests cover only about 2 % of Kenya's land area.

The Mau forests act as an essential catchment area and sponge in feeding and regulating the flow of all but one of Kenya's major rivers west of the Rift. The exception is the Suam-Turkwel which has its headwaters on Mount Elgon.

Otherwise, all the country's important western rivers – including the Kerio, the Mara, the Ewaso Ng'iro, the Sondu, and the

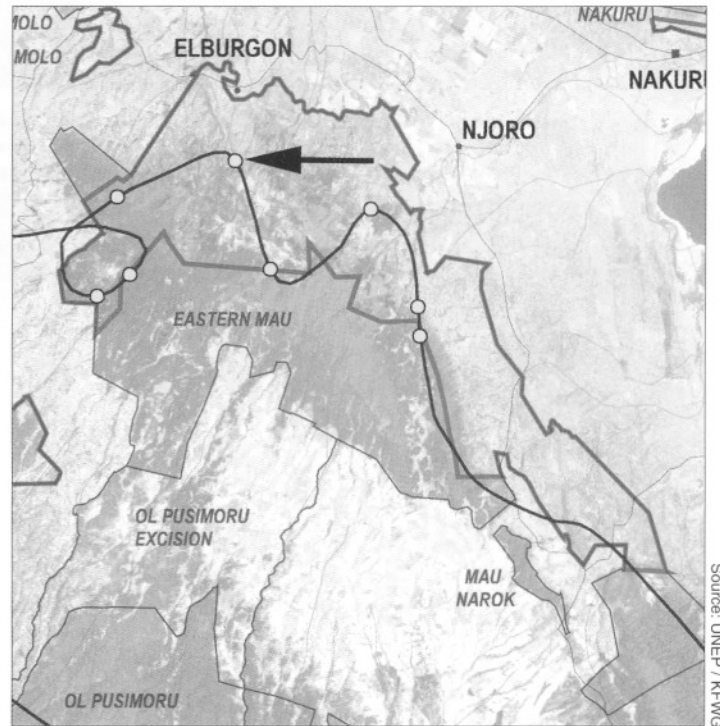


Nyando – emanate from the Mau complex of forests. These rivers drain eventually into many different lakes: notably Victoria, Turkana, Baringo, Nakuru, and Natron (in Tanzania). The repercussions, for all these lakes, of the proposed Mau forest excisions, and of the resulting riparian erosion, unmoderated stream flow, and increased siltation and pollution, could be nothing short of catastrophic.

The social cost, to the fishing communities, cultivators and pastoralists downstream from the Mau, faced with the prospect of alternating floods and droughts, bringing with them starvation and misery, would of course be incalculable. One of the functions of a forest is to catch, trap, store, and release rainwater, thus regulating stream flow, while maintaining superficial water tables during dry spells and both limiting siltation and diluting pollutants.

The impact on the area's wildlife would be no less serious. The planned excisions from the Eastern Mau forest would affect both the quantity and the quality of the water flowing into Lake Nakuru, thus affecting food availability in the lake and threatening the world's largest concentration of flamingos. The lake Nakuru ecosystem by international law under the Ramsar Convention.

Michael Gachanja is co-ordinator of the Kenya Forests Working Group (KFWG), a gathering of institutions and organisations – government, non-government; local, national, and international – concerned with the conservation and management of forests. The KFWG is itself a sub-committee of the East African Wild Life Society. Further information can be obtained from the KFWG Secretariat, on Forest Hotline, Tel + 254 (2) 571335; or by E-mail at < eawls@kenyaweb.com >.



Source: UNEP / KFWG

The excisions would impoverish the country's biodiversity, particularly in that Kenya's few remaining forests harbour a species-richness out of all proportion to their size. Indeed, Kenya's forests support 50 % of all the country's plant species, 40 % of its mammalian species, 35 % of its butterfly species, and 30 % of its bird species.

The incidence of severe droughts such as Kenya experienced last year is bound to increase if the excisions are allowed to proceed as planned. The 2000 drought, still fresh in the minds of all Kenyans, had a devastating effect on the local economy, which was hamstrung by the unprecedented rationing of energy and water.

