Swara

East AFRICAN WILD LIFE Society
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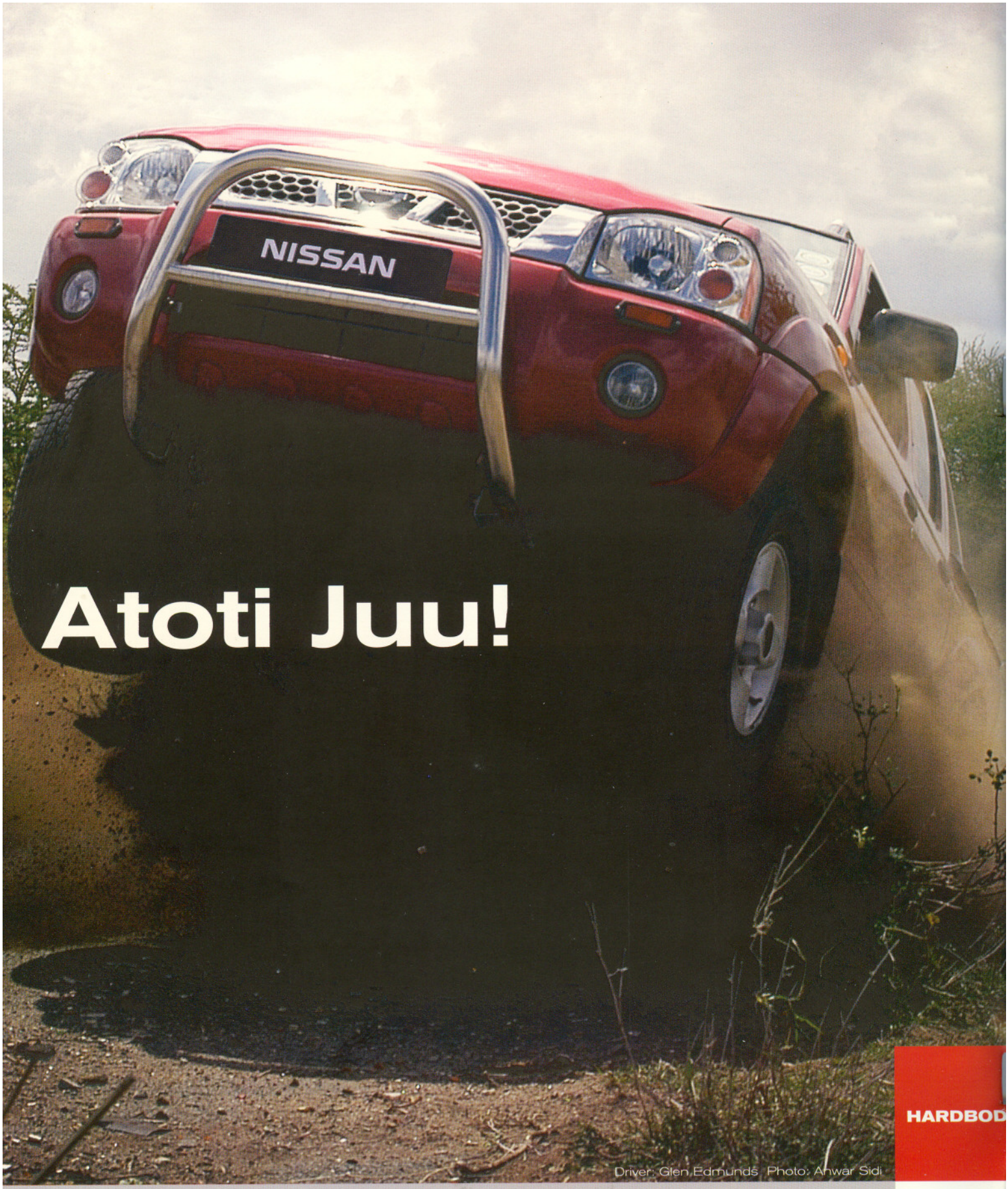

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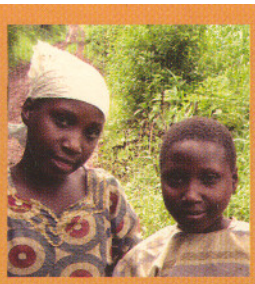
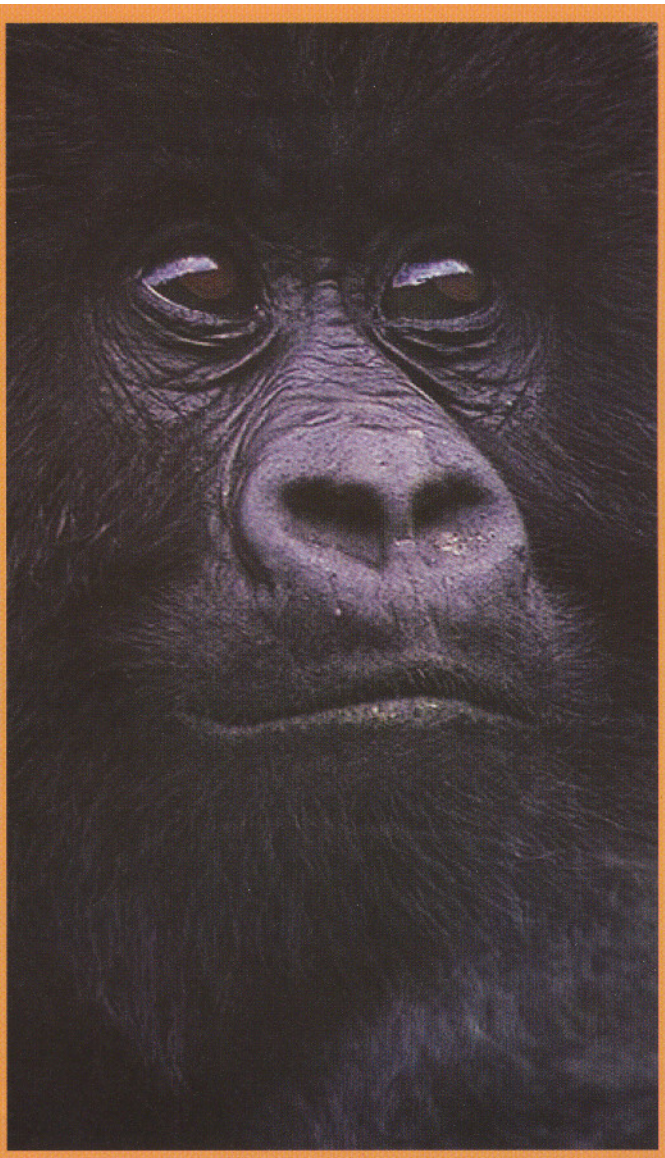



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Swara is a quarterly magazine owned and published by the East African Wild Life Society, a non-profit making organisation formed in 1961 following the amalgamation of the Wildlife Societies of Kenya and Tanzania (themselves both founded in 1956). It is the Society's policy to conserve wildlife and its habitat in all its forms as a regional and international resource.

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

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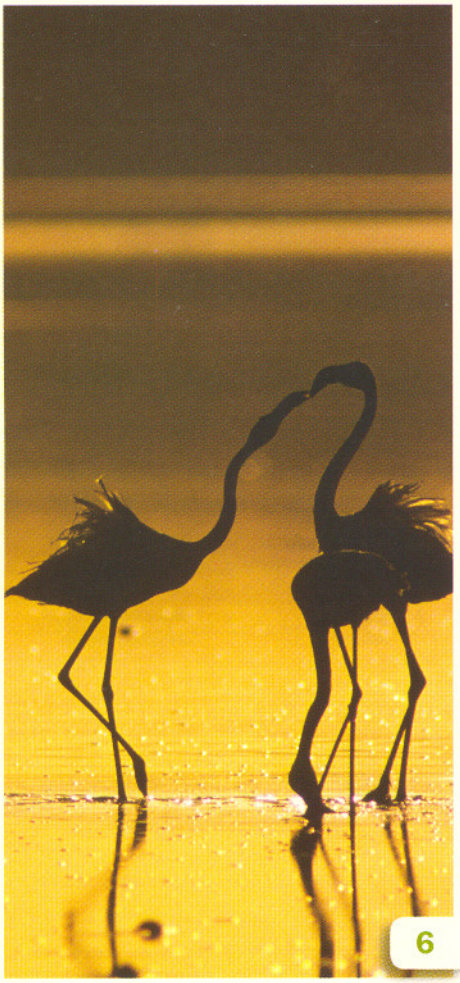

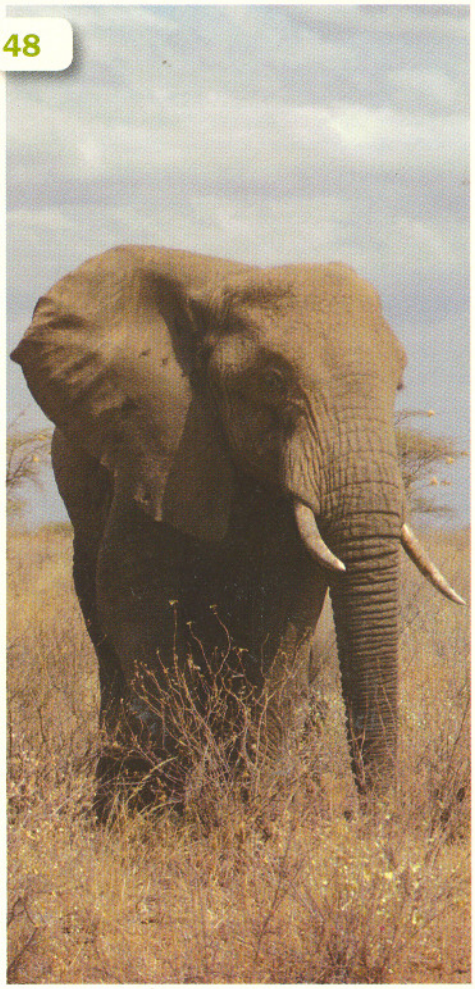

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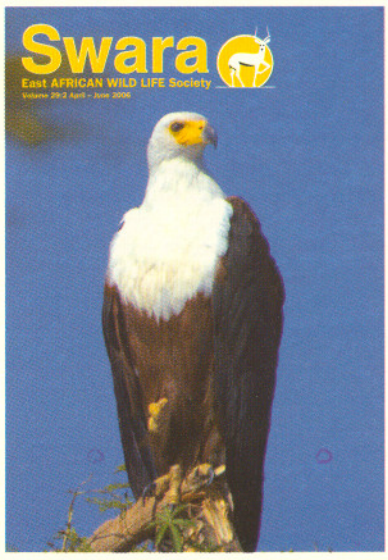

COVER
The African Fish Eagle, *Haliaeetus vocifer*, is the indicator species *par excellence* for gauging the health of African wetland environments such as Lake Naivasha in Kenya – the subject of a 24-page **Special Report** in this issue (see pp. 27-42).

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'Trying times'

Sustainable wildlife conservation in Kenya faces some very great uncertainties and major challenges. The Government Ministry responsible for wildlife conservation has recently formed a committee to review Kenya's existing wildlife policy and legislation. Our Society is represented on this committee, but it seems unlikely the committee will engage in the kind of comprehensive consultations with stakeholders that are needed if we are to see the introduction of positive changes that will strengthen wildlife conservation.

Even in the unlikely event of expedient policy and legislation changes, there is little hope that Kenya's present Kibaki Administration can muster the necessary political commitment to *implement* such changes. Witness the recent promulgation of new forest law – and the ongoing political dithering over the Amboseli National Park.

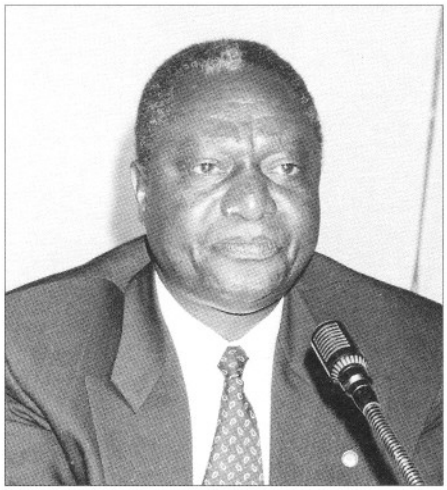
The growing impatience and frustration of the country's many wildlife conservation players and interest groups is perfectly understandable. Indeed, it is this frustration that prompted the recent tabling of the G G Kariuki Bill in Parliament – essentially pressing for wildlife policy and law changes providing for wildlife use rights outside Kenya's national parks and game reserves, and for the establishment of community and private wildlife conservancies through which to harness the economic benefits of wildlife conservation in such areas.

Let us not lose all hope, however. When things get this bad, I recall an old Yoruba saying, which translates to 'No condition is permanent.' Instead, then, let us remain actively engaged in discussions and in advocacy on wildlife policy and conservation strategies. In particular, let us be proactive in addressing some of the key issues over which stakeholders do not see eye to eye. In this spirit, I hope, through my *Messages* in SWARA, to elicit constructive comments and reactions from EAWLS members.

About one year ago, the Chairman of the Board of the Kenya Wildlife Service (KWS) was dismissed over a "leaked" proposal from an investor wanting to manage some Kenyan national parks for profit. I was then a member of the KWS Board, and was most surprised by the Government's swift and highhanded response.

Such a reaction was fuelled in large part by media campaigns roundly condemning any such course of action. I did not know then (and I still do not know) the identity of the investor. But I did expect a more sober evaluation, and all due diligence, in respect of what the investor had in mind. I say this because several other countries are actively *encouraging* investors to develop their wildlife resources – whether in protected areas, communal areas, or on private land. Indeed, proposals of this kind are neither new nor unusual in today's wildlife conservation world.

The Government's hasty and dismissive reaction is a sign that we may have become so glued to a particular conservation paradigm as to be determined, at all costs, to resist any *possibility* even of a change in our approach. Let us consider some of the realities on the ground …



We all know that a substantial proportion of Kenya's wildlife is still found outside the country's protected areas, where the KWS lacks the investment needed to secure its effective conservation. Yet the KWS has, in an ambitious Strategic Plan it has just launched, issued some extremely positive projections on what it believes it can accomplish in the future. The Plan's two key assumptions are: (1) that Government investment in the sector will increase steadily, and (2) that income from park gate takings will increase steadily too (implying that wildlife-based tourism will thrive).

Neither of these assumptions will necessarily hold true, I believe, in an immediate or even a long-term time frame.

Two pertinent questions arise. First: what development philosophy (in relation to conservation, or to any other field of economic endeavour) is *discouraging* Kenya from seeking to exploit the potential of wildlife-based investment? And secondly: For how long does Kenya intend to go on relying on philanthropic organisations and individuals to provide the necessary investment in wildlife conservation?

Let me turn, now, to environmental catastrophe – in the shape of the accelerated forest destruction we are seeing, complete with its serious downstream effects on wildlife conservation and other land uses …

The East African Wild Life Society is justifiably proud of the work done by its Kenya Forests Working Group (KFWG) in probing, and in advocating interventions to stop, the alarming forest destruction that is still occurring nationwide. The KFWG has, for example, recently highlighted accelerated destruction of forests in the Mau Complex, and the dire effects this ongoing destruction is having on wildlife populations downstream in the Mara ecosystem. Much of this forest destruction is of course linked directly to the politically thorny issue of forest-based squatter populations.

Ever since Kenyan independence in 1963, successive governments have promised sections of the 'landless' poor living in the country's forests that they would be given land on which to settle. Indeed, the earliest forest excisions (in the late 1960s) were aimed at settling these squatters. Politically well-connected individuals have consistently hijacked excised forestland, however, so the 'forest squatter' problem has remained with us.

There are many Kenyans today who feel the Government has short-changed them in trying to evict them from forests in contravention of earlier promises of land. This remains a political 'hot potato', with several of today's Members of Parliament fronting for the forest-based squatters.

In its efforts to mitigate the 'forest squatter' problem, the Government has banned resident cultivators who – through the *shamba* system of plantation development – were participating in reforestation programmes. Clearly, there are hard economic and political choices to be made. In particular, I salute Prof Wangari Maathai for the brave (and risky) stand she has taken against the return of squatter populations to the forests under the cover of a return to the *shamba* system.

On the Society's internal governance and growth fronts, I did stress in my previous *Message* that I was glad to be taking over as the Chairman of a vibrant society with well functioning organs and sound financial management. I wish to confirm, at this early stage, that we are on course to scale even greater heights.

Fredrick Owino
Chairman,
East African Wild Life Society

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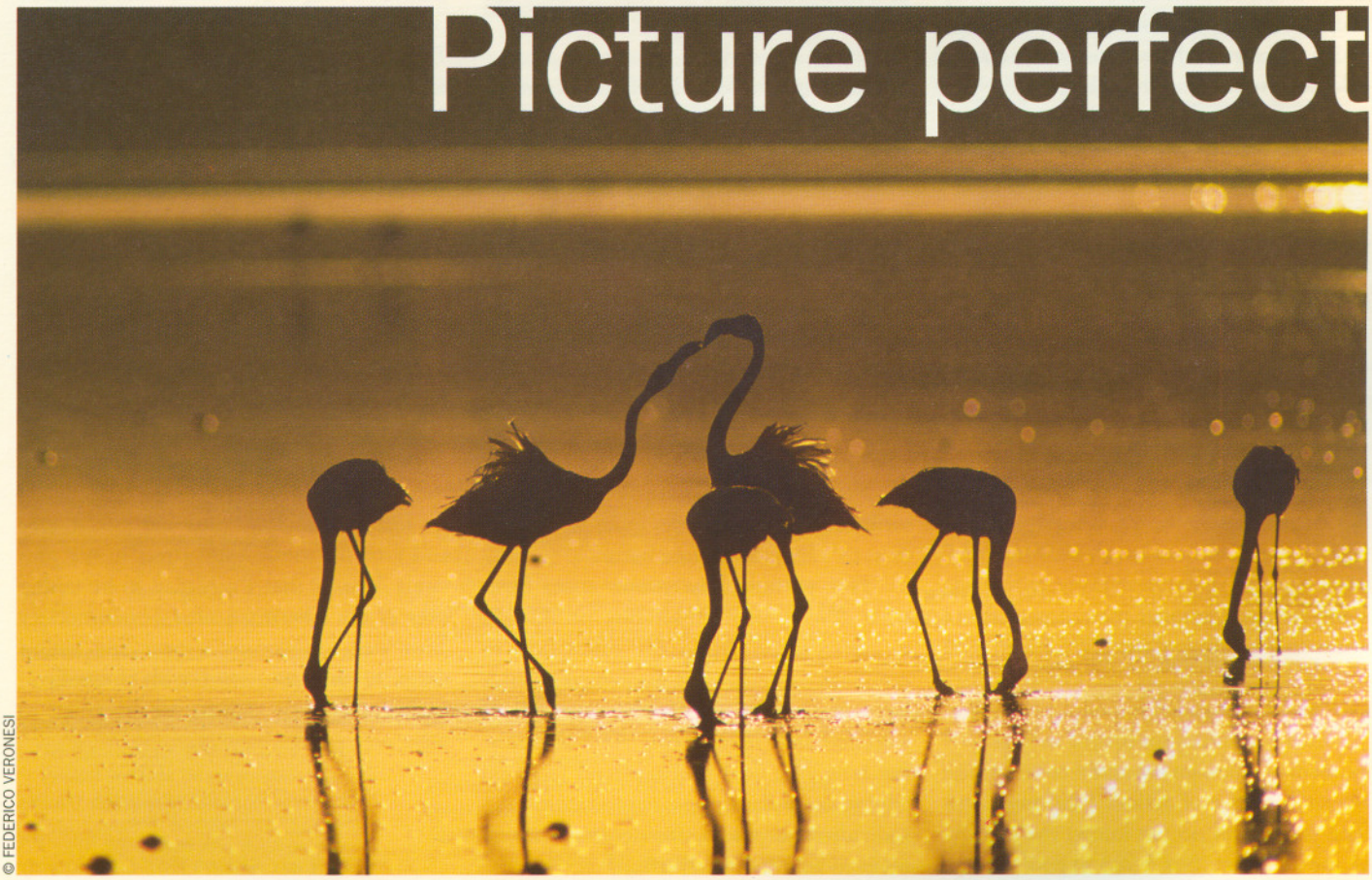
Picture perfect



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Winning images: This study of a Malachite Kingfisher (top, cropped from the bottom in this reproduction), **earned a beaming Paolo Torchio – seen** (above) **with the trophy he received from Kenya's Director of Tourism, Wanjiru Makanga** (right) **– the top award in this year's 'East African Photographer of the Year' competition. Federico Veronesi's image of flamingos on Lake Ndutu in Tanzania** (left) **was adjudged second overall.**

The **Village Market**, one of Kenya's most innovative shopping centres, hosted this year's **East African Wildlife Photographer of the Year** competition in the Gallery located on its premises in Nairobi's northern suburbs.

The 2006 competition attracted nearly 1,000 entries from across the region (of which more than 200 came from participants under the age of 18). This year's theme was *'East African Animals, Birds and Landscapes'*.

The winners were revealed at a gala Opening Night on Tuesday 23 May. All the winning entries, along with 700 others that were singled out by the competition's panel of judges, remained on public display until the end of May 2006. In all, the week-long exhibition was seen by many thousands of visitors.

Overall winner in the Adult category was **Paolo Torchio**, a photographer based in Nairobi whose work – through having appeared often in SWARA over recent years – will be familiar to East African Wild Life Society members around the world. Paolo is also a member of SWARA's Editorial Committee.

Paolo's winning photograph – of a Malachite Kingfisher, perched at the edge of a small dam near the Sweetwaters Tented Camp in Laikipia, Kenya – was taken at 5:30 p.m. on 2 January 2006 using a Nikon D70S Digital camera fitted with a Sigma 400-mm lens. (Exposure details: 1/200 sec at f-14 on ISO 400.)

"We were in our vehicle, watching some elephants on the other side the dam," Paolo says, "when – down below us – we noticed the kingfisher. It was on the 'wrong' side of the car, however, so we had to back away, turn the car around, and ease back into a position from which I could, by angling my clamp tripod steeply downward, get the bird into the frame. Expecting this kingfisher to fly off at any moment, we kept stopping at intervals on our way back towards the dam's edge, taking photographs as we did so ... from diminishing distances.

"Incredibly, the bird allowed us to get all the way back to our original position. Unfortunately, my tripod's clamp came adrift at this critical juncture," he adds, "but I managed – even so – to get *one* last image before the kingfisher flew away. That image is the one I entered in the competition."

The accolade of second overall in the contest's Adult (Open) category went to another Nairobi-based photographer, **Federico Veronesi**, for a stunning image of flamingos taken on Lake Ndutu in Tanzania with a Nikon F70 camera fitted with a 300-mm zoom lens and 600-mm converter.

Another of Federico's entries – of an Impala at sunrise in Kenya's Lake Nakuru National Park, and taken with the same Nikon F70 camera, this time fitted with an 80-mm zoom lens – was adjudged third overall in the Adult (Open) category.