For a country that depends for 70 % of its electricity on hydro generating plants, the continuing deforestation is tantamount to economic suicide. Assessment studies have shown that the severity of the 2000 drought was associated with the wanton destruction, past and ongoing, of the country's forests – in particular of those on Mount Kenya.

The repercussions of such deforestation are felt as far away as the mangrove and coral reef ecosystems of the East African coast. Increased siltation in the Tana River, induced by forest loss on Mount Kenya, results in damage to the delicate estuarine ecology of the Tana Delta, some 500 km downstream.

The Tana, originating largely in Mount Kenya's forests, feeds several of the country's most important hydro plants, including Kiambere, Kindaruma, Gitaru, Kamburu, and Masinga. Excisions from any of these forests will significantly compromise the

capacity of the plants to generate much-needed electricity. This in turn will unleash a host of negative economic impacts, ranging from further periods of rationing to decreased domestic production and sweeping job losses in the industrial sector.

The Sondu-Miriu hydro power plant, now under construction on the Sondu River and scheduled for commissioning in 2003, is expected to have a generating capacity of 60 MW. Yet the proposed clearing for settlement of parts of the South-Western Mau forests in the Sondu's upper catchment area places a question mark over whether this plant will, after all, be able to produce its envisaged full quota of electricity.

Food production, too, will suffer if the excisions go ahead. Deforestation is already affecting the microclimatic conditions essential to the growing of tea and food crops. Further excisions would accelerate this process, impacting heavily on the tea sector which, with annual revenues of some US\$ 450-million, accounts for almost 30 % of Kenya's total export earnings.

Many of the proposed excisions are from areas that are – or were, until quite recently – designated plantation forests of cypresses and other exotic trees, established under a US\$ 80-million programme of loans from the World Bank. Some of these plantation forests, on being clear-cut several years ago, were never replanted. For want of any proceeds from the forests themselves, it is the country's taxpayers who have inherited the burden of repaying the initial loans.

Settling squatters in degazetted forests, as the government claims it is seeking to do, cannot solve the problem of landlessness.

Sample excision: aerial view (top left) of section of the Eastern Mau forest cited for degazettement. The photograph was taken on 4 March 2001 from the location identified (arrow) in the Landsat 7 image (above), showing (dark outline) the proposed excision area.

The ultimate beneficiaries, more often than not, are neither squatters nor landless. Instead, they are usually a few powerful individuals bent only on taking possession of the land and then selling it for profit, or in order to gain political capital. The 'squatter' card, then, is usually just a ruse for the plunder of a greedy few, at the expense, quite literally, of the nation as a whole.

The proposed excisions fly in the face of government pronouncements on the environment, and are contrary to the recommendations of both the Kenya Forests Master Plan and the country's National Environment Action Plan. The proposals also contravene international agreements ratified by Kenya. Even Kenya's President, in his most recent New Year's address, condemned the destruction of forests in catchment areas.

The Food and Agriculture Organisation recently stated that any country with less than 10 % of its land surface area covered by forests is environmentally unstable. This places Kenya, with its less than 2 % of forest cover, in dire environmental straits already. Now is the time, then, if ever there was one, for the government to put an immediate stop to any further forest loss.

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The East African Wild Life Society was formed in 1961 by an amalgamation of the Wildlife Societies of Kenya and Tanzania (both founded in 1956) and Ugandan wildlife conservationists

The bigger picture

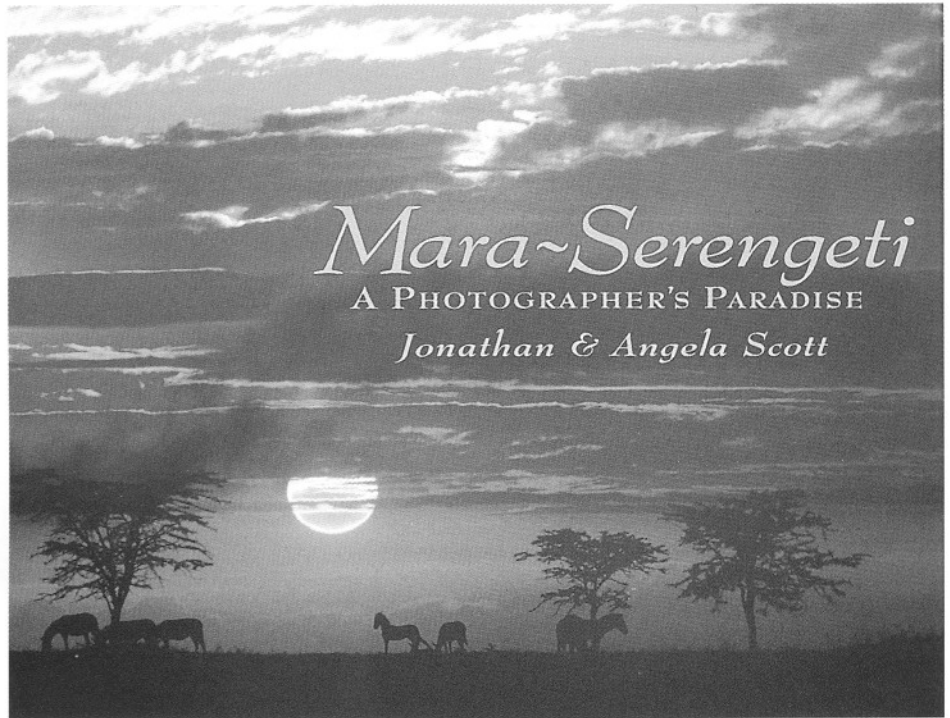
MARA-SERENGETI
A Photographer's Paradise

by **Jonathan & Angela Scott**

Published by Fountain Press
(UK), 2000

KSh 2,690

Reviewed by **J M Cheffings**



This book is yet another *tour de force* from the Scott family stable. Its stunning array of wildlife photographs is supported by delightful pen-and-ink drawings and accompanied by a well written and informative text, leaving almost nothing to be desired.

For me, it is Jonathan Scott's most impressive and enjoyable work since *The Marsh Lions*. There are many, I know, who would single out other works of his – like *The Leopard's Tale*, or *Painted Wolves* – as their personal favourites. But I prefer the broader scope on offer in this new book – possibly his best ever. It demonstrates a very high level of artistry, with both camera and pen, and is based on a wealth of detailed knowledge of the Mara-Serengeti ecosystem.

The magnificent illustrations, all beautifully produced and presented, are clearly this volume's principal attraction. But for the reader there is much of interest in the text, which consistently reveals the Scotts' great depth of feeling for, and of commitment towards, the land and wildlife they write about so movingly. One particularly deft touch is the way the chapters are headed by well-chosen epigraphs from perceptive writers like Evelyn Ames and Henry Beston. The chapter titles themselves – *Lords of the Savanna*, *Shadows in the Grass* – speak of empathy and involvement.

The backdrop to all Jonathan Scott's books is an awareness of tourism's importance for the conservation of Africa's wildlife. Indeed, it is tourism and tourist dollars that underpin today's conservation effort. Without tourism there would be no parks or reserves – and precious few animals. Only the day-to-day presence of tourist vehicles keeps the poaching menace at bay.

The Scotts have in addition always understood the very special place that big cats occupy in the tourist industry. Or, as they remark in *Mara-Serengeti* (p. 34): "No safari to Africa would be complete without the sight of wild lions. The lion is the symbol of Africa ..." It is the opportunities for close-up viewing of lions and other predators that have made the Mara-Serengeti famous, and will no doubt continue to do so.

With their books and television work, the Scotts are certainly doing more than most to maintain the popular appeal of this unique ecosystem. As long as tourist dollars keep rolling in, the chances of the animals' being wiped out to make way for wheat, maize, or livestock, may yet be kept in check. Anyone who recalls the wildlife wonderland of the high Loita plains around Ngorengore will know how quickly grassland savanna can be destroyed once subsumed by agriculture.