The winning image in the competition's Under-18 category showed a mosquito on a flower, and was taken by **Christopher Waddell**. In the under 12 category the winning image – taken by **Arjun Bhachu** – was of a landscape at sunset with a tree in the foreground.

This year's Panel of Judges included Tarlochan Singh Mhajan, ARPS, AIDP, FRSA, who is the Chairman of Mada Hotels; Jonathan and Angela Scott, both internationally renowned wildlife photographers, film presenters, and authors; Duncan Willetts, of Camerapix, who has several pictorial travel books to his name; Wendy Stone, Ford Foundation Photographer since 1994, whose work has been featured in *Time*, *Newsweek* and *The New York Times Magazine*, and Sir Mohinder S Dhillon, who has received a Knighthood in recognition of his humanitarian work through photography.

The annual East African Wildlife Photographer of the Year competition is the brainchild of Nairobi photographic firm **Photomural Gigiri (K) Ltd**. Other sponsors include: The Village Market; Mada Hotels East Africa; Camerapix; Fujifilm; Voi Wildlife Lodge; Wildebeeste Workshop; Hemingways Resort; Colourprint; the Nairobi Imaging Centre; *Going Out* Guide; Prime Cuts; The Wellness Club, and the East African Wild Life Society.

– reported by Job Ballard

'Charge' raises record sum

The Rhino Charge – the hugely challenging and popular off-road motoring event staged annually in Kenya to raise funds for conservation of wildlife and habitats on the country's Aberdare Mountains – this year netted a record **KSh 57.7-million** (the equivalent of **US$ 790,000**), an increase of almost 8 % on the sum raised at last year's event.

Courtesy: RHINO ARK

Held over the weekend of 3–4 June at **Swuari** in **Samburu District**, the 2006 'Charge' was won by Kenyan rally ace **Ian Duncan** in a Toyota Land Cruiser GX, Car No. 2 *(pictured in action, above)*. Duncan, who last won the event in 1998, described this year's course as the "toughest ever". Only three of the 58 starting crews could complete all 13 of the event's stages.

The crew that raised the largest sum in sponsorship – a whopping KSh 6.6-million (roughly US$ 92,000) – was that of veteran 'Chargers' **Alan McKittrick**, **Bruce Knight**, **John Trundell** and **Nick Hutchinson** in Car No. 5, which finished fifth overall after completing 12 of the 13 stages.

Proceeds from the 'Charge' go towards fencing Kenya's Aberdare National Park and Conservation Area through the **Rhino Ark Charitable Trust**. The entire 350-km-long fence is expected to be in place by 2008.

Camping fees accruing from the event are traditionally donated to the hosting local community, for use in welfare projects of that community's choice. The 2006 event brought in more than KSh 2-million (US$ 28,000) for Samburu's Swuari Community.

– reported by Job Ballard

New genus for *kipunji*

The new species of monkey that in 2003 was found to be living on **Mount Rungwe** in Tanzania's Southern Highlands, as well as in the **Ndundulu Forest** just to the west of the Udzungwa Mountains National Park, roughly 370 km distant, has turned out to be even more remarkable than scientists first thought.

The species was initially described in the 20 May 2005 issue of the journal *Science* (Report in SWARA Vol. 28 No. 3 /July–September 2005) as the 'Highland Mangabey, *Lophocebus kipunji*'. There, using a photograph as the holotype (for want of either a dead specimen or physical tissue samples), the species was placed within the existing genus *Lophocebus* – that of the 'baboon mangabeys' – on account of its being a tree-dweller with some physical similarities, including non-contrasting black eyelids.

Since then, however, science has gained access to a physical specimen – of a *kipunji* monkey found dead on 3 August 2005 in a trap that had been set by a farmer growing maize near the edge of Mount Rungwe's Livingstone Forest.

On finding the dead monkey in his trap, the farmer contacted scientists working with the Wildlife Conservation Society (WCS)-funded Southern Highlands Conservation Programme, whom he knew to be interested in *kipunji*

Arriving on the scene within hours, the researchers – including Programme Head, **Dr Tim Davenport**, and his colleagues

Out of her skin ...

A rare, endemic East African species of amphibian has offered a surprising glimpse into the evolution of maternal care and investment among animals.

The **Taita Caecilian**, *Boulengerula taitanus*, is restricted to forest fragments and adjacent farmland on the Taita Hills in SE Kenya. These hills are the northernmost portion of the Global Biodiversity Hotspot known as the Eastern Arc, which includes the Usambaras, Uluguru, and a string of other forested massifs further south in Tanzania. The Taita Caecilian has risen to prominence in a study of mother-offspring interactions, which was prompted by a quite remarkable recent discovery.

Writing in the journal *Nature* earlier this year, a team of scientists from the UK, Germany, Brazil and the US reported the discovery of foetal teeth in young Taita Caecilians, before going on to reveal their even more unorthodox purpose.

Caecilians are legless amphibians that typically dwell in moist leaf litter in tropical forests around the world. Foetal teeth had been observed in some Caecilian species, but their function was not clear. To understand the significance of this discovery, we need to recall some basic facts about caecilians (and amphibians in general).

The caecilians include both species that give birth to live young (viviparous) and species that lay eggs (oviparous). One challenge faced by all parents is to supply food to their developing offspring until the latter can fend for themselves.

The Taita Caecilian, an egg-laying species, is known to spend timed curled around its eggs and young. Close observations of mother and young, both in the field and in a laboratory, have revealed that the mother is doing rather more than simply coiling herself protectively around her brood. She is providing nourishment to her young in an extraordinary way...

The young caecilian hatchlings use their special foetal teeth to scrape and peel off

© TIM DAVENPORT

Noah Mpunga, **Sophy Machaga**, and **Dr Daniela De Luca**, all of whom were among the co-authors of *kipunji*'s original description in *Science* – were able to recover the carcass.

Davenport then contacted **Bill Stanley**, Mammals Collection Manager at Chicago's Field Museum of Natural History in the US, who at the time happened to be studying bats and rodents on Mafia Island, off the Tanzanian coast. Stanley urged the scientists to freeze the carcass until such time as he could get to Mbeya, two weeks later.

Stanley and the four WCS scientists then sent tissue samples to the University of Dar es Salaam in Tanzania and to geneticist **Dr Link Olson**, Curator of Mammals at the University of Alaska Museum in Fairbanks in the US. Stanley subsequently returned to Chicago with most of the remainder of the carcass, including the skull, which – along with parts of the skeleton – was examined by **Dr Eric Sargis**, a primatologist with the Anthropology Department at Yale University.

Results of molecular analyses on the muscle tissue samples came as a major surprise, suggesting that *kipunji*, far from being a mangabey, was in reality the closest living relative of the baboons (genus *Papio*)!

Despite the similarities between *kipunji* DNA and that of baboons, however, scientists identified too many marked discrepancies – anatomical, as well as molecular – between the two animals to lump them both into the same genus.

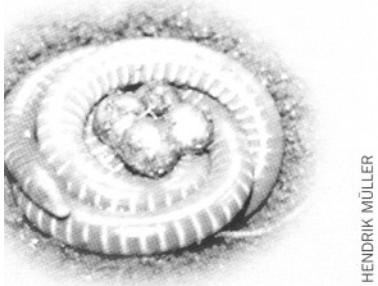
Faced with a monkey that was neither a baboon nor a mangabey, the scientists were left with no option but to conclude that *kipunji* must represent an entirely *new* genus.

That new genus has – in a description published in the 2 June 2006 issue of *Science* (Vol. 312; pp. 1,378-1,381) – been given the name ***Rungwecebus***.

Accordingly, ***Rungwecebus kipunji*** (as the monkey is now called) becomes the only known representative of Africa's first new genus of living primates to be brought to the notice of science in more than 80 years.

– reported by Gordon Boy

● ***A more detailed account of this amazing discovery will appear in the next issue of SWARA.***



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their mother's skin, which they proceed to consume. The mother's skin at this stage of brood care is thicker and richer in proteins than that of female caecilians not tending young.

Further analysis of the nutritive content of a brooding female's skin will shed more light on how much nourishment baby caecilians derive from it.

This fascinating glimpse into the complex biology of an often-overlooked denizen of the leaf litter in a tiny forest fragment offers a compelling example of how much remains to be learned about the creatures with which we share the earth. More importantly, the discovery will hopefully lend impetus to the need for us to protect even the more obscure inhabitants of our precious forests.

– reported by Dino J Martins

Kenya's 'birding industry' set fair

Nature Kenya (formerly the East Africa Natural History Society) has embarked on a major campaign aimed at raising Kenya's profile around the world as a prime birding destination for tourists.

The project is much more than just an exercise in global marketing, however. It also makes provision for the training of Kenyan birding guides, and for the further development of existing site support groups serving the country's various Important Bird Areas (IBAs).

In the meantime, in keeping with these goals, Nature Kenya will be represented at this year's staging – on **18–20 August 2006** – of what is reputedly the world's largest and best known birding exhibition, **The British Birdwatching Fair**, due to be held at the Egleton Nature Reserve, alongside Anglia Water's Rutland storage reservoir, near Leicester in the English East Midlands.

At the three-day event, which is expected to attract more than 20,000 visitors, Nature Kenya will be sharing an exhibition stand with the Watamu, Kenya-based **Turtle Bay Beach Club** – a long-standing associate of Nature Kenya's (and a corporate member also of the East African Wild Life Society).

Nature Kenya will be among more than 300 exhibitors represented at this year's fair. Wares on display during the fair will include, in addition to birding travel and safari packages and national birding tourism promotions, a staggeringly wide array of birding gear and paraphernalia, ranging from the very latest cameras, binoculars and telescopes to bird books, films, recordings, and other merchandise.

With in excess of 1,080 bird species on record as occurring in the country, Kenya can justifiably stake its claim to being among the leading birding destinations on earth. At the British Birdwatching Fair – and through its ongoing drive to harness Kenya's huge birding tourism potential – Nature Kenya is committed to developing a vibrant birding industry that will benefit all Kenyans.

To this end, a detailed business plan has been submitted to **The Tourist Trust Fund** of the European Union, along with an application for funding support. A positive response is anticipated shortly.

– reported by Mike Davidson
Bird Committee, Nature Kenya

Photos: © JACKI SMITH

Further evidence of sea level rise

The two accompanying photographs, taken on the coast just south of Dar es Salaam in Tanzania, corroborate the observations made in Dan Stiles' recent letter, '*Sea level rise?*' (SWARA Vol. 29 No. 1 / January–March 2006, pp. 14–15), relating to Diani Beach on the Kenyan south coast.

Between January and April 2006, at least three palm trees have, as shown, been washed away along this section of the beach, together with the entire front row of *makuti* beach huts that had been there at the beginning of the year.

It is also apparent (in the earlier photograph) that there had previously been other palm trees still closer to the advancing ocean.

Jackie and Rob Smith
DAR ES SALAAM
Tanzania

That caterpillar ...

© DAN STILES

The strange, spiky creature whose photograph – taken at Gedi on the Kenya coast – appeared in the preceding issue of SWARA [Vol. 29 No. 2 / January–March 2006, page 13] with the title *'What is this?'* is none other than the caterpillar of that most beautiful of coastal butterflies: the **Gold-banded Forester**, *Euphaedra neophron*.

These larvae, after they have hatched, resemble mere blades of grass. As they grow, however, they develop ever longer and more extravagant spikes, exquisitely latticed with fine hairs. The photograph in SWARA *(reproduced above)* is of a large, mature caterpillar that is evidently about to pupate. At this stage, *Euphaedra* caterpillars can look very scary, although in reality of course they are quite harmless.

***Angas Mnyaka**, Haller Park,*
P O Box 81995, MOMBASA
Kenya

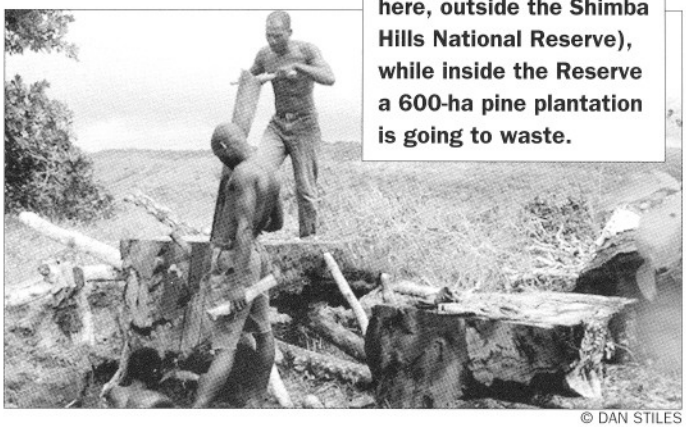
© MARTHA NZISA MUTISO

'Wasted resources'

Since the ban on tree harvesting in Kenya was decreed in 1999, the resulting timber shortage has triggered a frenzy of illegal logging in both gazetted and unprotected forests, often with the connivance of Government officials and Forest Department personnel. And, while the **Kenya Forests Working Group** (a sub-committee of the East African Wild Life Society) and journalists have exposed many illicit logging operations, these continue unabated.

This exasperating situation is aggravated by the fact that there are deteriorating timber plantations going to waste because nobody is harvesting the trees. One such example is the 600-hectare Caribbean pine plantation established within the **Shimba Hills National Reserve** in the 1960s, which was intended to provide timber to the coast. These trees have never been harvested and are now well beyond their prime, providing nothing but shade for animals and a bit of resin to a collecting company.

Worse still, the exotic pines are propagating and spreading into the reserve, replacing the precious indigenous vegetation. The toxic pine needles provide no fodder for wildlife. The pine plantation's presence is also adversely affecting management of the Reserve, since all decision-making is split between the Forest Department and the Kenya Wildlife Service (KWS).



© DAN STILES

'Exasperating situation': Kenya's logging ban is encouraging people to fell indigenous trees, (as here, outside the Shimba Hills National Reserve), while inside the Reserve a 600-ha pine plantation is going to waste.

If the trees could be harvested and their timber sold locally, all the consequences would be positive. The timber extracted would help alleviate illegal logging pressure on the indigenous Shimba forest. The considerable income so derived could be used for conservation work. Open areas left behind could be planted up with indigenous species beneficial to wildlife and to the ecology, and the KWS could manage the Reserve on its own.

So go on, President Kibaki: overturn the decreed logging ban in so far as this applies to Kenya's timber plantations.

Dan Stiles
Shimba Support Group

Travesty at Leopard Gorge

I have just returned from my 22nd visit to Kenya's famed Maasai Mara National Reserve, where I was horrified to see construction work going on at Leopard Gorge – prime leopard habitat for the late Half Tail and now for her daughter Zawadi.

Not only will the resulting lodge drastically disrupt wildlife viewing in the area, but it is also an eyesore. Already conspicuous from some distance are the large, bright metallic roofs of the workers' housing.

Is this the end of the Mara as we know it? Already, there are Maasai cattle grazing in the Reserve and tacky 'duty-free' shops selling souvenirs to tourists on game drives. Now a lodge is going up, ruining the aesthetic appeal of a vital and highly valued wildlife habitat.

How has this been allowed to happen? Can it be stopped?

Michele Burgess
20741 Catamaran Lane,
Huntington Beach,
CA 92646-5513; US

An urban drama

'*Haa haa ha-aaa.*' This strident call, repeated over and over by a pair of **Hadada Ibises**, *Bostrychia hagedash*, clambering about among the branches of some trees growing near the Car Park outside the **Nairobi Arboretum** on 25 April this year, was even more jarring than is usual for these astonishingly noisy birds.

On learning of this from a colleague, I immediately feared the worst. I had been monitoring this pair on its nest – an untidy platform of twigs lodged high up in a Jacaranda – for nearly six weeks. I had noticed how the female confined herself to the nest while incubating the eggs, and how the male, during this time, had been feeding her a succession of tasty morsels. Then, after their two chicks hatched, I had watched the two birds taking turns with the parenting and feeding duties.

The last time I had heard such persistent calls was just a week before on 18 April, when – as I later found out, only too late – one of the growing chicks had fallen out of the nest. Two days later, we found that chick lying dead under a nearby tree. So this time, when my colleague told me 'my' birds were "really worked up about something," I feared the same fate might have befallen the other chick.

We went across to search for the chick on the ground around the base of the tree, but could find nothing. Overhead, the din from the restless pair continued. '*Haa haa ha-aaa!*' Before leaving for home that evening, we revisited the scene. In the Jacaranda tree we could see both birds; but there too – sitting nonchalantly on the nest platform – was an **Augur Buzzard**!

Had the buzzard killed and eaten the second chick? There was still no sign (that we could see) of any chick on the ground. And the Augur Buzzard, just sitting there, did not *appear* to be eating anything.

Come the next morning, one of the ibises was still calling, piteously as ever, from the Jacaranda. A closer inspection, in good light, confirmed that the nest was now empty. The other Hadada, meanwhile, was shuffling about on the ground, on the other side of a nearby fence. Edging closer, we noticed that this bird was *feeding* the fallen chick, which was alive, but unable to fly – although it *was* flapping its wings and seemed animated enough.

Returning after lunch to check on the chick's progress, I was horrified to discover that a group of schoolchildren, visiting the Arboretum, had found the bird. One of them had picked it up, and they were all tormenting it. Of course, I gave the children an *impromptu* lecture on the senselessness of what they were doing. Then, when the kids had left, and I was taking the chick back to a more secluded position very close to where they had found it, I noticed … that the poor thing had a badly broken leg.

I hoped the parent birds would find, and would continue to feed, the traumatised youngster. In the meantime, I made some enquiries as to whether anything could be done to repair the bird's leg – all to no avail it turned out, for this chick, sadly, did not survive. It died the next day. Nevertheless, this episode has done much to instill in me a fresh appreciation of our noisy, much-maligned Hadadas, and of what even they have to contend with in our helter-skelter urban environment.

– by Martha Nzisa Mutiso

Martha Nzisa Mutiso *works with FONA, the Friends of the Nairobi Arboretum.*

'Breathtaking'

***Simon Thomsett** savours an unexpected encounter with a Taita Falcon in the Tsavo West National Park.*

Although always described as rare, the **Taita Falcon**, *Falco fasciinucha*, is widespread, utilising a surprisingly wide range of habitats. These birds nest on undisturbed cliffs of greatly varying size and aspect. And, since humankind has yet to figure out a way of using cliff faces for farming or habitation, such cliff-dwelling species logically face a more optimistic future than most.

Perhaps your best chance of getting to see a Taita Falcon is to take your bedroll up on to a cliff ledge … and to wait there until dusk. Then, if you are very lucky, you may hear one clicking, or whining, in some hidden recess in the rock. As the swifts, coming in to land, change shifts with departing small bats, so – between day and night – the Taita Falcon pair comes out to hunt. The birds have only 20 minutes or so in which to catch their fill of swifts or bats, before they roost again in the near darkness.

In Zimbabwe the late Ron Hartley contributed almost all we know about the biology of this elusive falcon. From his work, we know that Africa's Peregrine and Lanner Falcons vie for similar resources, and that in southern Africa at least, the Taita Falcon is 'sub-dominate'. Its distribution is influenced largely, in other words, by the occurrence of the two much larger falcons that compete directly with it for nesting ledges, avian prey and cliff space.

Yet I have seen Taita Falcons so comprehensively see off Peregrines and Lanners that I have my doubts over whether such direct competition really is that critical a factor in determining their distribution or abundance.

Taita Falcons are tough, pugnacious little falcons – always ready for a scrap. Avoiding detection through reverting to their secretive, crepuscular habits, they might well avoid confrontation. Personally, I am inclined to view cliff-dwelling Eagle-Owls as perhaps their major threat. (Nesting failures that I have observed in another locally uncommon small cliff-nesting falcon, the Mountain Kestrel, can be attributed directly to predation by these formidable owls.)

At 7.30 a.m. on 16 December 2005, as I and fellow-raptorphile **Anthony Curro** were driving towards Mzima Springs in Kenya's Tsavo West National Park, we saw a small, dark falcon perched atop a half-dead *Newtonia* tree barely 50 metres away. The bird's exceptionally large, blocky head, coupled with its short tail and plain russet chest were instant giveaways. Finer features were the large rufous patches on the back of the head, and the slate-grey upper tail coverts diffusing into the under tail coverts.

Not the culmination of some long, arduous ascent at dusk of some remote cliff face, this bird was so readily encountered that, at first, I doubted it myself. In my excitement I forgot to use the RAW image, super mega-pixel mode on my camera. I bitterly regret this now, but the resulting images – even so – offer conclusive proof as to the species' identity.

It was an adult Taita Falcon, and – I should guess – a male. He sat for 20

minutes in the sun, preening himself and cocking his head repeatedly to espy distant birds. Like any professional, he seemed to be in no great hurry. So, after stretching, and stretching again, he at last took off.

It is in this action that the Taita Falcon's superiority over all other African falcons becomes evident. The rate of ascent and the speed reached seem to defy the laws of nature. In less than half a minute, he had climbed in still air to a height of at least 250 metres (more than 800 feet) – that is, faster than most propeller-driven aircraft.

He was after Barn Swallows, and when he began to clip his wings harder, I knew he was about to stoop. Stoop he did, so fast and over such a distance that Anthony cursed his misfortune at being unable to keep binoculars trained on him. A gigantic rebound, following the vertical descent, shot him up into the air like an arrow for easily 100 metres. He had evidently missed his prey. Or, was he just testing his wings? Within seconds, he was gone.

Those 25 minutes eclipsed all the other wildlife experiences that had come our way over many days spent in the Tsavo area. This was a truly breathtaking experience.

So named after the nearby Taita Hills, this falcon is not unknown in Tsavo West, having been recorded around Ngulia Lodge by several eminent ornithologists. Since 1997, I have encountered the species four times near Chaimu Crater and once near Finch Hattons. There can be no doubt that the Taita Falcon remains relatively well represented in this national park.

In most locations where I saw the species regularly in the 1980s, such as Ololokwe and surrounding mountains, the Taita Falcon's numbers appeared to have declined sharply by 1997. I have noticed a similar marked decline in all 15 or so other locations known to me in Kenya. The complete disappearance of a once dense Taita Falcon population on the western, Ugandan slopes of Mount Elgon has been noted. The species' status in Zimbabwe has shown a similar downward trend.

The Peregrine Falcon, similar in its habitat requirements of indigenous woodland and permanent water, rather than a denizen of the drier conditions that are tolerated more by the Lanner Falcon, has also declined in all these areas. The Lanner Falcon, meanwhile, is – increasingly – encroaching upon sites previously frequented only by the Peregrine and Taita Falcons: a consequence of global warming, perhaps.

There are other possible explanations for the lack of recent personal records, not the least of which is that I find it less easy to access many of these areas owing to greatly increased human populations, insecurity, and declining physical fitness. Another more consoling theory (so far poorly understood in raptors generally), is that both the Taita and the local Peregrine Falcons may be nomadic opportunists, settling in during good years, but moving on to better climes in bad, dry years.