My only criticism – and it is a very minor one – has to do with the book's contrasting portrayals of the Serengeti and the Mara. Of course the Serengeti is very much the larger, and wilder, of the two and is magnificently depicted as such in many of the photographs (not least, in stunning vistas like the one on p. 117 showing wildebeest spread over the Serengeti's short-grass southern plains). Against this background, it does seem a little unfair to the Mara to dwell on such aspects as the "torrents of cars", "clusters of vehicles",

"minibuses packed with excited and noisy visitors", and so on, without putting the Mara's rather different circumstances in their proper context relative to the Serengeti.

In some parts of the Mara – near the junction of the Talek and the Mara rivers, for example, or better still around the confluence of the Ol Keju Rongai and the Mara – there are still extensive tracts of genuinely wild terrain, well off any beaten track. Similarly, for visitors who opt for an excursion on foot (in the company of an armed escort), there is the prospect of being able to hike all day through whistling thorn country along the Ntiakitiak, never out of sight of wild game but with no off-putting vehicles or wheel tracks in sight.

If, on the other hand, you prefer to hang around Leopard Gorge, or Rhino Ridge, then you must *expect* to have to put up with seeing other visitors in other cars! That goes with the territory, so to speak. But it is not true of the Mara as a whole, which still offers a wide variety of safari experiences with something for everybody.

I first visited the Mara-Serengeti in the early 1960s when this was one immense, pristine wilderness of incomparable natural beauty. There have of course been many changes since then. But the area remains, in conjunction with the Ngorongoro Conservation Area, the world's most spectacular big game sanctuary. Jonathan and Angela Scott's wonderful new book certainly bears ample testimony to this. 🦁

Enigmatic outlier

THE EIGHTH CONTINENT
Life, Death, and Discovery in
the Lost World of Madagascar

by Peter Tyson

Published by William Morrow
New York (2000)

pp. 374; one map, 19 colour
photographs.

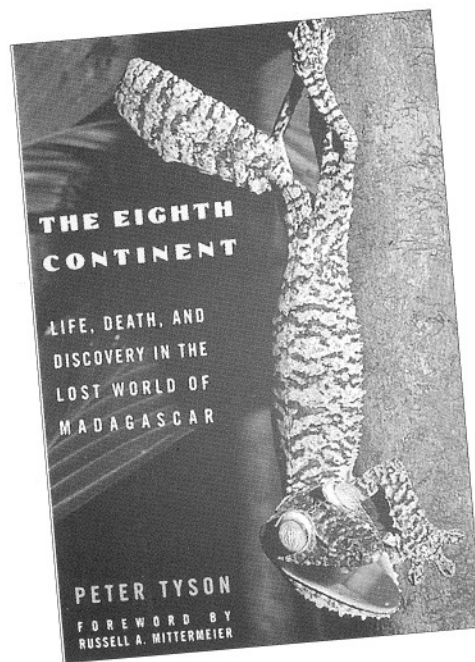
Reviewed by **Bella Bowker**

An island big enough, and sufficiently diverse, to be considered a continent; this is author Peter Tyson's view of Madagascar. It is a land both separate and special, where eight out of every ten living things native to the island are found nowhere else on earth. There are unsolved puzzles and paradoxes regarding the animals, the plants, and the people. In this fascinating book Tyson accompanies four experts in four different fields in a bid to find some possible answers.

There is the inescapable feeling that, for much of the biodiversity of this amazing place, time is running out. The 'Great Red Island' looks in winter time like the surface of Mars. With few trees to hold the soil in place, in the rainy season the silt-laden rivers run like blood into the sea. Slash and burn agriculture, fuel wood collection, and logging have destroyed many of the forests, and yet the people love their land, the land of their ancestors, with a passion.

It has been called a 'cornucopia of curious beasts.' The beasts include the hedgehog-like tenrec, the small carnivorous fossa (pronounced *foosh*), and – most famously of all – the lemurs. No less perplexing are the legions of creatures *not* represented here. No native freshwater fish, no plains game, and none of the big herbivores found only 400 km away across the Mozambique Channel in Africa. Except for the bushpig and the Nile crocodile, there are no big animals at all – given that anything weighing 12 kg, or more, is here accounted a big animal.

Yet there *were* large creatures here only a few hundred years ago: giant lemurs, giant tortoises, the enormous 'elephant bird', *Aepyornis maximus*, said to have weighed half a tonne, and a strange aardvark-like creature so unusual that a special order had to be



created for it in the scientific record. There were plenty of pygmy hippos as well. How, then, could all these creatures have vanished over such a short period and from across such a vast area, when by contrast only seven large animals are known to have become extinct in Africa in 100,000 years?

Madagascar's plants are just as strange. In the Spiny Desert of the southeast grows the Octopus tree, its curving arms covered in tiny leaves and sharp spines. And there are no fewer than eight species of baobab, versus just one for the whole of Africa. Why so many species of everything? This is another puzzle. Take chameleons, for instance, of which there are a staggering 62 types – accounting for more than half of all the chameleon species on the planet.

Despite its proximity to Africa, the cradle of humankind, Madagascar was settled by people only about 2,000 years ago. Where did they come from? Language and other ethnographic factors point to Indonesia, but no Indonesian artefacts have yet been found. There are 18 recognised tribes on the island and many smaller tribal groups, yet they all speak the same language. The west coast dwellers have a cattle-keeping lifestyle of African origin, and all words pertaining to livestock have Bantu roots. On the eastern side, though, are people claiming Arab descent.

Arab seafarers visited the island in the ninth and tenth centuries and provided the first written record, while the Portuguese, the French, and the British made successive attempts to establish trading settlements. Pirates used Madagascar's many bays and

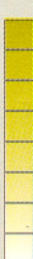
inlets to hide from the law in the late seventeenth and early eighteenth centuries, while also provisioning their ships here with food and water. The island was French for 65 years until Independence in 1960. More recently, the president, his brief flirtation with Marxism behind him, has taken to championing the cause of promoting the national parks and reserves that circle the country 'like a necklace of pearls.'

Tyson goes with herpetologist Christopher Raxworthy to Nosy Bé, the small forested islet in the north which is Madagascar's principal tourist destination. They are searching especially for the plated lizard, *Zonosaurus boettgeri*, of which only two specimens have ever been found, both in the 1890s. Both specimens later disappeared from the museums to which they were sent, thus making it imperative for science to try to find this creature again, if it still exists.

With David Burney, a palaeo-ecologist, Tyson visits a site abounding in fossils. A specialist in the analysis of pollens, Burney postulates what Madagascar's plant life must have been like at various times in the past. Interestingly he does not believe, as some do, that the entire island was once thickly forested. He thinks the vegetation has always been a mosaic of woodland, bush and grassland. Archaeologist Robert Dewar is Tyson's guide in trying to work out the origins of the Malagasy people, and there is one particularly interesting section on the language, including its poetry.

One of Madagascar's more successful national parks is Ranomafana. Here Tyson sees how primate specialist Patricia Wright's dream of saving the trees and of safeguarding the ecosystem and its wildlife is taking shape. By training dedicated local Malagasy staff, and by improving – with the spin-off from ecotourism – the welfare (health, education, and rural development prospects) of neighbouring communities, Ms Wright hopes to ensure that the area can be preserved in perpetuity. Not everybody shares her hopeful view.

This remarkable book goes a long way towards persuading us that Madagascar is indeed a unique treasure trove of wonders, and one that, were any more of these wonders to vanish, would leave the world a poorer place. I should like to have seen more pictures included, and certainly a more detailed map. But these are minor quibbles and in no way detract from an altogether excellent book.



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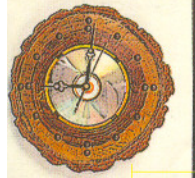
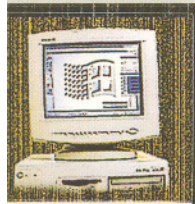
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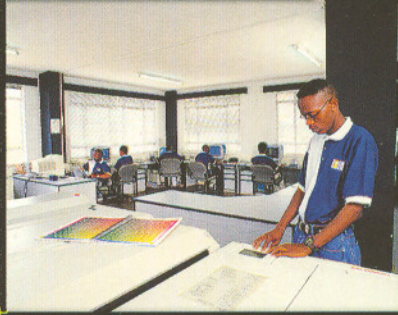
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Double trouble

Anne Mugo counts herself twice lucky ...