One feature common to all sites that have lost their falcons over recent years is the burgeoning prevalence of people, livestock and infrastructure in places where, 20 years ago, there were invariably very few people. Woodland, natural vegetation cover, food species, and water sources (these especially) have diminished, even in the most remote of mountain locations.

In some areas, while such intrusions may not – yet – have triggered dramatic 'wildlife' declines, the effect has been enough to tip the balance against large eagles and sensitive raptors. Raptors, classic environmental 'bio-indicators', may give us much more insight into the sustainability of our conservation areas than, for example, the wildebeest, lion, or elephant. Certainly, today's raptor populations bear little resemblance to those of the mid-1970s, even within the heartlands of most Kenyan parks and reserves.

Sanctuary size does matter. The bigger such areas are, the more stable their raptor communities. Despite a chequered environmental past, I believe that Tsavo may hold Kenya's last vestige of something approximating to a 'natural' raptor population. But today even Tsavo is under considerable pressure.

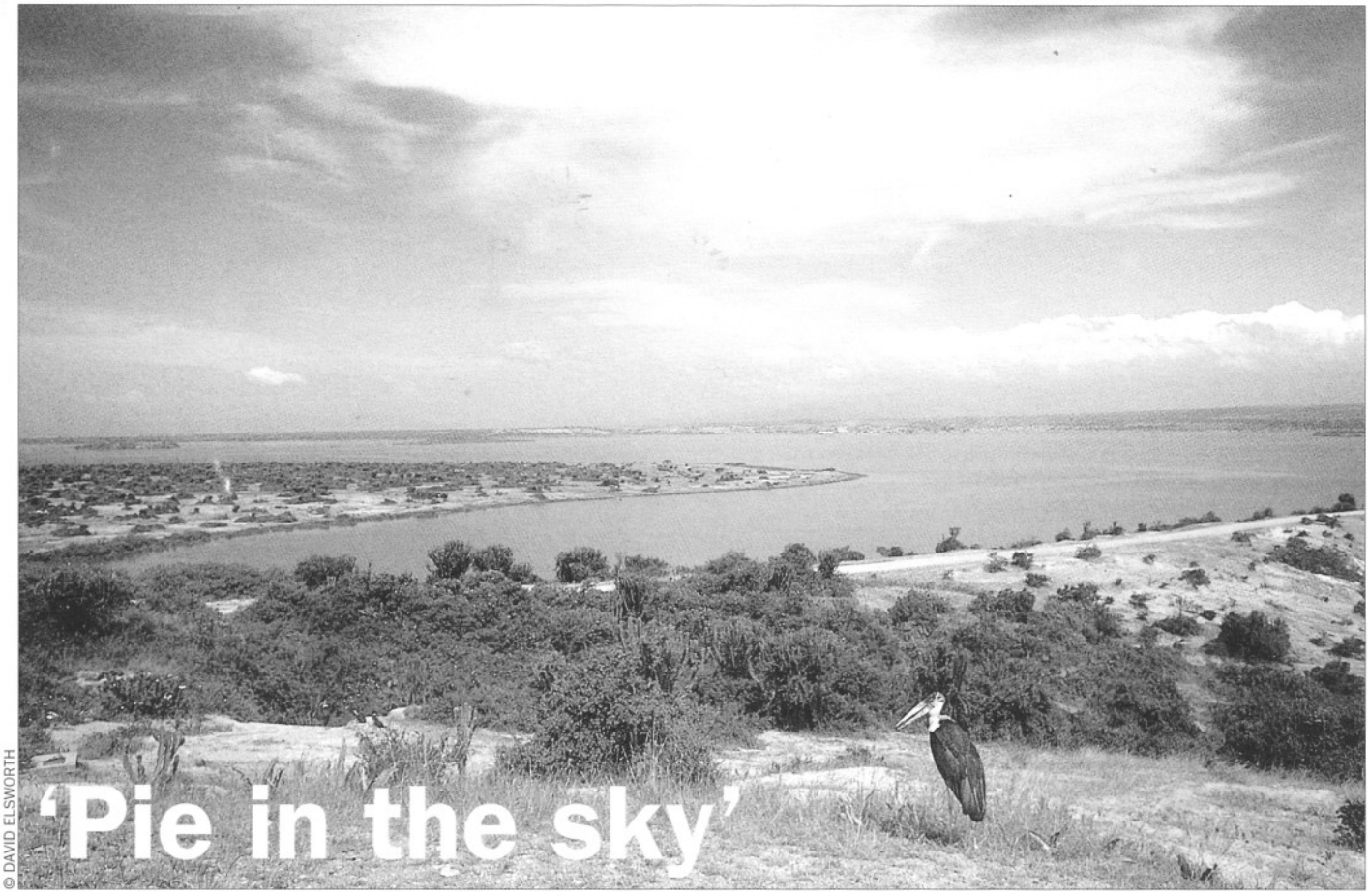
Global warming is drying out East Africa. Condoning the use of wildlife sanctuaries as 'dry season grazing grounds' is exacerbating factors leading to regional drought. Tsavo has been subjected to domestic livestock grazing on a vast scale over recent years, and I am sure that, already, some raptor species have declined as a direct result of this.

While it may be easy to relate the demise of (poisoned) vultures and susceptible tree-nesting eagles to human-induced factors, it requires more subtle thinking to extrapolate the threats to a small falcon nesting on a cliff. The consensus is that, while other large falcons can adapt relatively well to human conditions, the Taita Falcon cannot.

Whether the Taita Falcon can be guaranteed a future even within Tsavo remains to be seen.

Photos: © SIMON THOMSETT

While other large falcons can adapt relatively well to human conditions, the Taita Falcon cannot



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'Pie in the sky'

For now at least, this seems to be the Uganda Government's reaction to a proposal to build a golf course within the ***Queen Elizabeth National Park****. Long may such good sense prevail, writes* ***Arthur Mugisha****.*

Site of the proposed golf course (above)**: View from the grounds of the Mweya Safari Lodge on to one of the headlands jutting into Lake Edwards's Katwe Bay, NE of the Mweya Peninsula in Uganda's Queen Elizabeth National Park. This headland was to have formed part of the envisaged new golf course.**

A proposal to build a golf course within the northern sector of Uganda's showpiece Queen Elizabeth National Park (QENP) is understandably being viewed with alarm – and disbelief – in conservation circles throughout East Africa.

A stretch of Lake Edward's scenic NE shoreline overlooking Katwe Bay from the edge of the Mweya Peninsula *(Map, facing page)* has been identified as the site for the proposed golf course, which is the subject of an application put before the Uganda Government earlier this year by the powerful Madhvani Group of Companies – Uganda's (and also one of the world's) wealthiest industrial and business conglomerates.

The Madhvani Group acquired the Peninsula's Mweya Safari Lodge in 1992 on a 30-year lease. The historic lodge is a prime property within the Group's leisure and hotels portfolio. The Group argues that a world-class golf course would help to lure more tourists to the Park, and that increased tourist traffic through the lodge (which already boasts year-round occupancy levels of close to 80 %) would enable the Group to achieve a fair return on its investment.

In the Saturday 15 April 2006 edition of Uganda's *New Vision* newspaper, regular columnist Mr John Nagenda – who is also a Senior Advisor to Ugandan President, Yoweri Museveni, on Media Affairs – confirmed that Mayur Madhvani, the joint Managing Director of the Madhvani Group, had approached Uganda's Minister of Tourism, Trade and Industry in connection with his cherished 'dream' of building an 18-hole golf course within the QENP.

The Minister is even quoted as having defended the golf course application. Writes Mr Nagenda, "The following words sent a chill down the spine of every right-thinking Ugandan: *'That park will not remain just a jungle fit for animals.'*

"These were not the words of a water-seller in Wankulukuku," he points out, "– or a landless peasant abutting the park. They came from the mouth of the Hon Daudi Migereko, MP, the Minister of Tourism, Trade and Industry, who by virtue of this office is the political boss of the Uganda Wildlife Authority [UWA] and a principal adviser to HE the President – and, oh yes, a great friend too of Mayur Madhvani's."

In a cabinet reshuffle following Uganda's recent General Election, Hon Migereko has since been handed the Energy portfolio instead. His successor as Minister of Tourism, Trade and Industry is the Hon Mrs Janat Mukwaya.

Mr Nagenda, who has recently completed a three-year term as Chairman of the UWA's Board of Trustees (and who is expected soon to hand over this responsibility to a new Chairman, Andrew

Kasirye, a prominent Kampala lawyer), has a reputation for not mincing his words. "Would anyone want the Museveni era to be remembered," he asks rhetorically in his column, "for the shoddy robbery of land from our noble animals for a mere round of golf? For shame!"

The Madhvani Group's hankering to build golf courses around the properties it has accumulated on prime wilderness sites in Uganda is nothing new. "While I was the UWA Chairman," recalls Mr Nagenda, "we did offer Mayur alternative sites – well away from prime wildlife habitats – that would be much less controversial from the point of view of conservation interests, including our own."

Established in 1952, the 1,989-km² QENP is one of Uganda's oldest national parks. Until the early 1970s it was among the richest wildlife havens in Africa, renowned above all for harbouring the continent's highest concentration of mega-herbivores – including elephants, buffaloes, and hippos. Today, as the QENP continues to recover from the catastrophic battering it took under Idi Amin's brutal dictatorship (1971–1979), game-viewing tourism is once again in the ascendancy.

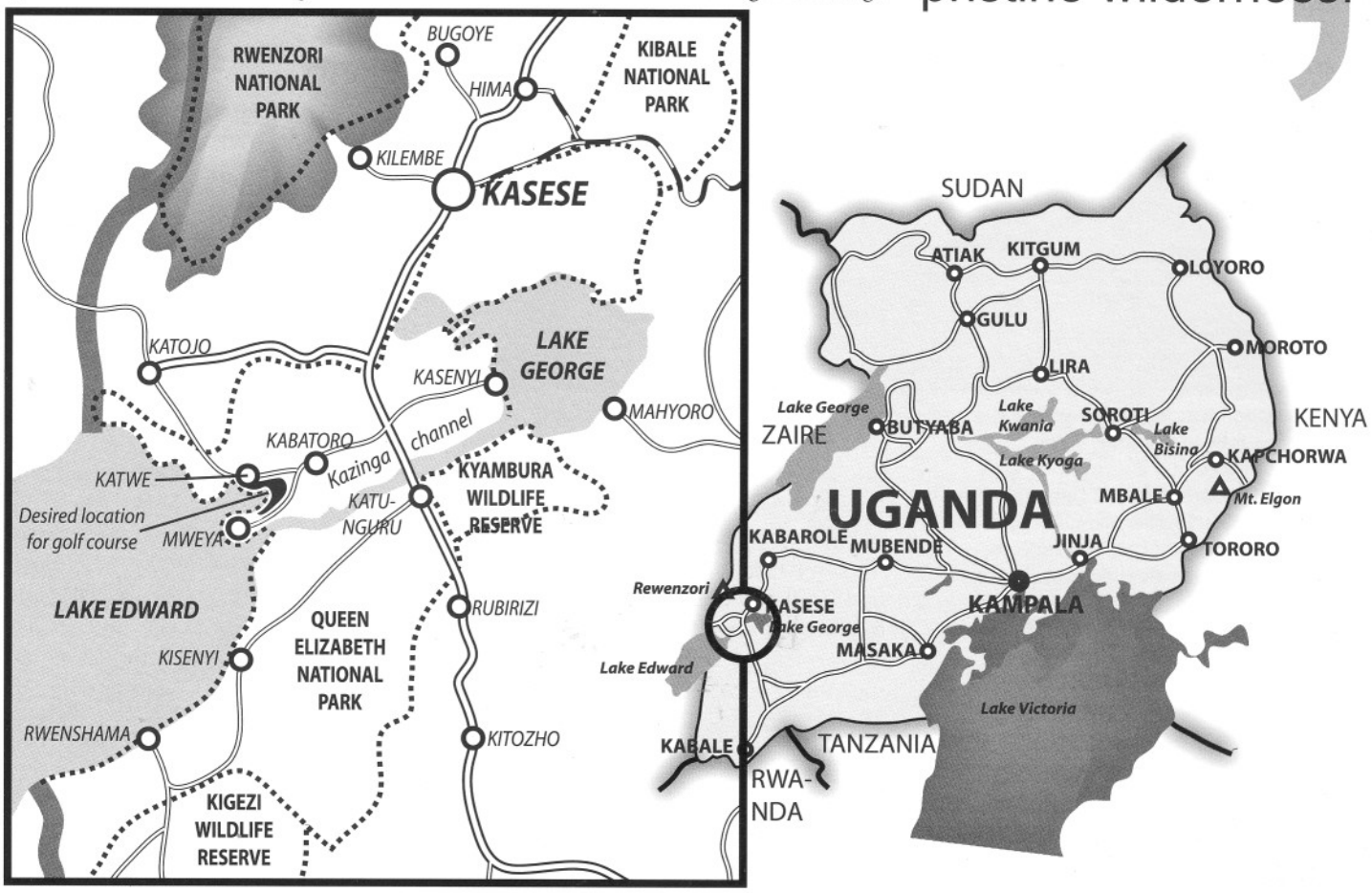
The southern (Ishasha) sector of the Park, characterised by flat, open grassland and patchy scrub, is again a stamping ground for some of the largest herds of elephants to be found anywhere in Africa. Their recovery, alongside that of the area's buffalo and Uganda Kob populations, not to mention the celebrated Ishasha tree-climbing lions and other predators, has been nothing short of remarkable.

The northern sector of the Park, closest to the foothills of the Rwenzori Mountains, is pitted with explosion craters, some of them now filled with water – the result of heightened volcanic activity here during the late Pliocene. Recovery in this sector, encompassing the area to the north of the Kazinga Channel linking the two Lakes, Edward and George, will continue to be hampered, however, by extensive human activity and settlement inside the Park.

Besides the townships of Katwe, Kabatoro, and Katunguru, there are – within the Park's northern sector, along the shores of the two lakes and flanking the Kazinga Channel – at least 14 fishing villages, each housing between 600 and 700 families, amounting to an average of about 2,500 people per village. The towns and villages, coupled with the many roads that crisscross the area, and the presence of extractive industries (such as salt mining in Katwe and lime works at Dura in the NW), mean that only around 10 % of the northern QENP can be considered pristine wilderness.

The Mweya Peninsula, jutting out into Lake Edward and overlooking the Kazinga

"Towns and villages, coupled with all the roads that crisscross the area, and the presence here of extractive industries (such as salt mining and lime works), mean that only 10 % of the northern QENP can be considered pristine wilderness."

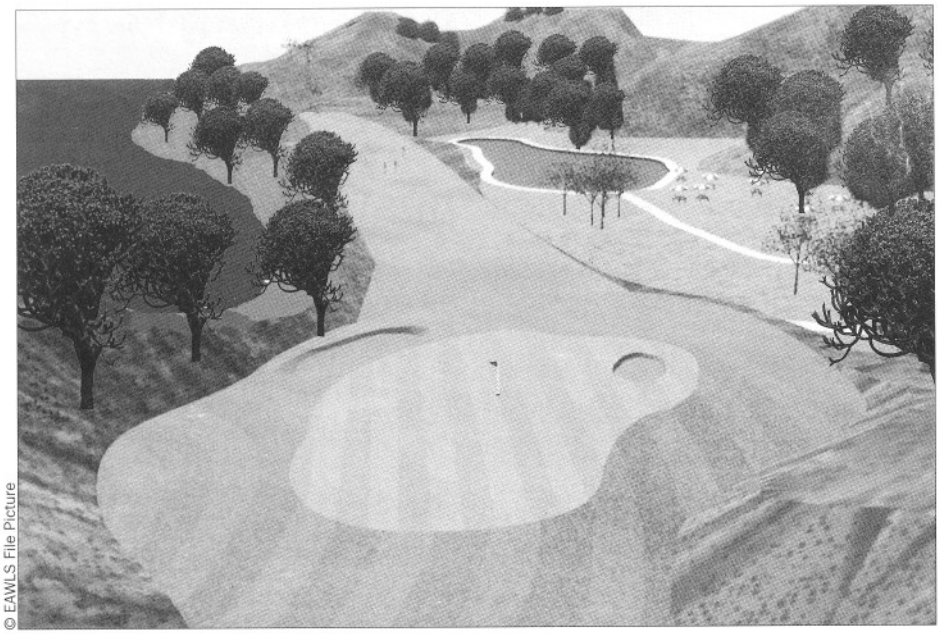


> This part of the shoreline is a vital stopover for elephant herds on the move between Ishasha and Lake George. Their presence here at certain times of the year is one of the Park's great tourist spectacles.

Channel to the SE, is the site, not only of the Mweya Safari Lodge, but also of the QENP's administrative headquarters. In having to accommodate the staff of both the Park and the lodge, the peninsula is (in conservation terms) another relatively disturbed area, having roughly 500 households with a resident human population, at any given time, of around 1,500 people.

Opportunistic scavengers – the warthogs, especially – are always much in evidence on the peninsula, as are waterbuck and other gregarious species that have learned to use the peninsula's human traffic as cover against being pursued by lions, leopards, and other shy predators. Lions, however, do sometimes venture on to the peninsula at night.

Human activity aside, what intact wilderness does still remain around Mweya, and in the northern sector of the Park, is hugely important, both as a habitat for resident wildlife and in providing dispersal corridors or seasonal grazing grounds for those wild species on the move between different parts of the QENP.



© EAWLS File Picture

Not a good idea: Notwithstanding the immense folly of allowing a golf course (artist's impression above) **to be built within the heart of one of Uganda's best known wildlife tourist attractions, there is every chance that such a venture, were it ever to see the light of day, would prove a costly flop, resulting in the impoverishment of the entire area.**

In particular, that strip of undisturbed bush extending around Katwe Bay from the Mweya Peninsula on Lake Edward's NE shoreline offers a secure refuge, not only for many of the lake's hippos, but also for the Banded Mongooses made famous by all the years of research carried out here by scientists from Cambridge University's Department of Zoology. This part of the shoreline is a vital stopover, too, for herds of elephants making their way at certain times of the year from Ishasha in the south to Lake George, and back again. Indeed, the sudden appearance here of hundreds of assembled elephants is undeniably one of the Park's great tourist spectacles.

Yet it is here – in one of the *few* areas of genuinely undisturbed riparian habitat in the northern QENP – where the Madhvani Group of Companies is now proposing to construct a luxury golf course!

This rash proposal flies in the face of all the existing management plans, which were drawn up with the priority aim of securing the future, for generations of Ugandans to come, of the QENP *as a conservation area*. As such, and fully in keeping with the Park's status as a UNESCO Man and Biosphere Reserve, the emphasis rests squarely on working hand in hand with local communities (that for centuries have lived within the area now designated as the Queen Elizabeth National Park) to safeguard the integrity of this amazingly biodiverse area for the sustained benefit of its wildlife and people alike.

The idea – that a recreational amenity intended for the sole use of foreign tourists should somehow be given precedence over the concerns of local people – seems unbelievable! What recreational activities have previously been considered in the QENP's management planning have all been geared towards ensuring the survival, first and foremost, of the Park's priceless biodiversity. The commercial interests of a single wealthy business tycoon cannot, and should not, be allowed to hold sway.

And then, of course: It is by no means certain, even in the unlikely event of the Ugandan Government's agreeing to this selfish and unethical proposal, that 'golf tourism' in this part of the world would ever really catch on. The Mweya Safari Lodge, in any case, is already over sold as a destination for game-viewing tourists, so where – one wonders – would the necessary additional accommodation infrastructure be found?

A more likely scenario, were such a golf course ever to take shape, is that the idea would soon prove a costly flop, which – in the process – would irreparably destroy the proven attraction presented by the wildlife and so result in the impoverishment and collapse of the entire northern sector of the National Park.

Some disquieting recent Ministerial utterances notwithstanding, the Uganda Government is – for now at least (as Mr Nagenda is at pains to stress in his 15 April 2006 *New Vision* newspaper column) – simply treating the Madhvani Group's proposed golf course in the QENP for what really is: mere pie in the sky. Let us hope, then, that the Uganda Government will now dismiss this senseless proposal once and for all.

A former Executive Director of the Uganda Wildlife Authority (UWA), **Dr Arthur Mugisha**, now based in Nairobi, Kenya, is a Technical Specialist with **Fauna & Flora International**, covering the entire eastern African region.

Mass stranding

This year's beaching of dolphins on northern Zanzibar is East Africa's first experience of a Cetacean mass stranding in more than 60 years.

The carcasses of more than 500 **Common Bottlenose Dolphins**, *Tursiops truncates*, were on 27–28 April 2006 washed ashore on beaches along Zanzibar's NW coast in what experts say are "mysterious circumstances".

On the afternoon of 27 April, local fishermen observed large pods of the dolphins in the channel between mainland Zanzibar and the Island of Tumbatu. That night, from about 9:00 p.m., the fishermen began hearing "strange thrashing sounds in the surf," according to a *Statement* compiled by marine experts **Narriman Jiddawi** and **Omar Amir** and issued in early May by Zanzibar's **Marine Mammal Project**.

At the time, the northern part of Zanzibar was experiencing strong winds and stormy weather, as well as tidal surges under a new moon.

The next morning, the island's northern beaches of Nungwi, Kendwa, Kikokwe, and Kigunda were strewn with the carcasses of hundreds of stranded dolphins. Hundreds of other carcasses could be seen floating on the sea across the deep channel between mainland Zanzibar and two small islands known locally as Kiwa Kikubwa and Kiwa Kidogo, the MMP *Statement* adds.

Zanzibar's Fisheries Department moved in quickly to warn local residents, some of whom had wasted no time in carving up the carcasses (both for meat and for making *sifa*, an anti-fouling material used in boat repair), against eating the flesh of the dead dolphins. Instead, residents were instructed to bury all the carcasses, from which – come the evening of 28 April – a "heavy stench" was emanating. By the afternoon of 2 May, at least 450 of the dolphin carcasses had been interred, the *Statement* says.

Just how these dolphins came to be stranded *en masse* on northern Zanzibar remains a mystery. An examination of the carcasses revealed no sign of physical injury, or of any dolphin's having been subjected to oil pollution. The stomachs of all those dead dolphins that were subsequently dissected were found to be empty, and there was no indication whatsoever of poisoning as a possible cause of death.

Courtesy: MARINE MAMMAL PROJECT

"While the mass stranding of cetaceans (whales, dolphins, and porpoises) is known to occur periodically in various parts of the world (notably Australia, New Zealand, and Cape Cod), there is still no universally accepted explanation for this distressing phenomenon," Jiddawi and Amir state in their report.

"All we do know," they go on, "is that a mass stranding event, once started, tends to escalate rapidly, as the affected animals relentlessly follow one another ashore (even where there is clear access to open water), as though overcome by hysterical panic.

"A disorientation in the echolocation mechanism that dolphins (and other cetaceans) use for navigation and prey detection may result in pods losing their way, especially in shallower waters and after periods of stormy weather, and this in turn – it is widely believed – might trigger a mass stranding.

"So strong are the social bonds within a pod's hierarchical structure, that once one influential animal beaches itself, the inclination for other dolphins in the pod to do likewise may overrule the survival instincts of the individual animals."