Conducting fieldwork in a forest can be hazardous at the best of times. I know this from a close encounter I experienced in late January.

I was among a group of scientists carrying out the groundwork for a comprehensive new census of the crested mangabey and red colobus monkey populations of the scattered forests of Kenya's lower Tana River. Ours was one of two four-strong teams based at Mchelelo Camp and charged with reconnaissance of the Guru East forest.

After a four-day workshop on methodology, aimed at ensuring – among other things – that no primate could mistakenly be counted twice, we entered the forest. The team to which I had been assigned was to move, four abreast, along the river's edge. The other team was to comb the forest's outer reaches. By communicating every 100 metres, or so, using pre-determined vocalisations, we could compare notes, while ensuring

that we were all proceeding at the same pace.

It was tough going in that forest, and we were reduced at times to crawling on our hands and knees along old, overgrown hippo trails. But, three hours later, everything seemed to be going according to plan. Both teams had come across, and counted, separate mangabey groups. And both had, in addition, collected copious data on mangabey food plants, as required under our concurrent habitat assessment brief.

At 9:15 a.m. a loud bellowing stopped us in our tracks. An incensed hippo, head shaking and incisors bared, burst on to the scene. Worse, it was coming straight for me – at speed. I confess that I panicked. I let out a scream and, running blindly, fell repeatedly as I tried to force a way through the tangled undergrowth. And still the hippo kept coming ...

It was a liane, catching me around the neck (I have the scar to prove it), that finally floored me. Collapsing in a heap, I resigned myself to my

fate. But the hippo – apparently distracted by the yells of one of my colleagues – miraculously changed direction and went for him instead. What happened next I learned only when our guide valiantly came back and pulled me, badly shaken and near-hysterical, back on to my feet. Mercifully, it transpired, we were all still in one piece.

It took another couple of hours to get out of that forest and back to camp. A few days later I returned to Nairobi, still nursing my bruises. My colleagues, though, were back in the forest each morning at dawn, covering the same ground as before. All were determined to make amends for what, scientifically, had been a "wasted day."

I hadn't been in Nairobi for long when I learned, first by 'bush telegraph' and then from articles in the daily press, that my fellow researchers had, over the weekend of February 4-5, again been set upon – only this time not by an angry hippo but by an irate mob of "more than 300" naked women!

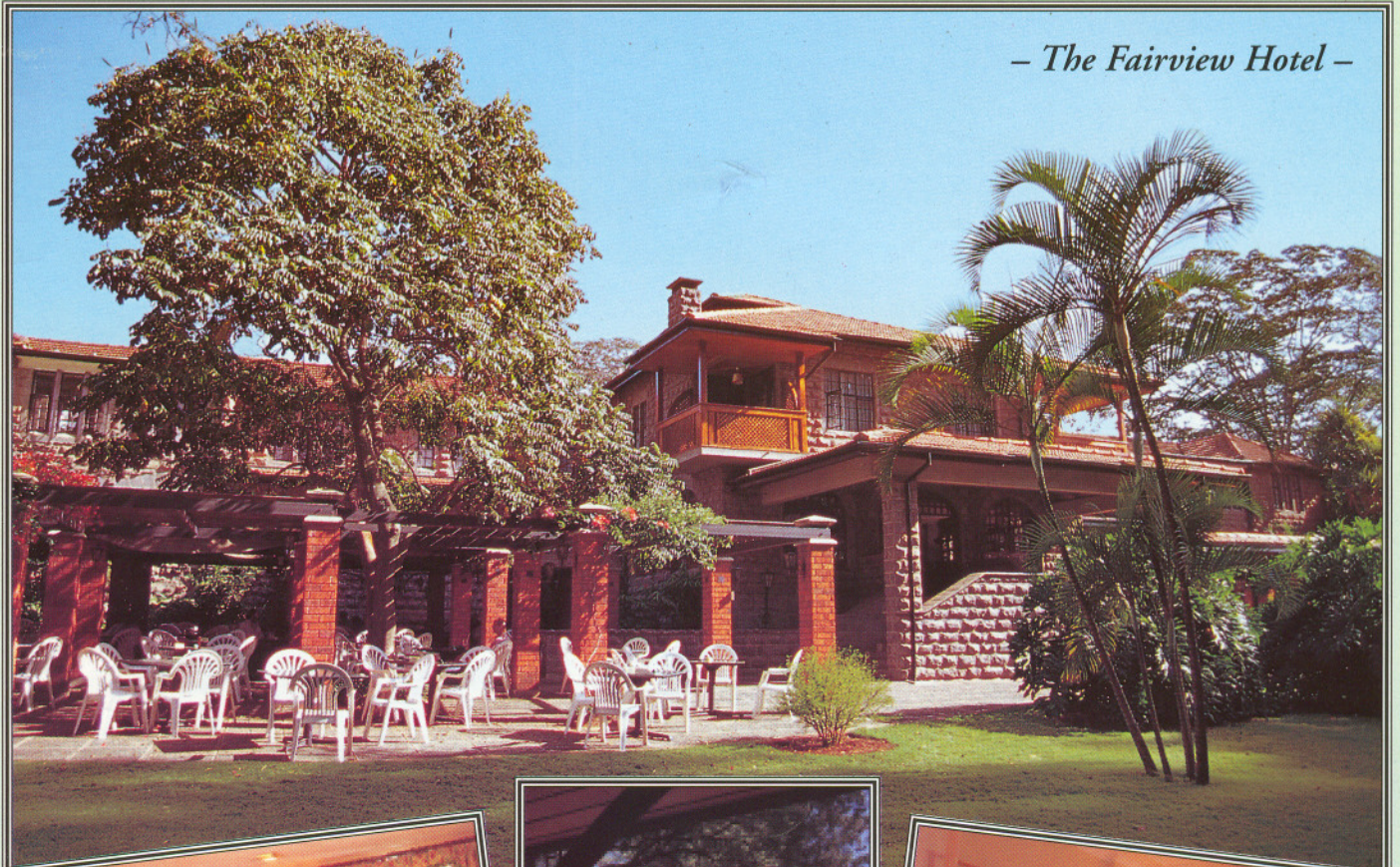
By stripping, these Pokomo women were effectively unleashing a traditional curse on the scientists, whom they perceive as agents of a plot, under the ongoing World Bank-funded Tana GEF Project, to relocate them and their families from their ancestral land in order to preserve the habitat of the two endangered primate species.

While in no way making light of this fraught situation, I can only wonder – as a scientist trained in taking primate censuses – how the figure of "more than 300", given for the naked women, was arrived at. For it seems, from what my colleagues say, that many of these women were very definitely counted twice! Still, I do know that, given the choice of having to face the wrath of one hippo or that of even 150 naked women on the rampage, I should take the hippo – any day.

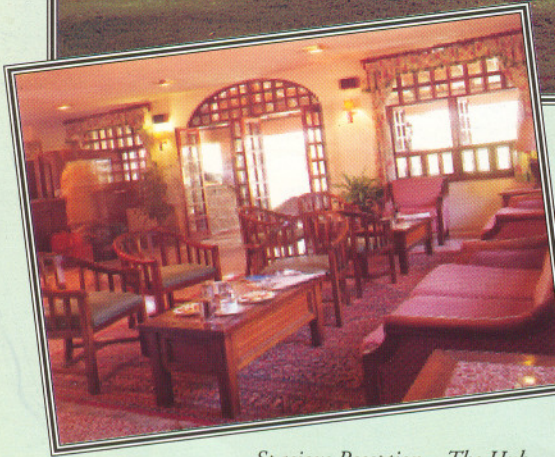
Anne Mugo is a programme officer with the East African Wild Life Society's Species Conservation unit.

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