Mass strandings of cetaceans have been recorded throughout history. "So recent human-induced factors – such as noise pollution – are unlikely, in themselves," the two scientists point out, "to be wholly responsible for such calamities."

Common Bottlenose Dolphins (known locally on Zanzibar as *pomboo weusi*), along with other highly gregarious cetacean species that normally live in deep water far off shore, appear to be especially susceptible to mass stranding, the scientists add.

Zanzibar's last known mass stranding was in the 1940s, when more than 60 Pygmy Whales reportedly beached themselves at Mtoni, on the island's western coast, not far from the ancient Stone Town.

– reported by Gordon Boy

Once lucky

Paul Kirui *on how a plucky Thomson's Gazelle fawn endures a close encounter with Cheetahs, only to be overcome in the end by the elements.*

That wonders never cease is borne out by the events I witnessed during an early morning game drive in Kenya's Maasai Mara National Reserve on 26 February 2006.

There has for some time been a trio of male Cheetahs operating on Rhino Ridge, roaming south to the Burrungat Plains. I have twice watched this redoubtable trio bring down a full-grown Topi. And, on another couple of occasions, I have seen the same three Cheetahs bring down one-year-old wildebeest.

So attached are these three Cheetahs that any one, on making a kill, will not start feeding until the other two have arrived. The only sign of jealousy that I have seen among them has arisen where the trio encounters a female in estrus; for then, only the strongest one will cover her.

On our game drive, the Cheetah trio – I noticed – had just stumbled on a newborn Thomson's Gazelle, which had been lying hidden in the grass. The fawn's mother, having taken flight, was looking on from a safe distance in the company of some other Thomson's Gazelles and a few Topi.

For about 40 minutes, the three male Cheetahs toyed with the little fawn, which was only a few hours old and still far from steady on its legs. All three Cheetahs then lay down for a catnap. Amazingly, the unsuspecting fawn proceeded to lie down in the grass beside them. Whenever the fawn shifted its position, however, the eyes of one or more of the 'napping' Cheetahs would immediately pop open.

After about two hours, all three Cheetahs got up and departed the scene, leaving the gazelle unharmed. What had stopped them, I wonder, from killing this fawn for their breakfast? Fortunate to be alive, the reprieved fawn shuffled into some thicker grass nearby, and – curling up there – was soon all but invisible again to would-be predators.

Returning in the afternoon, I found the well-camouflaged fawn had moved again, and was now lying wedged in the shallow depression of an eroded vehicle track – a dangerous spot where it might easily be run over. I felt like moving it, but quickly restrained myself from interfering with the course of nature. A heavy storm was approaching, posing an added danger, as the rut in which this fawn was lying also serves as a run-off trench for rainwater.

I was careful to depart before the storm broke, so as to avoid getting caught on the wrong side of the Olare Orok River, which in a storm is rapidly transformed into a raging torrent. I wondered whether the little fawn – which, surely, would be very hungry by now, having not been suckled all day – would survive.

Early the next morning, I was saddened to find the gazelle fawn lying dead in the trench, having evidently succumbed (as I had feared) during the night. Its mother was still pacing about forlornly, just a short distance away.

The behaviour of the three Cheetahs, in sparing this little fawn the day before, has continued to puzzle me.

I witnessed something similar in the late 1990s, and my report was subsequently published in CC Africa's *Ecological Journal* for 2000. On that occasion, a female Cheetah with three young cubs in tow had been crossing the plains near the foot of the Olo-ololo Escarpment in the western part of the Reserve, when she flushed out a Thomson's Gazelle fawn which had been hidden in the grass. Again, the fawn could not have been more than a few hours old.

The female Cheetah at once 'captured' the fawn, holding it down for her cubs to play with. Young and inexperienced, the cubs did not know what to do with the fawn, but they toyed with it all the same for almost an hour. On tiring, they went over to where their mother was resting and lay down in the grass beside her. The fawn too lay down with the resting Cheetahs.

When the female Cheetah stirred and began to saunter off (possibly in search of larger prey) both cubs and gazelle fawn followed her. The cubs were doing their best to shrug off the fawn. One cub would ambush it, and hold it down until the other Cheetahs had gained some ground, before releasing the fawn and bounding off to rejoin its family. Another cub would then do the same, until the exhausted fawn – no longer able to keep up – took to hiding itself in a shallow depression in the grass.

Soon afterwards, the female Cheetah flushed a second gazelle fawn that – being a couple of days' old – was significantly larger. She wasted no time in running after this second fawn, killing it, and feeding on it with her cubs. The mother of the first fawn, meanwhile, returned to comfort and to nurse her lucky baby, which had run the gauntlet of playing with Cheetahs but without having also been made to pay the ultimate price!

Paul Kirui, a Silver-rated member of the Kenya Professional Safari Guides' Association (KPSGA), has been based for many years at the Heritage Hotels' Mara Intrepids Club.

"The three male Cheetahs toyed with the little fawn for about 40 minutes. All three Cheetahs then lay down for a catnap. Amazingly, the unsuspecting fawn proceeded to lie down in the grass beside them."

Party time!

Dino J Martins *on how, and why, all comers are welcome to a flowering Euphorbia's sugary feast.*

Photos: © PAOLO TORCHIO

It comes as a surprise to some to learn that flowers engage in sex. In reality, a flower's every feature – whether its colourful petals, exquisite shape, or enticing scent – is but part and parcel of the means to a single end: that of pollination.

Effective pollination involves the transfer of viable pollen from anthers (the 'male' component) to a stigma (the 'female' component) of a receptive flower. Conveying pollen to a stigma, a core process in floral reproduction, results in fertilisation – and in the subsequent development of fruits/seeds.

In their sexual relationships, flowers appear to have evolved every conceivable variation and strategy that will enhance the chances of effective pollen transfer to the stigmas of their own species.

The importance of 'out-crossing' – that is, transferring pollen between the flowers of different plants of the same species – cannot be overstated; for plants, just like animals, suffer ill effects from repeated inbreeding. Mating through pollination with separate, less closely related individual plants of the same species is ideal for healthy seed production.

Being immobile and having flowers that may be spaced far apart, plants depend on a variety of mobile 'agents' to transfer their pollen. Transporters may take the form of mere wind or water, but – more commonly

– these agents are living creatures, such as insects, birds, and bats.

As insects have been around for a long time, and have diversified in synchrony with flowering plants over many millions of years, they are the most important and abundant group of pollinators.

Some flowers go to great lengths to court and train individual pollinator species. With the help of complex signals (and no little deception in some cases), they entice and manipulate an insect species into carrying pollen between flowers.

Other plants engage the services of scores of different kinds of insect pollinators by flooding the nectar market with thousands of flowers. Such plants, known as 'generalists' because of their open, accessible flowers and because of the great diversity of insect visitors their flowers attract, include the familiar Acacias and Crotons ... and this magnificent **Euphorbia,** *E. breviarticulata* **(pictured).**

Grown from a cutting collected in 2000 from coastal Kenya's Kwale District, this particular plant – ablaze with flowers, and teeming with insect life – was photographed in a private rockery in the Nairobi suburb, Karen, on the afternoon of 20 December 2005.

Euphorbias have a specialised inflorescence called a cyathium. This comprises a cup-like receptacle (the involucre), fringed with prominent, lobe-shaped glands and enclosing a single, central female (pistillate) flower and several male (staminate) flowers, each having just one stamen. Much reduced in structure, these unisexual flowers possess neither sepals nor petals.

In the case of *Euphorbia breviarticulata*, the cup-like involucres – bright yellow, and disposed in tight clusters on the apices of the stems – make for a spectacular floral display, visible from some distance away.

The stunning photographs shown here, all taken within a single, two-hour period, capture the frenetic diversity of pollinators that have come to visit this Euphorbia's cyathia to lap up the tiny beads of nectar secreted by these small, kidney-shaped glands on the rims of the involucres.

Visitors to the cyathia of East African tree-like Euphorbias include many species of wasps, ants, bees, beetles, and flies. Wasps, while not dependent on the cyathia for nectar (since most of them are also here to ambush insect prey), draw on the nectar for supplementary energy – and rank among a flowering Euphorbia's more common visitors.

Paper wasps (Family: Vespidae; Pictures **1, 8**), whose papery, multi-celled nests are familiar additions to our verandah eaves and hallway roofs, are often present at such gatherings. Social wasps that will sting quite readily if harassed, these common insects make their hanging nests from a mixture of chewed-up woody plant matter and saliva.

Large, colourful and noisy **Pompilids**, also known as **Spider-hunting wasps** (Family: Pompilidae; **2, 7, 12, 13, 22**), are also regular visitors. Their bold colouring and loud buzzing send a clear message to all would-be predators, as in 'I carry a mean sting!' These wasps also spend a lot of time on the ground below, searching for spiders, which they run down, sting, paralyse, and then stash away in subterranean nests to lay their eggs upon.

The **Mud-dauber Wasp** (Family: Sphecidae; **9**) is a solitary species whose compartmentalised nests, made of clay and often fastened to sheltered rocks or to the sides or corners of buildings, are stuffed with immobilised spiders.

A flowering Euphorbia also attracts any number of **parasitic wasps** (**10, 14, 16**), amazing insects that lay their eggs in the nests, or even inside the bodies, of other creatures, often caterpillars. Female **Gasteruptiid Wasps** (**14, 16**) use their long ovipositors to insert eggs into the nests of other wasps and bees.

The bright colours of the **Potter Wasp** (Family: Eumenidae; **20, 21**) serve as both a vivid warning signal and an advertisement to others of its own species. These wasps are solitary, and use mud to sculpt their nests.

Flies also come in droves to this sugary feast. The large-eyed **Hoverfly** (Family: Syrphidae; **3, 4, 6**), whose orange-and-black body markings resemble those of a bee, is just bluffing, being totally innocuous. The common **Bluebottles** (Family: Calliphoridae; **11**) never miss their chance, either, to partake of a free meal.

A more unusual visitor is the parasitic **Tachinid Fly** (Family: Tachinidae, **19**) with the spiny brown abdomen. These flies lay eggs in the nests and bodies of other creatures, including the caterpillars of various moths that are known crop pests. In helping to control infestations of voracious caterpillars, these can be very useful insects to have around.

The goofy-looking, red-eyed, multicoloured fly (**15**) is related to the **Hoverflies**, and spends a lot of time feeding from the cyathia of flowering Euphorbias – as does the smartly suited bee-like fly (**18**), which is yet another **Hoverfly**.

Not to be left out of this nectar-feeding frenzy are the tiny, elegant **Plume Moth** (**17**) and the strikingly conspicuous **Net-winged Beetle** (**5**), whose bright colours warn of its distasteful, toxic nature.

All of these different insects are contributing in some way to the pollination of the Euphorbia's cyathia. Some may be passing through opportunistically, while others may return again and again. The Euphorbia plant, taking a gamble, allows all and sundry on to its cyathia, hoping that some of its visitors – at least – will, at some point, serve as effective pollinators.

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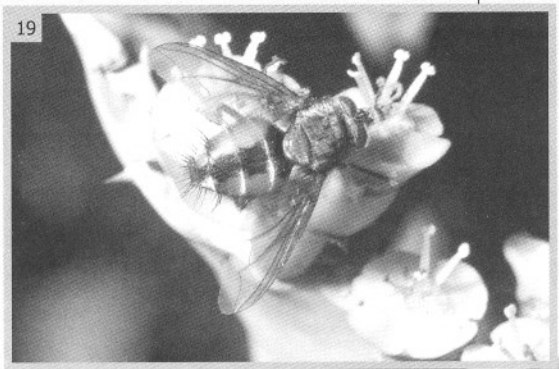

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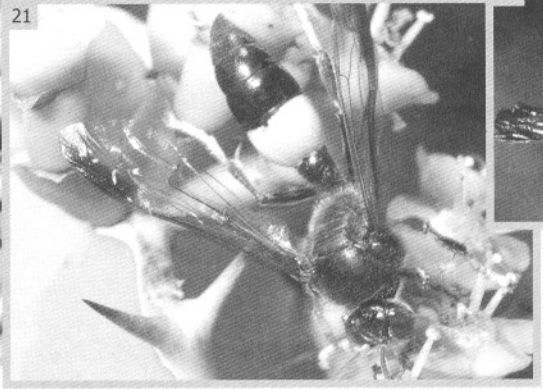

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Dino J Martins gratefully acknowledges assistance received, while working on this article, from the Nairobi botanist **Quentin Luke**.

POSTA
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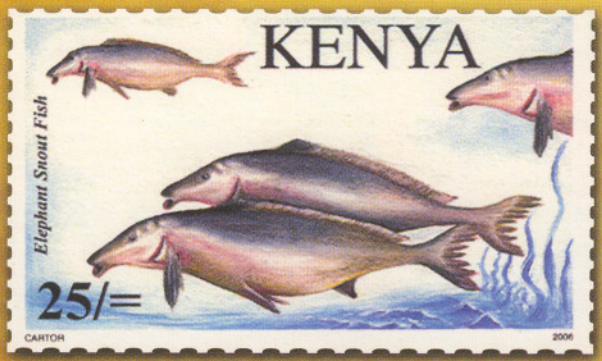
Fishes of Lake Victoria

FIRST DAY OF ISSUE: 4th MAY, 2006

Fish are the lowest class of vertebrate (backboned) animals which live in fresh or salty water. They breathe oxygen dissolved in water by means of their gills, passing water through the mouth and out under the gill covers. They swim by side ways movement of their tail, guiding and balancing themselves with the fins overlapping scales, which cover the body. Fish have no eyelids; they use their nostrils for smelling but not breathing and taste by means of smell appendages near the mouth. The ear has no outside part and teeth are outgrowths from the jawbones. Fish are used as food.

Lake Victoria is the largest freshwater lake in Africa and second in the world. It is the source of River Nile. The water mass covers the three East Africa countries i.e. Kenya, Uganda and Tanzania. Fish species in Lake Victoria are facing extinction due to over fishing and also from the Nile Perch, which literally feeds on them. The biggest threat is caused by trawler fishing and use of poisons. Sedimental load in the lake as result of erosion has made the waters more turbid leading to a decrease in growth of algae which is important to some fishes. The sediments have also given rise to the water hyacinth Eichhoraic crassipes a floating water plant which blocks light from the water hence decrease in growth of algae.

To create awareness on some of the fishes of Lake Victoria and promote conservation efforts, Postal Corporation of Kenya, issued a set of four stamps featuring some of the fishes.



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The Serengeti's Moru Kopjes

Graham Mercer *explores the timeless allure of an ancient rock 'archipelago'.*

> "These frogs might have chosen the wrong house, but they could hardly have chosen a better locality than the ancient, fascinating 'archipelago' of Moru."

The outcrops of rocks known as kopjes (pronounced "kop-ees") – whose Afrikaans name means 'small head', hence 'hill'– occur in many parts of East Africa, but it is the ones found in the Serengeti that concern us here, in particular the Moru Kopjes.

A group of kopjes might cover a few square metres, or – in the case of Moru – many hectares. Each outcrop consists of huge boulders, composed principally of brownish-grey gneiss and granite. These piles of rock are the still-eroding remnants of ancient hills that were almost completely buried by ash-falls from nearby volcanoes such as Ngorongoro, Sadiman, Kerimasi, and – more recently – 'The Mountain of God', Ol Doinyo Lengai.

The ash-falls created the shallow yet relatively fertile soils of the Serengeti Plains, rich in potassium, sodium, calcium, and other salts. Grasses grew, often cramped into dwarf forms by the shallow topsoil, and cropped into further acquiescence by the Serengeti's lawn-mowers-on-legs. Many grasses here are beautifully formed, but their delicate structures are deceptive; they are as tough as ballerinas. Conforming to the lie of the land, they make up the celebrated short-grass plains that extend in long, lilting undulations across the Serengeti–Ngorongoro border.

Above the sea-like swells of grass, the tips of the buried mountains protrude like islands. Subjected to widely varying temperatures, their exposed rocks split, characteristically in concentric shells, patch by patch, producing a jumbled gallery of weather-modified monoliths. Such 'galleries' often form picturesque compositions, but have a primaeval appeal also. Perhaps, with their shady overhangs, their ability to retain rainwater, and their colonies of animals and plants, they suggest shelter, safety and life-sustaining resources – the presence or absence of which meant life or death to our nomadic ancestors.

They certainly attracted hunter-gatherers (Seronera Lodge, for example, is built on a kopje that was once home to the Stone Bowl People, and before them to people of the Stone Age itself). Wandorobo hunter-gatherers lived in the Serengeti until recent times, and would surely have lingered among the kopjes. Presumably they would have been more concerned with self-preservation than with sitting around gnawing dik-dik bones and philosophising on the aesthetic merits of their surroundings.

Even now, something more primordially thrilling than the photo opportunity grips us as we drive among the kopjes. Today, we might be armed with cameras rather than with bows, and our picnic baskets might preclude the need to transform an unwary baboon into something resembling dinner, but the thrill is no less intense or ancient.

Talking of bows, there is – amid the profusion of plants growing in niches among the kopjes – the wild sisal, *Sansivieria ehrenbergiana*, once known as 'bowstring hemp' for obvious reasons. Other plants include the candelabra euphorbia (*E. candelabrum*), aloes (*Aloe volkensii, A. macrosiphon*), stunted figs (*Ficus glumosa, F. thonningii, F. Ingens*), lion's ear (*Leonotis nepetaefolia*) and, around the bases of the kopjes, blue or yellow hibiscus. Many of these plants are sustained even through the dry season by the water-retaining qualities of the rocks, with their impervious hollows, and by the generous run-off of water into surrounding niches and soils.

The kopjes attract animal as well as plant specialists. The most obvious are Rock Hyraxes, highly sociable, highly edible – and, as such, near the unpleasant end of a frighteningly long food chain. The similar Bush Hyrax (*Heterohyrax brucei*) is often found alongside its Rock counterpart. Slightly smaller and greyer than its cousin, the Bush Hyraxes have softer fur and white eyebrows.

Dr Richard Estes notes that the two species frequently "share the same rocks and associate more closely than any two known mammals, except for monkeys that live in multi-species troops". Hyraxes certainly have an interesting past; fossil beds in Egypt have convinced paleontologists that 36-million years ago hyraxes were the most important medium-sized grazing and browsing ungulates in Africa, with as many as seven genera, one containing hyraxes as big as hippos.

This sounds like a Verreaux's Eagle's dream and nightmare all in one, for while the Verreaux's (*Aquila verreauxii*) pounces on hyraxes as readily as hungry children do on pizza (hyraxes are said to comprise as much as 90 % of the eagle's prey), a hyrax the size of a hippo would surely cause a few flutters on a Verreaux's flight deck.

The large black eagle, "finest in the genus *Aquila*" according to Leslie Brown, often patrols the kopjes, sometimes hunting co-operatively, with one bird's flying over a hyrax colony while another swoops down, a little unsportingly, from a different direction. The eagles are born to murder; the female lays two eggs in a precariously placed nest high on a cliff face, and within three days of hatching the larger of the two chicks heaves his sibling into eternity.

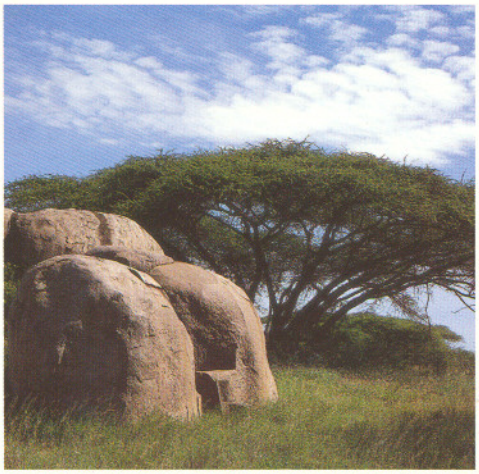
Kopjes such as the Moru are also ideal habitats for certain snakes, among these the Black-necked Spitting Cobra (*Naja nigricollis nigricollis*) and the Puff Adder (*Bitis arietans*). Like most snakes, both are largely nocturnal, although the cobra often basks on the warm granite of the kopjes by day.

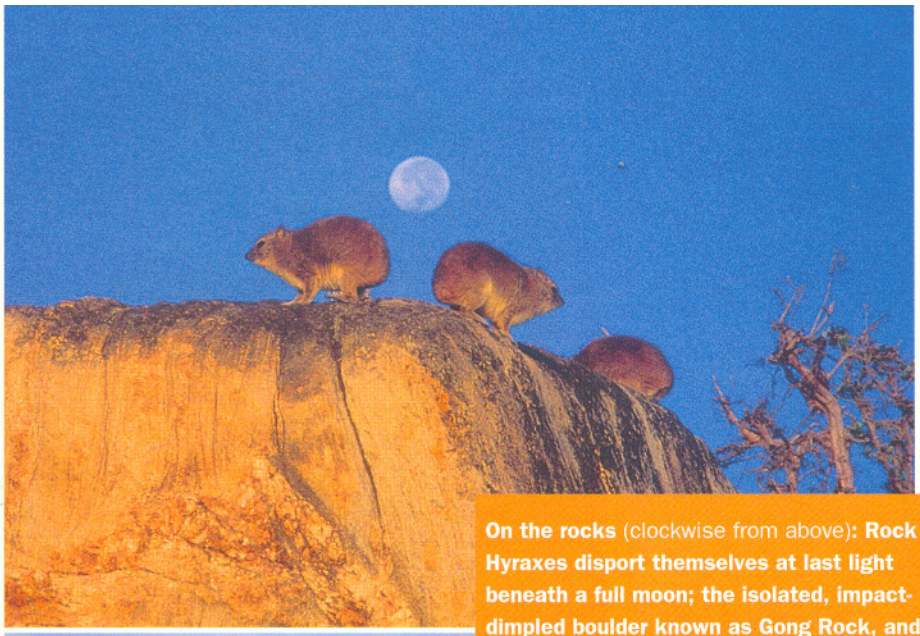
A very much more showy reptile in this environment is the Rock Agama (*Agama agama*), often known as 'the Rainbow Lizard', as the male is resplendent with an orange or coral-pink head, a turquoise-blue body and purple legs and tail, as though embroidered in brightly-coloured beads. This colouring is intended to warn off other males, and to impress the much duller females. Males can 'switch off' into a faded colour phase, to express different moods or intentions, and are said (like some of us) to grow duller as the day progresses.

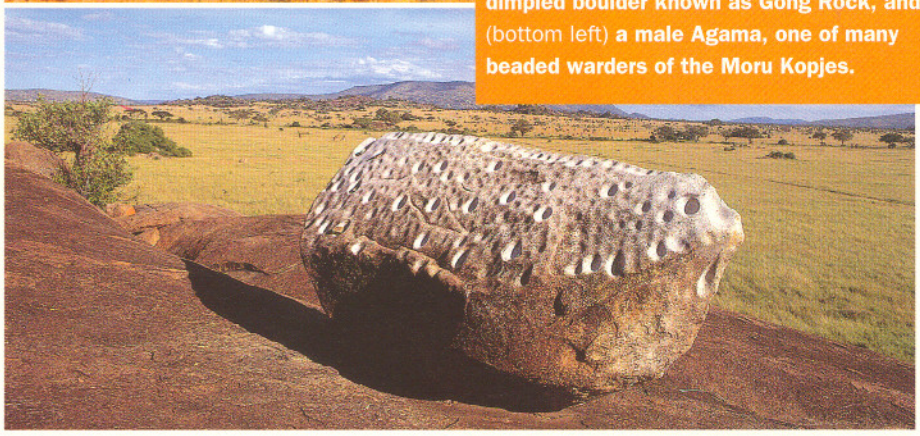
Another highly specialised if less glamorous reptile adapted to life on the kopjes is the Pancake Tortoise (*Malacochersus tornieri*). Pancake Tortoises somehow bring out the schoolboy humour in even the grimmest of old Africa hands ("Do they eat crêpe suzette?"). They feed mostly on grasses and other vegetation. Their common name stems from a flat carapace that allows them to live with some security in crevices among the boulders – wedged in, if necessary, with their stubby legs.

The kopjes also support a very diverse and sometimes uncommon bird life. Fischer's Lovebird (*Agapornis fischeri*), the White-rumped Swift (*Apus caffer*), the Grey-backed Camaroptera (*Camaroptera*

'Primaeval allure': Shapely boulders (top, facing page), **some emblazoned with rock art** (far left) **of recent origin, provide good cover for napping 'kopje cats'** (centre).







On the rocks (clockwise from above): **Rock Hyraxes disport themselves at last light beneath a full moon; the isolated, impact-dimpled boulder known as Gong Rock, and** (bottom left) **a male Agama, one of many beaded warders of the Moru Kopjes.**

brachyura), the White-browed Scrub Robin (*Circotrichas leucophrys*), the Red-rumped Swallow (*Hirundo daurica*), the Rock Martin (*Hirundo fuligula*), Hildebrandt's Starling (*Lamprotornis hildebranti*), the Slate-coloured Boubou (*Laniarius aethiopicus*), and the striking Purple Grenadier (*Uraeginthus ianthinogaster*) are among the species which occur most frequently.

All these specialist plants and animals, as well as many a non-specialist, might be encountered on or around the Moru Kopjes, within easy driving distance of several lodges and camps, notably the Sopa and Kusini. There are also some fine campsites in the area.

Location is Moru's great strength, lying as it does beside the Mbalageti River, athwart a main migration route and at the edge of a transition zone, where the long-grass plains phase into woodland. Just to the north is the central Serengeti with its plethora of resident game, while not far south are the short-grass plains that teem with wildlife in the 'green season'. The Gol Kopjes, another 'green season' hotspot, are only an hour-and-a-half's drive to the east.

All this makes Moru popular, which does not mean crowded, for the 'archipelago' is extensive and there are a number of alternative distractions nearby, such as the little soda lake, Magadi, which sometimes attracts flamingos. Moru, always interesting, is perhaps at its best in May and June, when the wildebeest rut takes place.

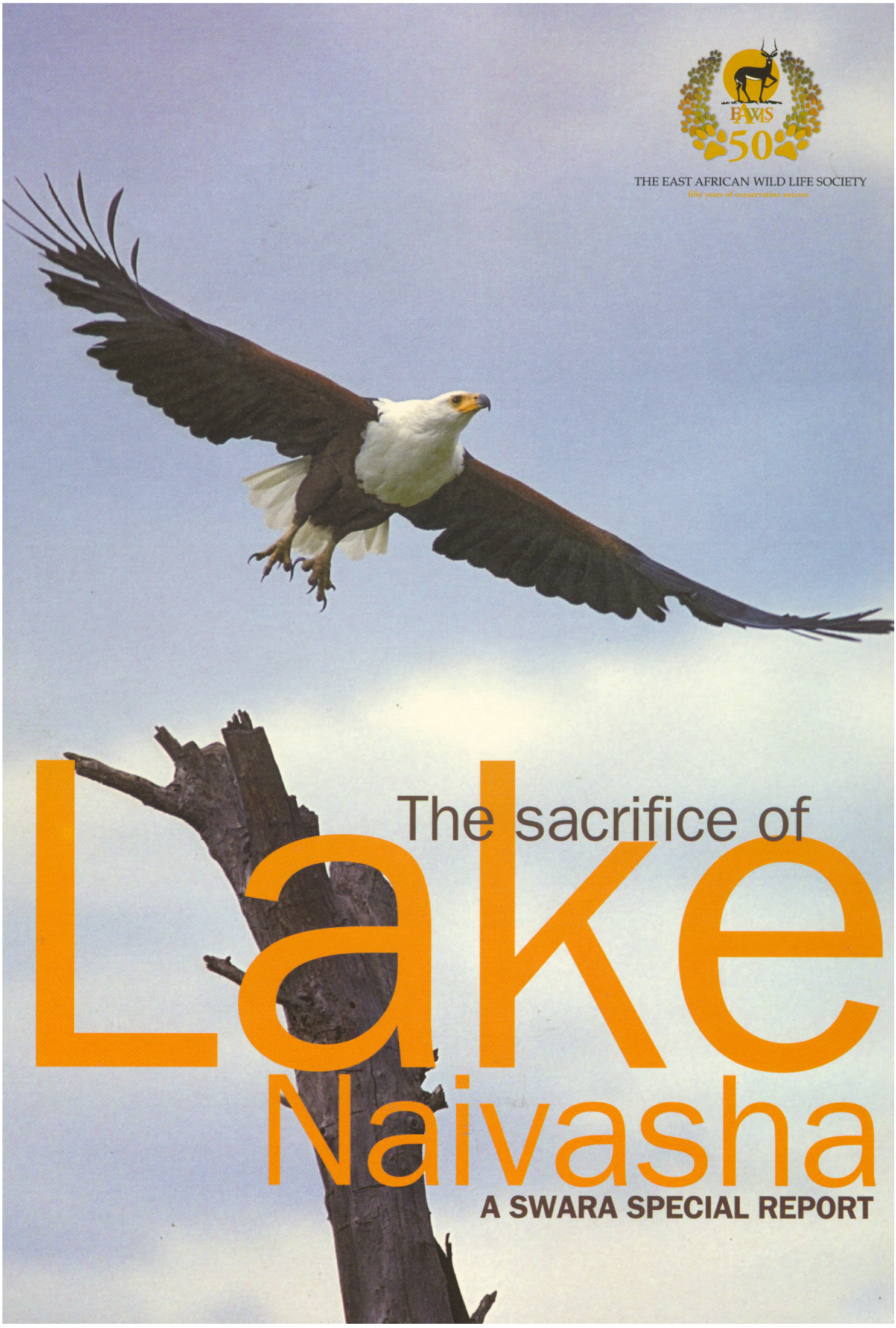
Apart from the awesome *passeggiata* of migrating wildebeest and zebras, big game around Moru includes Lions, Leopards, Caracals, Cheetahs, Thomson's and Grant's Gazelles, giraffes, buffaloes, Spotted Hyenas, Topis, Coke's Hartebeest, warthogs and Olive Baboons. Black Rhinos are occasionally seen: descendents of two female survivors of the slaughter of the 1980s, which were evidently found by a wandering male, perhaps from Ngorongoro. In a restricted area just south of Moru, there are now about 12 rhinos, one or two of which sometimes venture north to the kopjes.

There is human interest at Moru also, for on one kopje is an overhang where Maasai *moran* and herdsboys sheltered in the past. There are a few relatively recent paintings of Maasai origin on the overhang's outer rocks. On a nearby kopje is a boulder shaped like a segment of an orange, dimpled with small depressions where the boulder has been hammered, over the years, with hand-held rocks. When struck, the boulder reverberates with a dull ringing sound, and has become known as 'Gong Rock'. The natural 'gong' was perhaps beaten by a Maasai elder to summon young warriors, or – more probably – by the high-spirited *moran* themselves, just for kicks.

More surprisingly, in the 1990s, a young member of an American study group that had stopped off for lunch on the kopje discovered a tree frog hiding in one of the gong's dimples. He pointed out the frog to the party's leader, the herpetologist Dr Robert Drewes, who realised that this tiny, rough-skinned creature was new to science. On a later visit, Dr Drewes and his companions found more of these frogs wedged into cracks on the kopje, including in Gong Rock itself. The frog has since been formally described under the name *Hyperolius orkarkarri*. Its specific name derives from the Maasai word for 'gong'.

Why frogs should have chosen to live on Gong Rock is a curiosity, for they must suffer the most horrendous migraines during the peak season, when tourists and their guides hammer the rock with gleeful abandon. But if these frogs have chosen the wrong house, they could hardly have chosen a better locality, at least in human terms, than the ancient, fascinating 'archipelago' of Moru.

For some of the information in this article, acknowledgements are due to **Matthew Trager** and **Sharoukh Mistry** (*Avian communities of kopjes in a heterogeneous landscape* – www.westminster.edu) and to **Robert C Drewes, PhD** (*Discovery of a New Treefrog* – www.calacademy.org).



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The sacrifice of Lake Naivasha

A SWARA SPECIAL REPORT

Photos: © PAOLO TORCHIO

The sacrifice of Lake Naivasha

***Dr David Harper** on how our modern civilization can destroy a lake through ignorance and greed.*

Part 1. **A Lake on the Edge**

In the past three years you have probably read some alarming newspaper articles about Lake Naivasha. The Kenyan national press now pronounces the lake 'dead' with remarkable frequency. The UK press specialises in highlighting the 'slave wages' of the flower workers around its shores, and – as I found out recently – will pick up a story only if it can pronounce imminent doom for species or ecosystems. There is a great deal of inaccuracy in what written about the lake, but sadly, as the saying goes, "There is no smoke without fire".

Naivasha is no longer the beautiful, world-famous lake that it was until 30 years ago. Before very long it could be a turbid, smelly pond, with impoverished communities struggling to eke out a living along its barren shores. Naivasha is being sacrificed – deliberately, some might say; certainly openly – and this sacrifice can be compared with a similar sacrifice, of the Aral Sea, under Russian communism in the 1970s.

What has happened, and who is to blame? While the blame can be shared widely among the citizens of a dozen or so nations, the bottom line is that none of us know or care enough collectively about what has been happening to the lake to stop the rot.

We are all sacrificing Lake Naivasha, so as to keep raising our standards of living and our lifestyles. The "we" includes the middle-class Nairobi resident who likes to see a vase of roses on his table; the London taxi-driver who likes the convenience of buying fresh beans from his supermarket all year round; the Maasai herdsman who wants 100 cows but has land enough to support only two; the Luo mother who has to collect water for her family to drink and for washing her family's clothes at the lake's edge because there is no piped water in her shanty-town.

Our sacrifice of the lake has come about in two ways. During the 20th Century we began – unconsciously – to alter the lake's ecology and stability beneath the water surface. This century, we are attacking the lake, using all our might and all our technology, from the landward side.

Part 2. **Changing the Ecology**

The downhill slide started eighty years ago. Nobody realised at the time that it was anything but a good idea to introduce a 'sport' fish – the Large-mouthed Bass – into the lake. An alien from another continent, its introduction came at the suggestion of none other than the most powerful man on Earth, the US President. That, however,

'Aliens' capital of the world': the ecology of Lake Naivasha has undergone dramatic changes over the past 80 years in the wake of a succession of introductions – some deliberate, others accidental – of more or less destructive invasive species of fauna and flora. Above: **This Coypu (or Nutria),** *Myocaster coypus*, **a large South American rodent that found its way on to the lake in the 1960s after having been released into the wild elsewhere in Kenya during the late 1940s, was photographed on a luxuriant shoreline mat of Water Hyacinth (another species native to South America) in 2005.** Preceding spread: **Demand for Naivasha water from all the flower farms** (such as those at bottom right) **mushrooming on its shores have resulted, over recent years, in a full blown assault on the lake's ecology from the landward side.**

was just the first straw of many, and has led to today's final straw. The saying, "It's the last straw that breaks the camel's back", is quite an apt one for Naivasha. Just think of the camel as the lake, and all of us with the straws.

Looking back over a balance sheet for Lake Naivasha in the colonial era through to the time of independence in 1963, the lake thrived, despite many other introductions. Following the predatory bass came tilapias, East African fish that were added for the bass to eat. The bass had long since gobbled their way through Naivasha's native fish – a small freshwater sardine found living in no other lake in the world. Nobody noticed this, however. The bass and the tilapias were responsible, meanwhile, for the build-up of a wonderful population of African Fish Eagles, the densest population on the continent by 1970!

Some of the other aliens were not deliberate introductions, but accidental arrivals – including the Coypu (a South American mammal, farmed for its fur), and *Salvinia* (a South American floating water fern once popular as an ornamental pond plant). These newcomers were a nuisance, but caused no lasting damage.

In the 1980s life started to become decidedly uncomfortable for the ecology of the lake – although not yet for the *people* of the lake. Government fisheries officers and their expatriate advisers had brought in more exotic species to help the developing country of Kenya to rake in some more dollars. One was the Louisiana Crayfish. Its introduction worked well for a few years, into the mid-1980s; indeed, the crayfish even became the toast of Parisian society for a while – thanks to airfreight.

The only trouble was, the crayfish became rather too fond of their new home, and proceeded to eat everything – literally every blade of greenery, every slow-moving animal (remember leeches?) – that lived beneath the water surface. After that, they had nowhere left to hide. The bass, helped by native species (ibises, storks, herons, spoonbills, and eagles) severely depleted the crayfish. And plants (even the water lilies) briefly returned in the early 1990s.

Sadly, this did not last, because yet another new alien – the South American water hyacinth – came to the aid of the crayfish by hiding them again from prying eyes, jaws and beaks. The hyacinth had already been spread around the tropics

by a fondness among water gardeners for a splash of colour, reaching Naivasha in 1988. Much more robust than *Salvinia*, this plant could root itself on the lakeshore even where the soil had dried up, just waiting for water again. It also grew much bigger than *Salvinia*, so much so that the crayfish could make burrows in its roots on the shoreline and in floating mats.

The hyacinth was not eaten by the crayfish, or by much else either, but when it died it sank and decayed. The mud of the lake was a wonderful thick black soup, because plenty of dead plants all through its history (papyrus, then *Salvinia*, now hyacinth) had sunk on to it and decayed into it. The warm temperatures, year round, produced a veritable broth of bacteria and dead plant matter. The crayfish were in seventh heaven, because they ate this too!

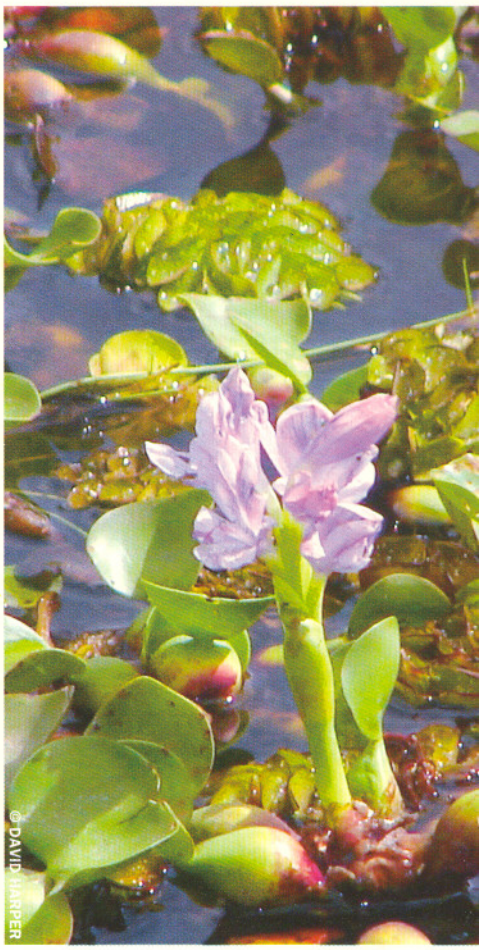
Little wonder, then, that the crayfish fishermen abandoned their old traps for plastic buckets in the 1990s. They just waded about in the shallows, turning over hyacinth plants and filled their buckets. It is a shame that crayfish did not make for locally popular *nyama choma*; the market, alas, was limited to hotels and *wazungu*.

By the time the last big 'El Niño' rains came in 1998, Lake Naivasha was truly an 'international city' of flora and fauna. Hardly a native species was left in the water. The good thing was that the bird populations seemingly remained stable, and the hippos were little affected. So the tourists kept coming. Even the great swarms of nuisance midges that used to get into your eyes and hair each evening had vanished (the crayfish had eaten them too), so there was nothing so pleasant as sipping a sundowner through a straw on the veranda, to toast in the new Century!

This was just the lull before the storm. The 'El Niño' rains also brought on to the scene an unexpected and unwanted newcomer, swept down from a fish farm in the catchment area: CARP. Probably no other fish has become so spread around the globe, or is so damaging ecologically. Naivasha now has two species, the Common Carp and the Mirror Carp, which are now almost the only species in the commercial catch. Fishermen have increased the mesh size of their gill nets, so as to be able to catch monsters more than half a metre long and weighing 20 kg.

Were it not for extensive illegal seine-netting in the shallows, this would be good for the lake, as all species would be able to breed in safety before growing to a catchable size. As it is, carp are hugely prolific. (A colleague of mine counted nearly a million eggs inside one female in April 2006.)

'Voracious appetites': The exotic Louisiana Red Swamp Crayfish, *Procambarus clarkii*, here photographed (below left) **on Lake Naivasha's southern lakeshore in April 2006, partially mired in a transient blue-green cyanobacterial 'algal' bloom, itself resulting from an increased inflow – in the absence, owing to land clearing, of a filtering fringe of papyrus – of fertilizers, human waste, and other nutrients. As the lake continues to get shallower, and warmer, so the advent of denser, toxic 'algal' blooms will become inevitable.** Below right: **Until the introduction of the Water Hyacinth, *Salvinia* – a South American floating 'fern' once popular as an ornamental pond plant (here pictured in among, and dwarfed by, the flowering hyacinth) – was the lake's main floral scourge.**



Despite the illegal catching of small fish in the shallows, the African Fish Eagles of the lake have benefited from the unexpected bonanza. They have been breeding well this century, and my wife, Maureen, has found that their population structure (if not their overall population size) has never been healthier since Leslie Brown's studies of 1968–72. The overall prospects for the lake are poor, however, because carp grub in the shallow mud, competing with crayfish, as well as predating upon them; their overall effect is likely to inhibit plant recovery, to maintain the loss of invertebrates, and to suppress the populations of tilapias.

Part 3. **Landscape Change and Lake Decline**

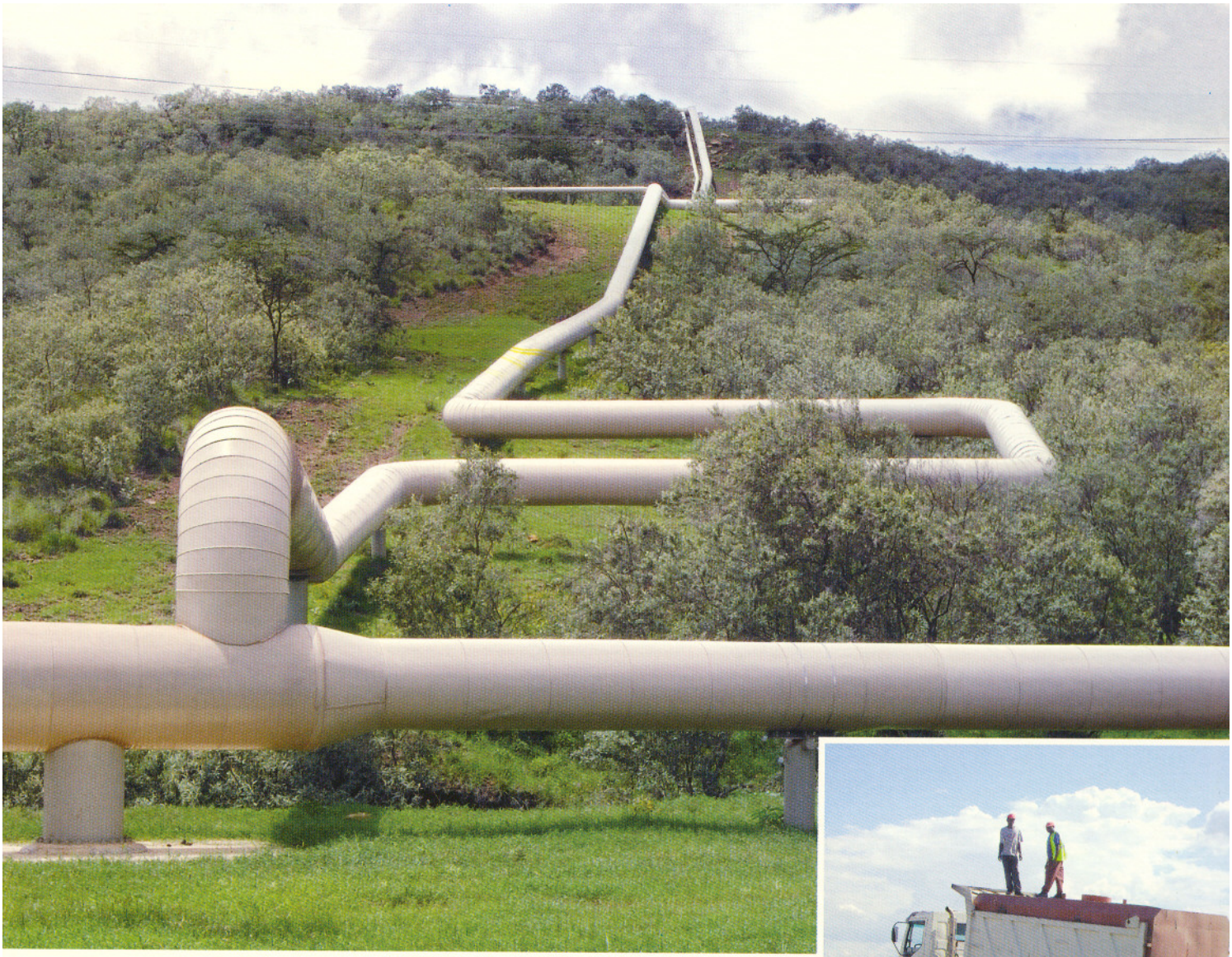
Landowners have, for the best part of a hundred years, always had the right to take water from Lake Naivasha. The riparian land was divided up in colonial days, when most plots would support a family and an agricultural business of some kind. Come independence, Kenya had just a few million citizens – only a few thousand of whom lived around Naivasha. So the demand for lake water then was not very high, either from people or from businesses.

Forty-three years of independence have seen enormous growth – in the numbers of people within Kenya, in the economic demands of all those people, and in the economic demands of other people outside Kenya. Lake Naivasha is meeting all these demands, without any regulation. If you think of each demand as a cluster of 'straws' sucking the lake dry, then you will begin to understand. There is a double problem, however: It is not just that the lake, its rivers, and their linked groundwater are being sucked dry to meet these demands; the waters running back into them are also turning the lake into a fetid cesspool.

So, whose straws are these? – Almost everybody's. Overseas, everyone who has ever eaten Kenyan beans, Kenyan strawberries, or gazed on Kenyan roses – and that is a good several million people – has bought Naivasha water. In Nakuru, as well as in Naivasha itself, residents and hotel guests drink Naivasha water. For Nairobi and other Kenyan cities (notwithstanding all the power cuts!), it is Naivasha water that runs the geothermal power plant without which there would be even more power cuts. And along the Kinangop Plateau, countless thousands of bowls of *ugali* are being made with Naivasha water.

Naivasha has a great deal of water to give – tens of millions of cubic metres every year – but the lake is being drained because we are using too many tens of

Invasive monster: The Common Carp, *Cyprinus carpio*, here seen being held aloft by a research scientist (below left), **is one of two carp species now rife in Lake Naivasha's waters. Throughout the tropics, carp are among the most widespread and damaging, ecologically, of all introduced fishes. Fishermen operating (illegally) in the shallows** (below right) **have increased the mesh size of their gill nets so as to be able to catch monsters, sometimes more than half a metre long and weighing in excess of 20 kilos. Carp are just the latest in a succession of alien species to be introduced in the wake of the North American Large-mouthed Bass, *Micropterus salmoides*. A tiny 'freshwater sardine' (*Aplocheilichthys* sp.), once Lake Naivasha's most common indigenous fish, has – in the process – vanished altogether.**



'Under pressure': The Ol Karia Geothermal Power Station near Naivasha (insulated steam piping shown, top**) depends on water from the lake in order to feed essential energy into Kenya's struggling national grid.** Above: **Lorry loads of Naivasha water are being extracted daily for ongoing resurfacing of the lake's South Lake Road.**

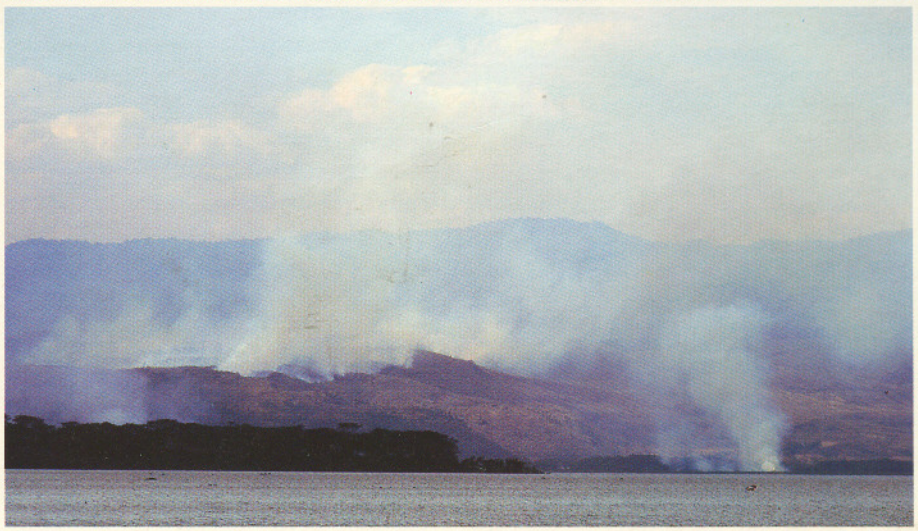
millions of cubic metres. We think water is free; in Kenya we fight over it physically, while in England we fight verbally over it. It is not free at all: the lake is paying. We are sacrificing the lake because we want too much water. And here is the rub: Nobody, but nobody, wants to pay for this water, whether from river, lake, or borehole. And almost nobody gives a fig, either, for the quality of what runs back.

Water beginning its cycle is clean enough. It comes from the sky, striking the land high up, on the Kinangop Plateau or the Aberdare Mountains. As it flows downhill, many people use it to irrigate their *shambas*. There is plenty of water, and many more people than there used to be – but nobody thinks too much about it. Some people have to make their *shambas* on steep slopes because land is in short supply. Others live in settlements with no sanitation.

When it rains the soil is washed off these *shambas*, the rivers fill with chocolate-coloured water, and poor sanitation leaches bacteria and nutrients into the water. Nutrients that should have fertilized the maize for feeding the farmers' families are now fertilizing the Naivasha mud to feed the crayfish.

The dry seasons last longer now than they used to, so there is not quite so much water in the rivers. The problem is that there are too few trees on Kipipiri, on the Mau, on Eburru, on the Aberdares – all forested hills that used to act as rainwater 'sponges', soaking up the rain and releasing it slowly over the course of the dry season, ensuring that there was always some water in the rivers flowing down into the lake. The trees recycled yet more water, evaporating it into the atmosphere, where it gathered in clouds and rained again, meaning there was also more water overall.

River water entering the lake once passed first through a lush papyrus swamp. It was filtered of its sediment and stripped of its nutrients, thereby sustaining the growth of the papyrus for the next rainy season and contributing steadily to the health of the lake ecosystem. Papyrus performed what ecologists now call 'an ecosystem service' – in short, this natural vegetation cleaned up the water before it flowed into the lake. Now, papyrus is ecologically extinct around the lake; its 'ecosystem service' has been extinguished.



'No smoke without fire': Thoughtless burning (right) **of shoreline papyrus and other lakeside vegetation is fast turning Lake Naivasha (Satellite Map,** above) **into a fetid cesspool.** Facing page: **A blue-green cyanobacterial 'algal' bloom, photographed in April 2006 within Lake Naivasha's Crescent Island lagoon. An extremely worrying development, this could herald the advent of deadly toxic 'blooms' to come.**

Rivers running into the north of the lake now pass through a muddy delta filled with happy hippos. In the south, the rainy season streams carry sand, as well as silt, from overgrazed hillsides, from pumice quarries that supply the flower farms, and from new settlements that house the farm workers. There are deltas of eroded sediment jutting out from the shoreline that just two years ago did not exist.

Where has all the papyrus gone? Around most of the lake, it has been left stranded on dry land by a decline in water levels and then trashed, literally, by large animals – buffaloes and cattle. Buffalo numbers around the lake's edge have trebled because they have been driven out of their former habitats in Eburru Forest; cattle numbers around the lake have increased ten-fold, or more, as huge herds are sent here from as far away as Narok in times of drought, and as people with no land, but with a desire to possess cattle, settle in droves around the lake.

In places farmers have burned the papyrus in a bid to create more land to cultivate. In places the papyrus has been dug up to make newer and bigger jetties or intake ditches. In places it has been cleared for houses, or to give tourists a better view of the lake. In places it has been burned by accident. In places it has been cleared away by fish poachers ... The exact causes are neither here nor there; individually, each one seems small and inconsequential to the perpetrators. The combined effect, however, is that what little papyrus does remain, while this might still look nice, can no longer do its ecological job.

The end result is visible to everyone who lives beside, or who visits, Lake Naivasha. It is a very brown lake that forty years ago was a very clear lake. The sediment that renders the lake turbid and brown is slowly filling up the lakebed, which is also very rich in nutrients. The nutrients support the growth of microscopic algae, which are between five and ten times denser today than they were at any time during the last century, thus contributing to the lake's murky colour.

Some of these organisms are called blue-green algae (actually they are bacteria, but they are blue-green all the same). You may have heard of them: they cause problems around the world in lakes that are too rich, because they produce toxins that kill dogs and sheep, and – occasionally – humans as well. All these toxin-producing species now live in the Naivasha lake water; it is only a matter of time before they 'bloom'.

As the lake gets smaller and shallower, so it will become warmer; every time a rainstorm brings another load of nutrients into the lake, the blue-greens will enjoy better growth. Both these conditions make a toxic bloom increasingly likely. For the first time, I recorded a transient bloom of one of these species in the Crescent Island lagoon in April 2006. It is only a matter of time before such blooms become more frequent and more dense.

What can be done? Whose job is this? Many people and agencies are aware of the deteriorating situation. Many others are not, because the deterioration is happening too rapidly for them to comprehend fully. People involved in settling Lake Naivasha's future fall into three main groups:

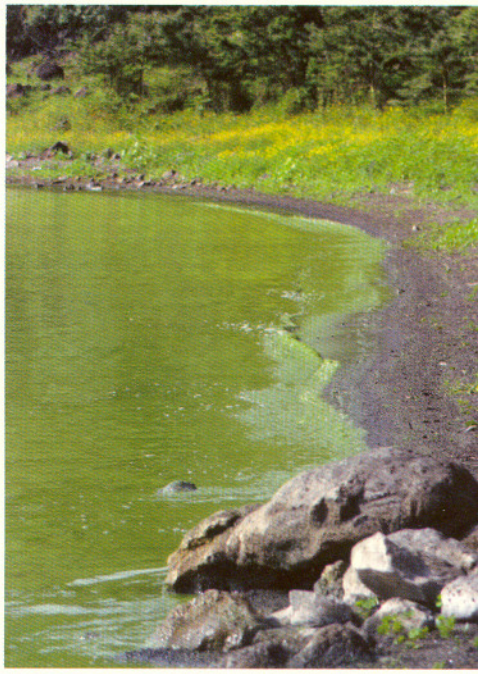
1. *Those in international, state, or local agencies and organisations.* Most members of this group do not live around the lake, but they are aware of its deterioration, and can articulate this. Some are trying to set in motion events and activities that might stop the rot and begin a process of restoration. At present, however, what money is available to support these activities is being used for talking – and not for doing.

2. *Those who live around the lake and who are educated.* Members of this group are either making money directly from Lake Naivasha and its environs, or have enough money to live within sight of the lake. It is possible, and there are some encouraging signs, that this group could be co-ordinated so that *all*, rather than just the present few, put the long-term interests of the lake above their own short-term interests. The key word here is *co-ordination*. At present, people in this group are not 'singing from one song sheet'.

3. *Those who are unorganised and/or poorly educated.* Members of this group are the small-scale farmers in the basin, employees of the industries around the lake, or direct informal users of the basin's water. They form the majority; all are poor, none can be expected to make sacrifices of their own or their families' well-being without practical incentives that improve their living standards.

It is obviously up to the people in Groups 1 and 2 to set the ball rolling, but how, when there are so many people in Group 3?

The Lake Naivasha Riparian Association seeks to represent all three groups. It has a good track record, having succeeded a decade ago in persuading Government to make the lake a 'Ramsar' wetland of global importance. Six years ago, it drew up a Community Management Plan,



Dr David Harper *is a Senior Lecturer at the University of Leicester, England. He has been carrying out research on Lake Naivasha since 1982 in partnership with Prof Kenneth Mavuti of the University of Nairobi and in association with the National Museums of Kenya. A dozen colleagues from other European universities (Queen Mary, London; Cambridge, England, and Lodz, Poland), together with the Environment Agency of England & Wales and the Natural History Museum, London, have been involved in the research and in training Kenyan students.*
All this research has been supported with funds and with volunteer labour from The Earthwatch Institute, a global environmental charity (< www.earthwatch.org >) since 1987, making this one of the Institute's longest-running projects.

In recognition of this work, the UNESCO International Hydrological Programme (IHP) declared the Malewa Basin an Hydrology for Environment, Life and Policy (HELP) basin in 2004, and an International Ecohydrology Demonstration Site in 2005, so as to further its restoration.

The author presented three papers on the lake at the International Lakes Conference held in Nairobi, Kenya, in November 2005, and in March 2006 reported on his team's recommendations for the restoration of the basin's ecosystems to the World Water Forum in Mexico City.

and – just over a year ago – persuaded Government to gazette that plan as a legally binding document under a Lake Naivasha Management Committee. Progress on the legal front is now being held up only by a few selfish individuals who can be clearly identified as being responsible for some of the destructive activities around the lake, but who do not wish to be stopped from committing these acts because they are still profiting from them.

Can the Government do anything? Obviously it should, but then what can a government with so many other pressing problems do about a lake that, directly and indirectly, is making a good deal of money for the country, as well as for individuals?

There are probably as many different answers to that question as there are people who think about it. The cause of Naivasha's present dire state is its value in real money to those people who do not know – or care – enough about its value, in non-monetary terms, to others or to nature. We could use the lake's value in real money to help pay to restore the damage done, and to help the people in the basin to live better lives and to do less and less damage.

The means of doing this is through an activity that is already in use in other parts of the world, and which is gathering momentum, as more and more people – in the US and Australia, for example – gain experience as participants. The activity in question is known as 'ecosystem trading'.

The trade would be in water, and the people who would pay for it are the end users. There are three kinds of end users of the ecosystem services offered by the Malewa basin. These are: **(1)** richer Kenyan urban domestic water consumers, in Nakuru for example; **(2)** richer Kenyan urban electricity users, in Nakuru and Nairobi; and **(3)** very much richer Western purchasers of flowers and vegetables, in Europe and in the UK especially.

The unit price could be worked out per flower, per bean, per litre of water, or per kilowatt of electricity. The price would be low to start with, as each and every water-user would be given a fair share of what the lake could provide. As the quantity of water wanted by the users took abstraction levels towards the sustainable limit, the price would go up. Then, once the agreed sustainable abstraction level had been reached, the unit price would become prohibitive.

There are many problems ahead for implementing such a radical idea, but the

Creatures of the lake and shore: A hovering Pied Kingfisher, *Ceryle rudis* (below)**, and** (facing page, clockwise from top left) **a Lilac-breasted Roller,** *Coracias caudata*; **an Eastern Black-and-White Colobus,** *C. guereza*, **seen reclining in a 'Fever Tree',** *Acacia xanthophloea*; **a pair of hybrid Fischer's/Yellow-collared Lovebirds,** *Agapornis fischeri–A. personatus*; **a small flotilla of Great White Pelicans,** *Pelecanus onocrolatus*, **and** (bottom) **a magnificent Goliath Heron,** *Ardea goliath*, **seen hunting in the shallows.**

rise of 'ecosystem trading' is an inevitable outcome, I think, in our fast deteriorating world. Societies all over the globe are slowly waking up to the fact that humans are rapidly destroying their own life-support systems. The only way of trying to arrest – and then reverse – this self-destruction is properly to value what we are destroying.

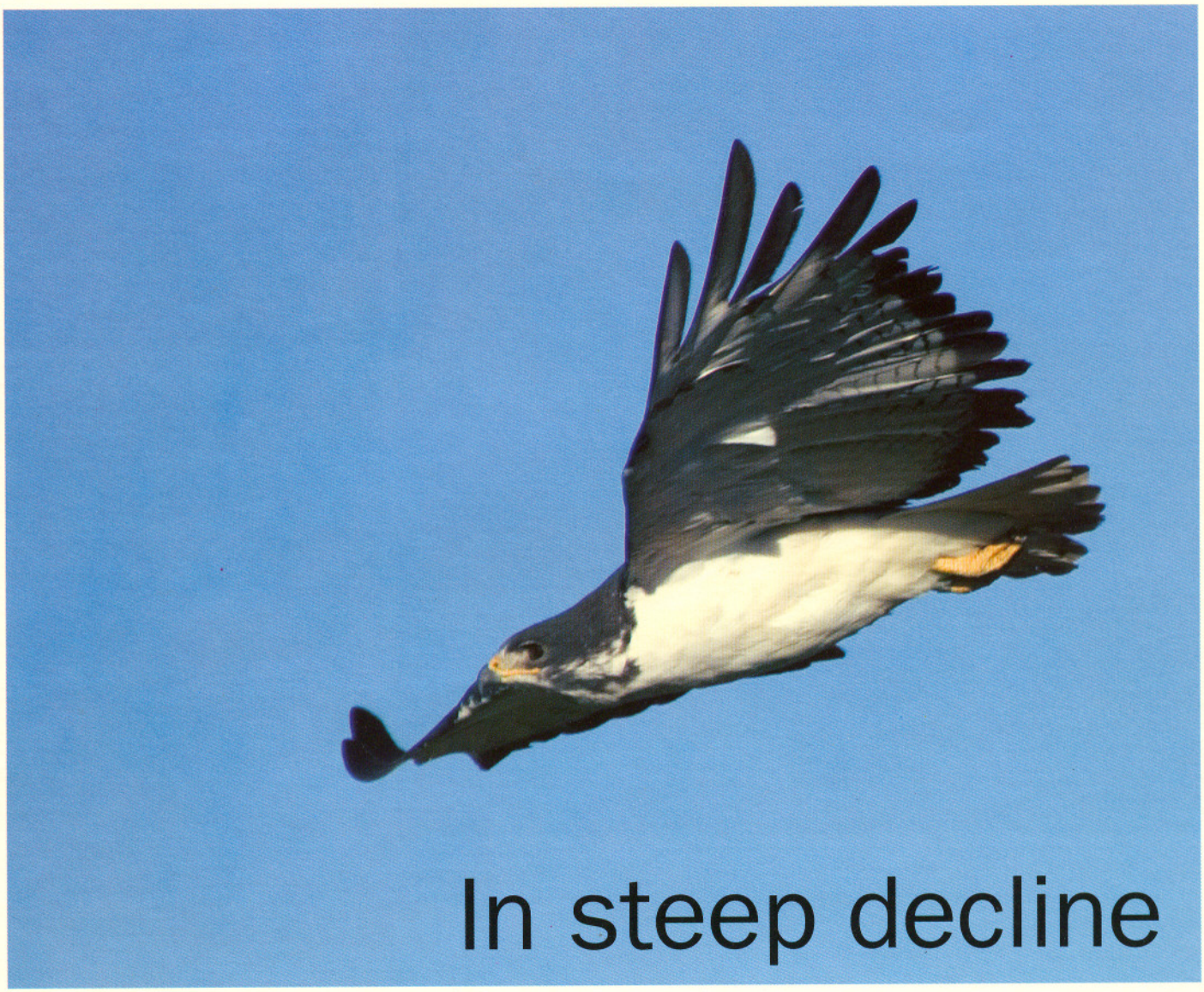
Valuing nature's services must be done in hard currency. This has (until recently) been done quite comfortably with game meat for human consumption. It will not be long before the bill for a tourist safari has a line in it for 'Naivasha water services', just as past bills have included a line for dinner at The Carnivore restaurant.

In April 2006 there were encouraging signs that this process may at last be beginning. The Lake Naivasha Growers' Group, representing about one-quarter of the horticultural companies (but all the environmentally conscious ones), has funded a consultants' study that will result in a water abstraction strategy. The plan, which involves the payment for water by those who use it, will have been presented to the community by the time you read this article. This is a crucial first step, but it is still only the beginning. The Water Users' Association that follows will have to make sure that every water user is represented on its Board, and it will also have to hold frequent meetings at which to share out the water allocations.

The biggest problem in Naivasha will be: how to spend this money? Only a large, wholly trustworthy and transparent organisation could do this. Such an organisation will need a 'taxman' branch to collect income from users, and a 'charitable' branch to disburse money for community projects such as sanitation, wetlands for water treatment, or tree planting.

How to restore Lake Naivasha should be the topic of a second, follow-up article in SWARA, to appear once this topic has been opened to the widest possible discussion. The one absolute certainty is, that unless something is done – and done quickly – by all of us, there will be no second article, for there will be *no lake*.

The future of Lake Naivasha should rest in the hands of us all. If we do not take collective responsibility for this lake, then a comparatively small number of people will quietly destroy it. One group, as its members go on trying to survive along the lake's shores and feeder rivers, will not fully realise what they are doing; the other group, whose members *know* what they are doing, will be sipping their sundowners in rather more expensive and exclusive surrounds.



In steep decline

Conditions around the lake do not augur well for Naivasha's buzzards, writes ***Munir Virani.***

Kikuyu people believe that if you see the white chest of an Augur Buzzard (*Mwewe*), *Buteo augur*, first thing in the morning, then your day will be a successful one.

Augur Buzzards are medium-sized hawks with short, stout bodies, broad wings, and striking, brick red tails. Until recently, their presence over much of Kenya's central highlands – including moorland, forest verges, rock outcrops, and cultivated areas – could easily be taken for granted. An Augur Buzzard circling overhead was simply part of the *mise en scène* of daily rural life, as was its characteristic squawking call.

The species appears to have adapted very well to human settlement, agricultural expansion, and exotic plantation forest. A 'Not threatened' conservation status, then, has always seemed assured. Indeed, some field guides declare the Augur Buzzard to be among the most frequently seen of all East African birds of prey.

My own research on Augur Buzzards – beginning with a four-year study (1995–1999) conducted at three sites around Lake Naivasha in Kenya – has revealed, not only that such a complacent attitude is foolhardy and reckless, having no basis at all in science, but also that it is *downright irresponsible*.

Why study a common species like the Augur Buzzard? And why in the Lake Naivasha area, of all places?

The effects of rapid habitat change on an ecosystem are perhaps best gauged through studying the behaviour, not of a highly specialised 'niche' inhabitant, but instead of a commonly seen and adaptable species. Among such species, an aerial 'apex' predator – like the Augur Buzzard, which operates near the top of the food chain – is often the most instructive barometer of

Photos: © MUNIR VIRANI

an area's general ecological health. This is because the health of its 'umbrella' population generally mirrors that of other species at the lower trophic levels. As such, there is a correlation between a flourishing raptor population and a healthy and biodiverse environment.

The Naivasha area has – as we all know – been subjected to a period of accelerated habitat change with the expansion along its shores of Kenya's burgeoning cut flower industry, buoyed by access to plentiful 'free' water from the lake, cheap labour, and proximity to the Kenyan capital, Nairobi.

The lake's enormous economic importance is reflected in the fact that 75 % of all the cut flowers produced in Kenya (now Europe's third largest supplier, after Holland and Israel) are grown on its shores. Between 1978 and 1998 Kenyan exports of cut flowers increased ten-fold (from 3,000 tonnes to 30,000 tonnes). Since then, the industry has continued to expand apace, raising questions over the sustainability of uncontrolled water extraction from Lake Naivasha, destruction of riparian habitats, pesticide run-off, influxes of labour, the resulting proliferation of lakeside settlements, and so on …

The implications are understandably dire for Lake Naivasha's *ecological* status as one of Africa's – and the world's – most important wetland areas. As home to more than 350 bird species, the lake is ranked among the top bird watching destinations on earth. Its shores provide essential corridors for wild ungulates. Incredibly (in view of what is going on there), the lake is also a Ramsar Site (that is, a wetland recognised, according to criteria adopted at a milestone conservation convention in Ramsar, Iran, in 1971, as being of global importance on the strength of the water birds and other wild species it supports, as well as for its scientific, cultural, and recreational value to people).

A scientific understanding of the environmental consequences for Lake Naivasha of the horticultural industry's runaway growth, not to mention a host of other problems (notably those arising from the introduction of a succession of invasive species, from the Louisiana Freshwater Crayfish to the Water Hyacinth), is crucial if this important lake – and with it, the well being of a large riparian human population – is to prosper. A study of the Augur Buzzard's behaviour and ecology around Lake Naivasha, then, might be expected to provide some answers.

To this end, I geared my research to finding out how different aspects of riparian land-use were affecting Augur Buzzard ecology and behaviour. I made daily observations of the buzzards in 40 identifiable territories spanning the Hell's Gate National Park (HGNP), the various commercial horticultural establishments (mainly flower farms) located between the park and the southern lakeshore, and Mundui, a privately owned expanse of *Acacia* woodland.

I found that Augur Buzzards within the HGNP preferred to nest on cliffs, whereas at Mundui and in the horticultural fields they chose trees. Male Augur Buzzards in the HGNP spent significantly more time incubating and attending to chicks than did their counterparts outside the park. This may have been because there are more predators – such as baboons, other eagles, and crows – to contend with in the park. In the HGNP, the larger, more aggressive female Augur Buzzards were kept busy defending nests, leaving the males to look after the eggs and chicks, or risk breeding failure. (Size differences between the sexes in raptors – an evolutionary phenomenon known as reversed sexual dimorphism – may help to reduce competition between males and females, while also enabling pairs to exploit both large and small prey species within an occupied territory.)

Augur Buzzards in the HGNP were feeding on a variety of prey: from flushes of dung beetles during the long rains, to birds, reptiles, and small mammals. Buzzards in the commercial horticultural areas fed almost exclusively on mole rats, and occasionally field mice. Mole-rat populations have boomed in the volcanic soils of the horticultural areas, presumably in the absence of mole snakes and other natural predators that were extirpated with the introduction of agricultural mechanisation.

In the privately owned woodland of Mundui, tall and mature *Acacia* trees combined with good grass cover and abundant prey produced a significantly higher number of chicks per year (1.3 annually, on average) than the other habitat types. Although the HGNP is a protected area, Augur Buzzard pairs there produced only one chick every two years, a reflection maybe of the high predation pressure from baboons and other nest raiders, as well as fiercer competition with rival predators.

Overgrazing by huge populations of ungulates has changed the characteristics of the grass cover in the HGNP, which in turn has negatively affected prey abundance and availability. Hunting success

> Within the past six years, Augur Buzzard territories around Lake Naivasha have declined by between 33 % and 57 % in all habitat types.

Dr Munir Virani coordinates the Asian Vulture Crisis Project for **The Peregrine Fund**. He also carries out research on raptors in Kenya in association with the **National Museums of Kenya**. The Augur Buzzard Project served as the basis of his PhD thesis at the University of Leicester in the UK. This Project was funded through grants from The Peregrine Fund, the Earthwatch Institute, and the Aga Khan Foundation. The author gratefully acknowledges the assistance he has received over the years from the Lake Naivasha Riparian Association.

rates for Augur Buzzards were lower inside the HGNP than in the horticultural fields and at Mundui.

Did this mean Augur Buzzards in the prey-rich horticultural areas raised more chicks? Certainly not! When mole-rat numbers peaked in June, soon after the long rains, many of the farms would deliberately seek to eliminate them, either through direct poisoning or by employing casual workers to kill them, thus depriving growing chicks of food.

Although Augur Buzzards were present in good numbers at all three Naivasha sites, I collected 15 dead adult birds over the four-year period. Annual adult mortality on the horticultural farms I estimated at 13 %. This suggested that the area might be acting as a 'population sink' – meaning that, while Augur Buzzards may have been dying rapidly, they were being replaced by a 'floating' population of birds waiting to occupy territories.

Persecution by humans and electrocution through contact with overhead transmission lines were the major causes of adult mortality in the horticultural areas. Other causes of death included poisoning (direct and indirect) and drowning in cattle water troughs.

The findings of my 1995–1999 study have contributed to a more thorough scientific understanding of Augur Buzzard ecology and behaviour. Perhaps more significantly, however, this study has yielded valuable baseline data from which it is now possible to assess the impact of commercial horticulture's subsequent expansion around Lake Naivasha.

Over a two-week period in October 2005, I revisited all 40 Augur Buzzard territories I had observed and monitored between 1995 and 1999. In particular, I wanted to find out what effect continuing expansion of Lake Naivasha's horticultural and related riparian developments were having on the species' food supply and ability to nest …

I considered a territory to be occupied where I could see either one or a pair of Augur Buzzards soaring above it, or where a previously documented Augur Buzzard's nest showed signs of breeding activity or recent use. In 20 % of all cases, I could recognise individual buzzards from rings, or from known markings (distinctive colour morphs or facial patterning). I considered a territory to be unused, defunct, or abandoned where I saw no Augur Buzzards at all over a period of at least three consecutive days.

Preliminary results show that Augur Buzzard territories around Lake Naivasha have declined by between 33 % and 57 % in all habitat types.

Predictably, the steepest decline in the number of territories has occurred on, or near, flower farms, and in areas accommodating large, and rapidly growing, human populations. Loss of previous foraging grounds (now invariably replaced by flowers), destruction of nesting sites, increased human persecution, and a greater likelihood of electrocution are clearly some of the principal reasons behind the alarming decline I observed in the number of Augur Buzzard territories around Lake Naivasha.

A decline of 50 %, or more, in the population of any commonly seen bird of prey is almost imperceptible to casual observers. (In the early 1990s, when it was proposed that the conservation status of three South Asian *Gyps* vulture species be up-listed to the 'Endangered' category, there was laughter all around the conference hall – until, that is, a team of researchers presented irrefutable scientific data showing how the species' respective populations had, in reality, fallen by as much as *90 %*!)

Similarly, from Leslie Brown's pioneering studies in the early 1970s, we know that Lake Naivasha's population of another 'common' species – the African Fish Eagle, *Haliaeetus vocifer* – has fallen by more than 50 % over the past 35 years. Again, as with the Augur Buzzard, this decline has *not* been readily apparent, as African Fish Eagles are still commonly seen (and heard) on the lake, where their population may even be said to have stabilised in the past couple of years – albeit on the back of an explosion, post-*El Niño*, in Lake Naivasha's population of that most recent of alien invaders: the carp. Any short-term stablilisation, then, while encouraging, must be viewed in the wider context of the species' worryingly low overall population base.

So, while I am not suggesting any up-listing in the conservation status of the Augur Buzzard (or, indeed, in that of the African Fish Eagle), I can state categorically that a population decline of between 33 % and 57 % within six years in the prevalence of a species that is as resilient and versatile as the Augur Buzzard does not augur well for the ecological health of the Naivasha area. And that is putting it very mildly!

Adaptability in a species may reach a threshold beyond which that species simply can no longer go on adjusting its behaviour and ecology. Lake Naivasha's Augur Buzzards appear, alas, to have reached this critical point – of no return.

Coypus in Kenya

During the late 1960s and early 1970s, when the **Coypu** (*Myocaster coypus)* – a large, crepuscular, semi-aquatic rodent that is native to South America – started appearing in prodigious numbers in Lake Naivasha, Kenya, people were understandably anxious to find out just how this pestilential species had been introduced.

The explanation generally given out was that a Colonial-era farmer "somewhere on the Kinangop" (the elevated plateau between the western Rift wall above Naivasha and the SW foothills of the Aberdare Mountains) had – in 1943 – brought in a stock of captive Coypus with the intention of making fur coasts from their pelts. Some of these Coypus had then escaped (so the story went) into the Malewa River, which of course drains into Lake Naivasha.

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Although nobody ever seemed to be able to identify the farmer by name, or even to reveal the precise whereabouts of his erstwhile "Kinangop farm", this is the explanation that – through continual repetition down the years – came to be accepted widely *as fact.*

So, when a visiting Australian scientist started making enquiries last year for some "profiles" he is compiling on the distribution in Africa of two invasive species, the Coypu (in Kenya) and the Grey Squirrel (in South Africa), this – predictably enough – is the explanation he initially received.

The scientist, **Dr David C D Happold**, a Visiting Fellow with the Division of Botany and Zoology at the Australian National University in Canberra, had three years before (in 2003) viewed the *Myocaster coypus* specimens housed within the collections of the Mammalogy Department at the National Museums of Kenya. All these specimens, he noticed, had been collected at sites on Lake Naivasha.

This appeared to vindicate the notion that the 'epicentre' of the Coypu's introduction to Kenya must have been situated, if not on the Kinangop, then somewhere else fairly close to the lake. Dr Happold wanted to be sure, however.

Early in June 2006, an enquiry circulated on his behalf elicited a flurry of responses from within Kenya mentioning Coypu sightings at various locations, including certain dams, rivers and ponds in Laikipia District and around the foot of Mount Kenya – and even the waterhole at The Ark forest lodge on the eastern slopes of the Aberdares.

One of the respondents, the former Game Warden **Ian Parker**, pointed out (correctly) that, "Coypus were introduced, not on the Kinangop, but by **Raymond Hook** [1892–1968] on his Nanyuki ranch. Hook released them from captivity some time before 1950, when they had failed to produce the expected fur. Thereafter, they dispersed rapidly through Laikipia's streams and swamps, and by 1956 (when I was briefly a Warden there) Coypus were present throughout the area.

"Their spread westward into the Rift Valley seems to have taken some time, but Coypus were seen in the Ol Bolossat swamp in the early 1960s. This was reflected," Parker recalls, "in the faunal records of the Game Department, which I extracted in 1964 – soon before all these files were burned. The card index system we devised has since also been disposed of, being deemed "too old fashioned" for the computer age, but without anyone's ever having bothered to transfer the data on to a computer disc).

"Coypus became conspicuous in Lake Naivasha during the same era that both Nile Crocodiles (1969) and Louisiana Red Swamp Crayfish arrived there (1972). By 1974, there was briefly a huge Naivasha Coypu population. This may have been responsible," Parker suggests, "for the fact that the largest crocodiles in the lake were then almost 10 feet long. The Coypu population then fell away dramatically, but (unlike the crocodiles) the species does still exist in Lake Naivasha today.

"The most southerly location at which I have seen a Coypu (in around 1972) is to the south of the Magadi Road, where the Kiserian–Isinya road crosses the southernmost tributary of the Kiserian stream. I have fished the upper, forested sections of the east-flowing streams of the Aberdares for 50 years, but I have never once seen a Coypu in any of these streams. While Coypus might well have dispersed outside the forests east and south of the Aberdares, their spread in these areas may have gone unreported."

Parker argues that Coypus must have been introduced to Kenya *after* World War Two – "perhaps in 1947," he suggests, "as, with the strictures on transport during the War, Coypus would not have been acceptable as freight in 1943."

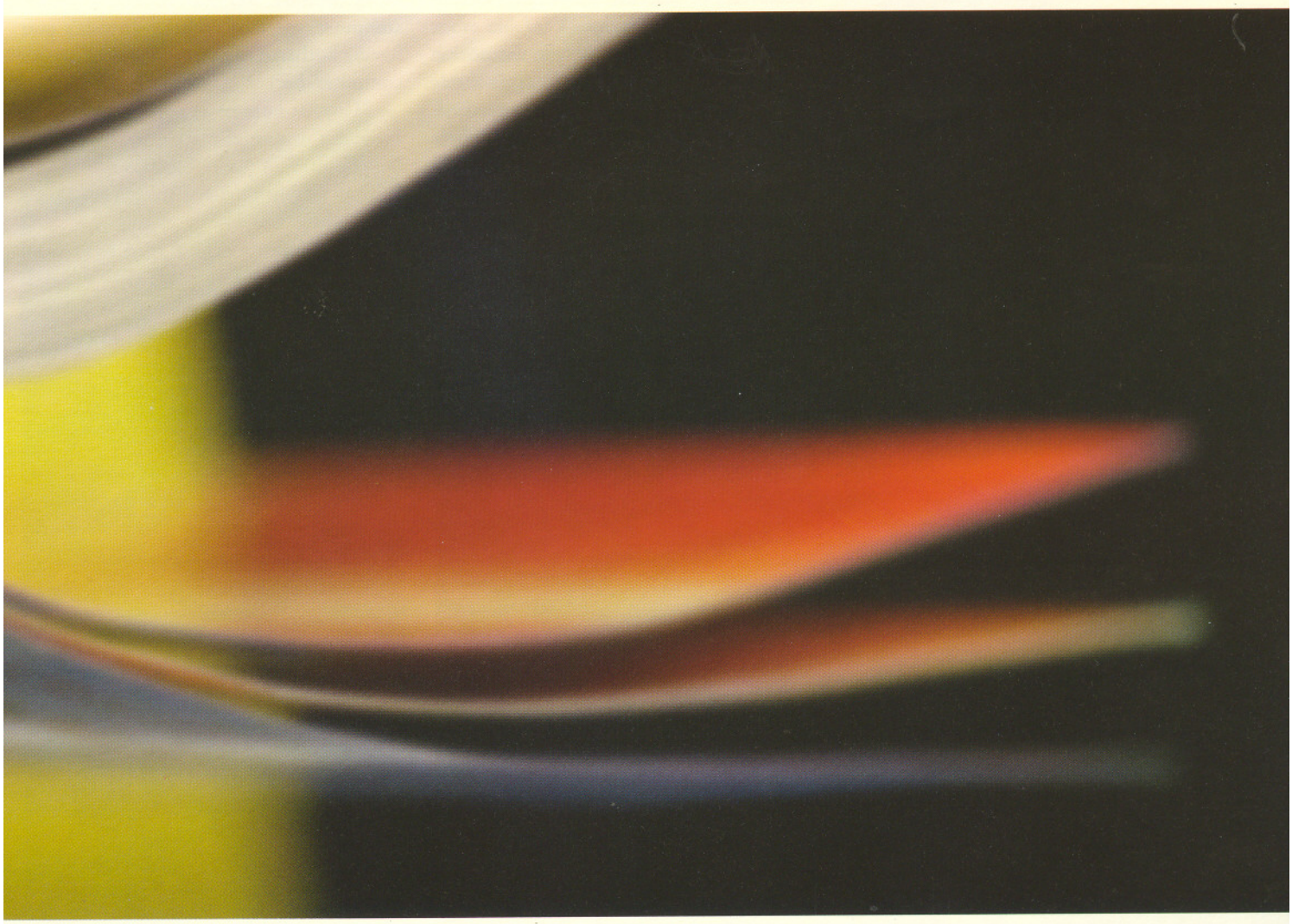
Raymond Hook's biographer, **John Pollard**, however, describing a visit to his subject's Nanyuki ranch in 1944 (in *African Zoo Man*, The Adventurers Club, London, 1963; p. 42), confirms the presence *then* on the Hook ranch of "Nutrias, large South American rodents that had become Raymond's latest fad."

Pollard goes on: "At that time the Coypu, as it was more generally known, was valued for its fur, and the hunter [Hook] was hoping to make a fortune by breeding the beasts and selling their pelts. He kept his Nutrias in big enclosures like pigsties with conduits for them to swim in, and half-buried drainpipes in lieu of burrows."

The Coypu's introduction to Kenya, then, does appear to date back to 1943.

– reported by Gordon Boy

Readers are encouraged to send interesting Coypu observations to ***Dr David C D Happold****, via < David.Happold@anu.edu.au >.*



A flower moves, twitching in brief, unnatural spasms, betraying the presence of some other being. A closer look among the petals reveals a bizarre little creature: terror and beauty merged into one living form. Exquisite and deadly, it is a marvel to behold.

A storm descends on the forest. Black-and-white-casqued Hornbills, heavy and dark, flounder over the canopy, their wings wheezing with effort. Leaping to one side, a Blue Monkey dislodges further showers of droplets. The entire forest seems to be celebrating the downpour. A sudden gust of wind shakes the flowers vigorously. In a watery blur, the creature seems to vanish. Might she have lost her footing?

I kneel down to take a closer look. No, despite the disturbance, she remains perched on her chosen blossom. With studied arrogance, her head swivels around to meet my gaze. Mottled eyes atop a streaked pink-and-green head transfix me in a purposeful stare. Her body, contorted in indignation, is even more marvellous. Two spiny arms, folded neatly, are tucked in close beneath her chest. These are her weapons. Sharp, irregular spines protrude from their margins, hinting menacingly at their potential deployment.

Adorned with flanges and protuberances, her body sports a variety of colourful spots and blazes. Mostly pale pink, flashes of pink-purple and lime-green dot the surface of her complex exoskeleton. These colours complement one another on this remarkable insect to form what amounts to a cloak of invisibility here among the flowers at a garden's edge in western Kenya's Kakamega Forest.

which she patrols, stalking her unwitting prey. Immobile on her floral perch, she is virtually undetectable. She waits here with infinite patience for hapless insect visitors seeking nectar and pollen rewards from the brightly coloured flowers. Should any one of them probe this particular blossom, it is unlikely ever to leave, as the flower mantid nymph's appetite is voracious.

'In the pink': Nestled among the petals of this spray of flowers (below) **on the fringe of Kenya's Kakamega Forest, the nymph of a** *Pseudocreobotra* sp. **mantid is virtually undetectable.** Facing page: **Another superbly camouflaged young mantid assumes the classic 'ambush' pose, transfixing the photographer with an icy, demonic stare. The dark flanges and protuberances are typical of many mantid nymphs.**

© DINO J MARTINS

Praying mantids

***Dino J Martins** on the attributes and antics of some members of one of Nature's most enigmatic and successful insect groups.*

This fantastic creature is a young flower mantid. Her wings, not yet fully grown, are short stubs laid out flat against her mottled back. Within a few more weeks, they will be transformed to cover her back. Extending them, she will be able to take to the air and to move freely through the forest.

Until her wings and body grow, she will remain confined to these few flowers,

Praying Mantids, also called Praying Mantises, are among the most enigmatic insects that we come across in our gardens, forests, and grasslands. Their distinctive posture and their remarkable habits ensure that they are also some of the world's most widely recognised and appreciated insects.

Mantids are always recognisable from their striking and defining posture. They stand partly upright with raised heads and forelegs folded neatly before them. The fore-legs are typically clasped in a manner suggestive of meditation or worship, and this has given rise to the common name 'praying mantid' (or 'soothsayer', as they are sometimes also known). Indeed, the name 'mantis' is Greek for 'prophet'.

The specially adapted fore-legs are essential to their survival. All mantids are predators and use their toothed, jagged forelegs to seize and to subdue prey. Other insects form the bulk of the fare on most mantid menus, but frogs, tadpoles, and even small birds are known to have been taken by some of the larger species.

Attached to the front of the thorax, the fore-legs are long and very mobile. They can be extended with astonishing speed and power. The strong spines along their margins serve as grappling hooks to ensure that struggling prey, once seized, cannot slip from their grasp.

Despite the speed with which they can deploy their weaponry, the mantids themselves rarely move in a hurry, another aspect that endears them to us. Their slow, calculated movements lend them an air of calm – yet composed – tension.

Mantids can also move their heads freely. This will be familiar to anyone who has ever watched one closely. Walk around

'Exquisite and deadly': A twig-like mantid (above) **stalks an unsuspecting honeybee; the characteristic chilling stare** (top right) **of the large green mantid,** *sphrodomantis* sp.**, common in gardens throughout East Africa.** Right: **The egg-cases of** *Sphrodomantis obscura* **resemble those of other mantids. Such cases, often seen on walls, can endure for several months, until conditions for hatching are right.** Below: *S. obscura* **mimicks the ant galls on** *Acacia drepanolobuim* **trees, feeding mainly on the ants.**

a mantid perched on a leaf, and its gaze will follow your movement, even if it has to swivel its head to look over its back at you! Few other creatures, even non-insects, have such a potent and direct gaze.

Vision in mantids is very highly developed. Their eyes are sensitive to even the slightest movement. Mantids can also detect sound and ultrasound through specialised ears located on their thoraces.

Mantids are generally classified in their own Order, the Mantodea. Their closest relatives are the cockroaches (Order: Blattaria). Some taxonomic schemes place Mantids in their own Family, the Mantidae, and lump them into one Order with the cockroaches.

With close to 2,000 species described from around the world, mantids are not the most diverse of insect groups, but they are certainly one of the most successful

– at least from a human-biased viewpoint, which sees sophistication, perhaps even sentience, as a necessary virtue.

Perhaps the most impressive and most widely-known fact about mantids is their strange mating ritual – and its gruesome outcome. They have even become icons for radical feminists (of our own species).

Yes, as you have probably heard, many female mantids will devour their mate before, immediately after, or sometimes even *during* copulation! While female mantids do occasionally consume their mates, recent studies have shown that it is only when they are exceptionally hungry that they do so. There is no malice intended.

Observations of well-fed, unstressed females have shown that there is an elaborate dance courtship that precedes mating. This dance involves tapping the female gently in certain places. So long as the male gives all the right cues and makes the right moves he is safe. If not, and she is hungry, then … Would-be chauvinistic males take note!

Mantids, and flower mantids especially, are among the most superbly camouflaged of all insects. Being large, relatively long-lived and mobile renders them an easy target for insectivorous birds. So many mantids have evolved ingenious camouflages that closely mimic various plant-parts such as leaves, bark, and twigs, cleverly concealing the mantids from their potential prey.

There are many kinds of exquisitely camouflaged mantids in eastern Africa. These include the outrageous, aptly-named Devil's Flower, *Idolomantis diabolicum* (featured in SWARA Vol. 26 No. 1 / January–March 2003), and the flower mantid *Pseudocreobotra wahlberghi,* that in the Tsavo area is often found perched on flowering acacias, such as *Acacia senegal* (SWARA Vol. 24 No. 2 / May–August 2001).

One of the most striking examples of mantid camouflage and pizzazz is found dwelling happily in one of the places where perhaps you might least expect to find a large, slow-moving insect.

East Africa is home to many different species of ant-acacias. Variously inhabited by different kinds of ants, the relationship with most of the ants is mutualistic, with the ants patrolling the trees and seeing off threats (mainly from herbivorous insects), whereupon the tree rewards the ants with sugary secretions and comfortable lodgings in the shape of swollen thorns.

On the Whistling Thorn, *Acacia drepanolobium*, one of East Africa's most widespread ant-acacia species, the ant inhabitants include aggressive Cocktail Ants (*Crematogaster* spp.) that come swarming out at the slightest provocation to defend their leafy homes.

Watching the ants and the various other insects on these trees provides for many hours of unadulterated natural history joy – and some curious observations too, as I discovered recently…

With the beginning of the rains, the Whistling Thorns resonate with energy, as life rebounds from the lull of the dry season. Founding queens hasten to establish new colonies; fat, fuzzy jumping spiders dance across the shiny galls; bright red parasitic wasps tremble and probe for potential victims with hypertrophied ovipositors, and shimmering Lycaenid butterflies zip and circle through the air above the trees.

Suddenly, amid the comings and goings of the ants, all feeding from the extra-floral nectaries and patrolling the young branches, one of the galls moves. In the blink of an eye one of the diligent ants is seized and dismembered. Within seconds, a second and then a third ant are picked off in rapid-fire succession from their patrol.

> "From the moment they hatch, mantid nymphs are able to hunt and to feed themselves."

Seizing the ants is an amazing mantid – one that resembles closely the swollen thorns of the Acacia! Stepping lightly over the leaves and jumbled thorns, the mantid dances smoothly out of the way of other ants that by now begin to sense that something is amiss. She weaves her way under the branch, before perching in the mosaic of shadows cast by the frieze of leaves, thorns, and twigs.

Here, I can observe her more closely – and marvel at the uncanny resemblance she bears to the galls and thorns among which she stalks. This swollen-thorn mimicking mantid, *Sphrodomantis obscura,* is coloured and shaped exactly like a middle-aged thorn.

Mottled with growth 'scars' in her bark-like patterning, she reinforces the illusion by sitting, when not hunting, with arms folded and hind-legs splayed just like the paired thorns that normally protrude from a swollen gall. Her abdomen, rounded and distended, seemingly inflated like one of the swollen thorns, completes the picture.

Masked thus, this mantid lives among the ants on which it preys, while at the same time enjoying some degree of protection from other insects that the ants keep away from the tree.

Walking among the Whistling Thorns, these swollen-thorn mantids, once their image is imprinted, become obvious at regular intervals. Sometimes, close to one of the mantids, or else alone on a bare section of twig, sits a pale, papery mass.

Resembling a wad of paper that has been spat out and left to dry, these are the egg-cases of the mantids. They are often fastened to branches or even to walls. Of a longish oval or rectangle shape, the egg-case is known as an ootheca (pl. oothecae).

Secreted by the female as a foamy mass, the egg-case quickly hardens, providing a safe abode for the eggs until conditions are right for hatching. These papery lumps can endure for many months, even through long dry seasons. They may hatch over an extended period, so hedging more broadly the survival chances of future mantids.

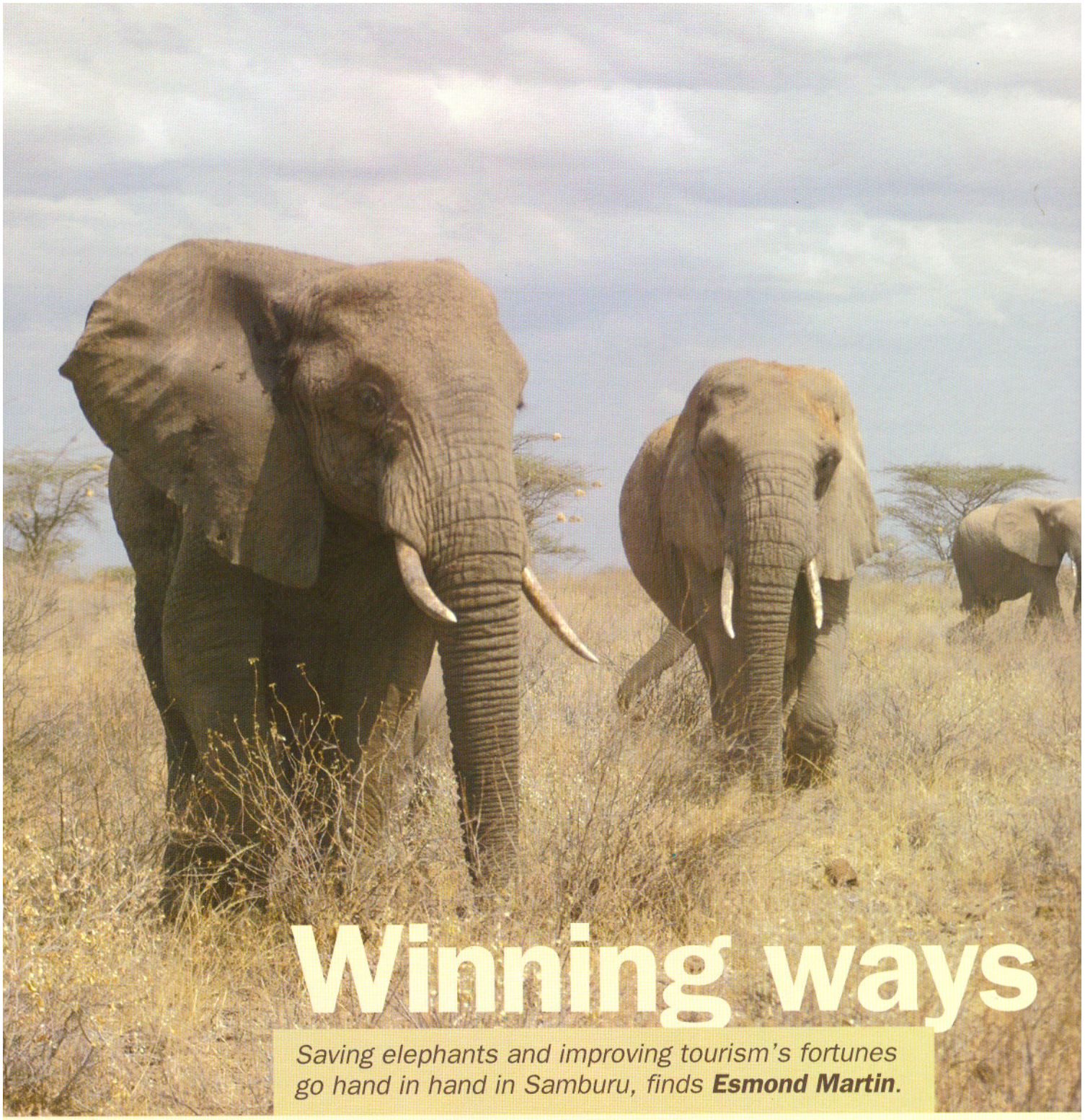
The mantid nymphs hatch directly from the eggs, and are immediately able to hunt and to feed themselves. Unlike many insects that go through distinct metamorphoses, mantid nymphs are just simpler, miniaturised versions of the adults. Tiny and ant-like at first, they grow through many moults into their adult forms. The rate of growth is generally dependent only on the quantity and availability of food.

Absolutely ravenous, the young nymphs will seize and eat whatever they can find, including one another!

Mantids, for all their sophisticated adaptations and outstanding camouflage, are very vulnerable creatures. Reliant on a constant supply of food in the form of other insects, they are very sensitive to environmental degradation and to the 'holocausts' wrought by careless use of pesticides.

More than just enchanting to watch and to admire, mantids are true friends to farmers and gardeners. They assist in the control of other insects, including many plant-eating kinds, and so help keep populations of these potential pests in check.

Next time you encounter one of these marvellous insects reposed in meditation on a leaf, bow down and spend a few moments communing with it! Watch it as it watches you – and be filled with wonder.



Winning ways

Saving elephants and improving tourism's fortunes go hand in hand in Samburu, finds ***Esmond Martin.***

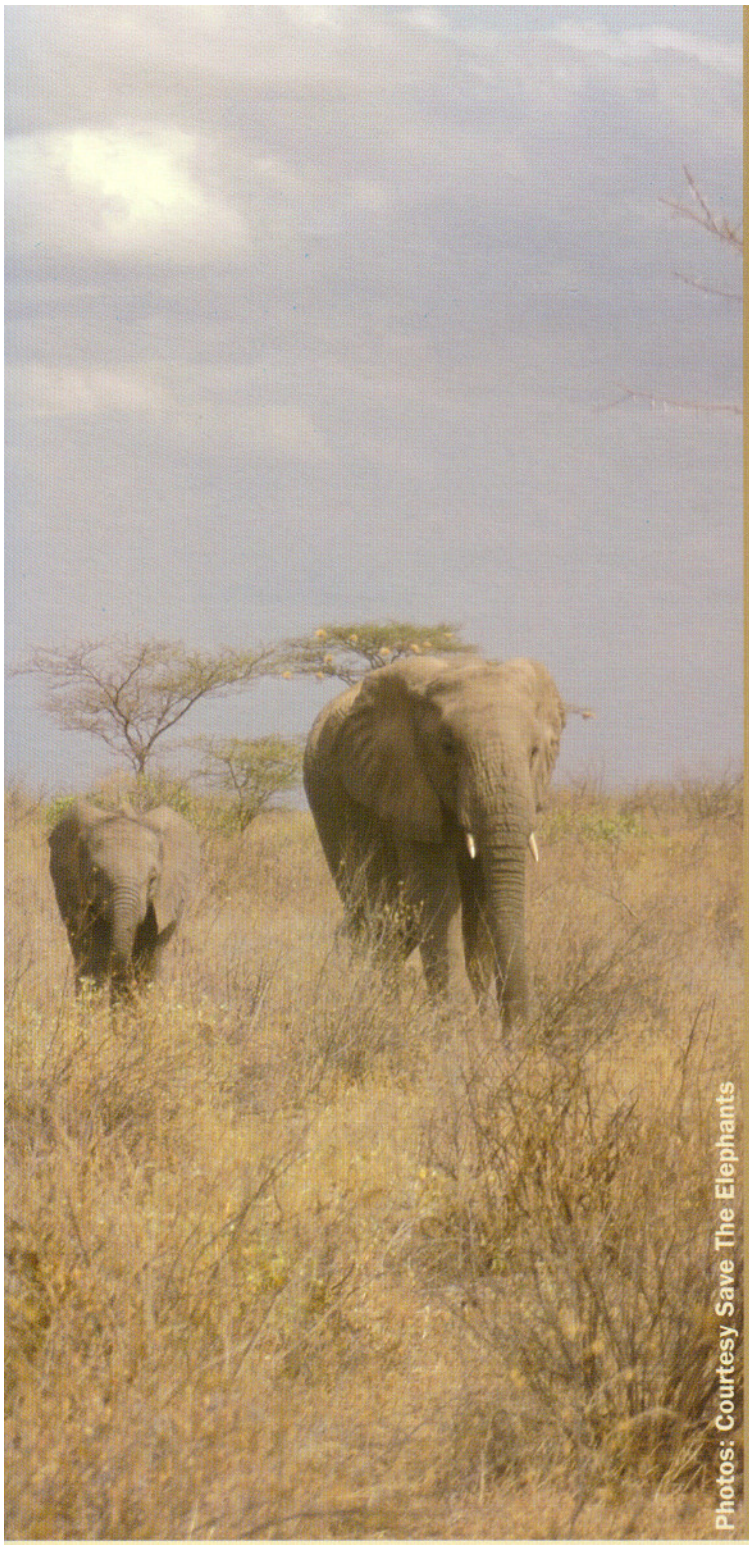
One place where tourists can combine excellent accommodation with an intimate and varied experience with wild elephants is Elephant Watch Camp. Based in the Samburu National Reserve in northern Kenya, this camp offers a unique chance to learn about elephants and their behaviour, while at the same time getting to know about the Samburu people who live among the elephants here.

The camp, owned and managed by Oria Douglas-Hamilton, opened in January 2002. About seven kilometres east of the camp, Oria's husband, Iain, has built up a field research centre for Save The Elephants, the organisation he founded in 1997. Both camp and research centre work together closely for their mutual support and for the benefit of elephants, the local community, and tourists alike.

Scientists at the research centre help train Oria's guides, over periods of several months, to the point where all can identify every individual elephant, and speak knowledgeably to visitors about elephant behaviour. All four of the camp's present guides are Samburu. Not only are they highly skilled communicators, well up on all aspects of the area's wildlife; they are also more than happy to teach visitors about their culture.

To this end, they often take their clients to authentic Samburu villages, as opposed to the mock villages typically paraded before tourist groups elsewhere. The guides offer nature walks, whereon – among other things – they interpret animal tracks and signs and explain the uses of medicinal plants. Many visitors to the research centre come specially to learn about the science of elephant management in the region.

Between excursions, visitors can relax in the exclusivity of Elephant Watch Camp, which consists of only five tents sleeping ten people. Far away from all the lodges, nestled among *Acacia* and *Kigelia* trees in a secluded wilderness on the sandy north



Photos: Courtesy Save The Elephants

Elephants congregate in Kenya's Samburu National Reserve, where they feel secure. Outside the boundaries of this and neighbouring Buffalo Springs National Reserve, the region's elephant groups move very rapidly, however. Over the past few years, elephant numbers in this area have been increasing at an average rate of 4.5 % per annum.

bank of the Ewaso Ngiro River, the camp exudes peace and tranquility.

The idea behind this tourist experience – of closeness with elephants – sprang from a 1997 visit to Canada, where Oria went whale watching near Vancouver. Later in that same year she took tourists to see the elephants of the Amboseli National Park, but at nightfall her party was obliged to return to a large impersonal lodge that (she felt) shattered the intimate bush experience.

Oria had grown to love the close proximity to elephants experienced 24 hours a day, every day, at Iain's research camp in the Samburu National Reserve, which had also opened in 1997. So she decided to set up a camp in Samburu at which tourists could enjoy the same experience.

Unfortunately there were bandits and poachers around the reserve at that time. By 1999, however, she had found a suitable location, and had started building a camp that would not damage the environment. The camp was ready by 2001. It was built almost completely from local materials. Some of the dead trees knocked down by elephants were made into tent poles, while items of the furniture were carved from 'toothbrush' trees. The chairs have camel skin-plaited seats.

To make the camp's atmosphere more relaxed and less formal, there is no reception or front desk. There is no generator either, as this would disturb the tranquility. Nor is there piped water. Instead, the comfortable, well-provisioned bathrooms adjacent to each tent have simple bucket showers. The camp is rustic but it is also luxurious. The tents are unusually large, and each one is individually decorated. The spacious mess tent houses a well-stocked Africana library. Meals are usually taken outside near the river, and the food – all specially chosen by Oria – is excellent.

The 14-strong camp staff, most of whose members are Samburu, provides an excellent, highly personalised service. Visitors do not have to keep to a particular

timetable, and can have their meals, or go on excursions, whenever they wish.

Samburu is now a safe and popular destination for tourists. In 1997, the security was poor. Armed gangs, mostly Somali, Turkana and Borana, would sometimes hijack tourist vehicles on their way to Samburu, in the Buffalo Springs and Shaba National Reserves, and around Isiolo town. The Samburu National Reserve was effectively closed to tourist traffic, and the elephants – which were being heavily poached – were running scared from one area to another.

The Samburu themselves were not active in the poaching, having no tradition of killing elephants, or eating their meat. From 2000, representatives of the tourism industry, conservationists and government authorities began to take serious action against the poachers and bandits. The Kenya Wildlife Service (KWS) established three operational security centres in the area, and the Kenya Police increased its presence to 100 men, making this the largest deployment in Kenya for protecting tourists. Even today, officials (often stationed on hilltops) keep watch over tourist vehicles as they drive north from Isiolo towards Samburu.

Save The Elephants has been instrumental, too, in improving the region's security, not least through the work of scientist Onesmas Kahindi. He initiated a series of meetings in 2002 for Turkana people living in the Ngare Mara Location of Isiolo District, through which the main road from Isiolo north to Samburu and Buffalo Springs runs. The people promised not to poach animals in the reserves, including the elephants, and to stop harassing the tourists. This helped to restore security to both the Samburu and the Buffalo Springs National Reserves.

Information gathering is crucial in staying alert to the potential return to the area of bandits and poachers. In addition to employing 60 rangers to patrol the reserve, Samburu's Senior Warden, Abdi Boru, set up an intelligence system in 2003 to monitor people trying to enter the reserve illegally. Save The Elephants also has a local information network outside the reserve, which is operated in collaboration with the KWS, the county councils and the local communities.

No money changes hands. Instead, Save The Elephants gives support to the community. The people now understand that tourists bring financial benefits to the area and welcome the tourists accordingly. Save The Elephants' scientists out in the field with the elephants serve as an added deterrent to criminal activity – as do the many tourists now visiting the Reserve, further increasing the area's stability.

The Reserve still has its problems, however. During the dry seasons especially, the Samburu bring their cattle into the Reserve, which is illegal. The cattle compete for vegetation, bring in diseases, and spoil the wilderness atmosphere for tourists. Save The Elephants works alongside the rangers in reporting cattle movements.

Unfortunately, there is no buffer zone that would expand the ecosystem while allowing cattle into the area. The Samburu live right on the Reserve boundary, and are especially numerous on the northern side, where direct access into the Reserve is easy. The people also block the migratory routes of the elephants.

Save The Elephants has been monitoring this problem, but has yet to finalise its recommendations. At times, there can also be too many tourists in the Reserve, especially along the river, where good views of elephants and of big cats are the prime attractions. Some minibus drivers, encouraged by generous tips, drive off the roads and disturb the animals. Drivers caught doing this by the rangers are fined around KSh 2,000 (the equivalent of about US$30) on the spot for disobeying the rules of the Reserve.

> **"This relationship between a tourist camp and a research establishment could provide a model way forward for other protected areas."**

Save The Elephants is also concerned about the increasing tourism development that is taking place within the Reserve, as this flies in the face of efforts to reduce vehicle pressure on this fragile ecosystem.

Besides assisting with the Reserve's management, Save The Elephants helps the local community. In 2000 the organisation carried out a survey to ascertain from the Samburu what their priorities are for assistance. The number one priority was found to be education. So Save The Elephants and Elephant Watch Camp have established an education programme.

Shivani Bhalla, the organisation's Education Officer, assisted by Daniel Lentipo, organises school bursaries. As a result, seven pupils have completed secondary school, two have taken diplomas, and 21 others are now in secondary schools. Clients at the Elephant Watch Camp weigh in with added financial support towards these bursaries. Save The Elephants also provides equipment and other supplies to the local schools, and its scientists regularly give lectures to the schoolchildren.

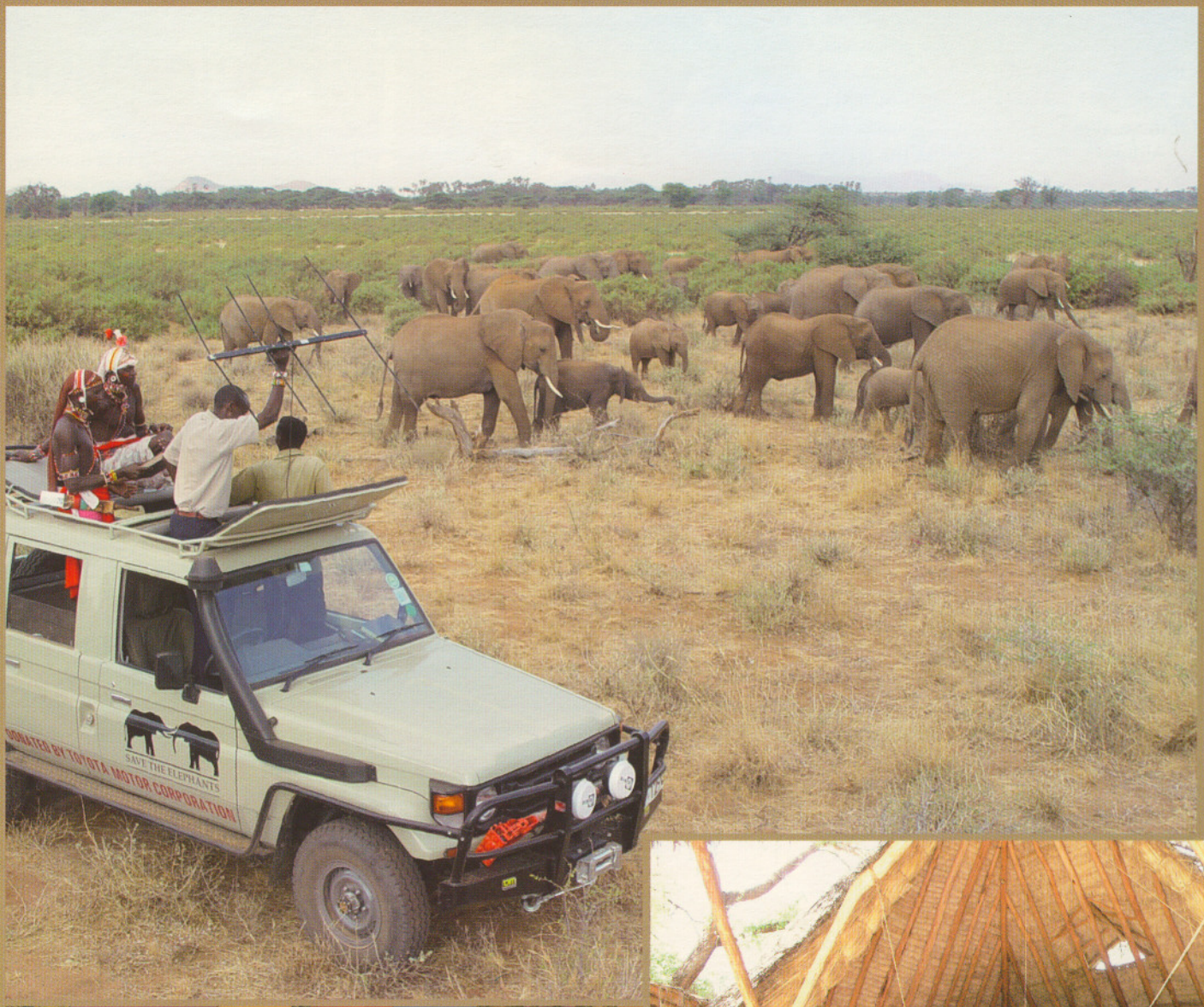
Save The Elephants is best known internationally, however, for its scientific work. Its scientists have – since 1998 – been documenting the increase in the number of elephants in the Samburu and the Buffalo Springs National Reserves: 4.5 % a year. The scientists have also identified individually nearly all of the area's 900–1,000 elephants, grouped in 68 family units within these two reserves.

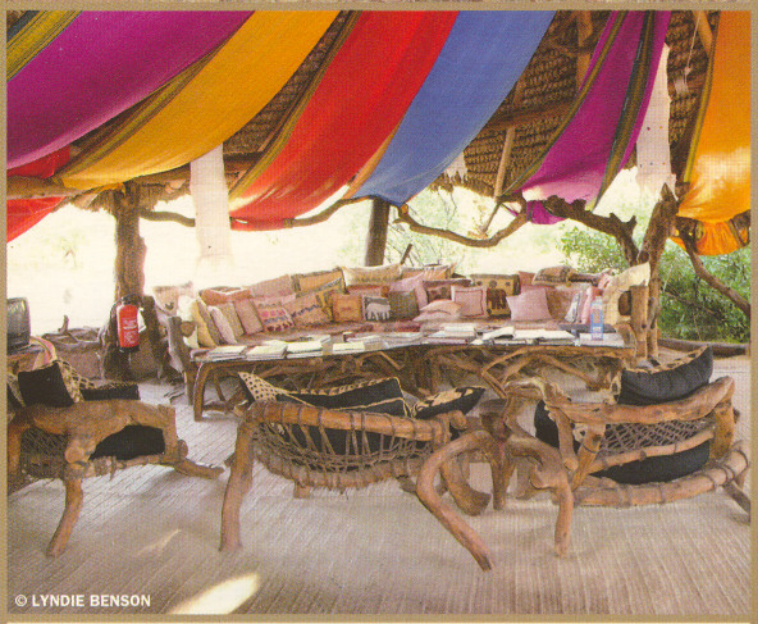
Innovative GPS radio tracking technology has been instrumental to understanding elephant movements. Since 2001 some of the area's adult elephants have, with the support of the Safaricom Foundation, been collared with simcards and cell phones. These send out messages every hour, giving the elephants' precise geographical co-ordinates, as well as their speed and direction of movement.

The resulting data has shown that the elephants remain calm within the reserves, but move very quickly once outside their boundaries. Some elephants migrate over long distances to other protected areas. The data has also shown that the elephants are changing the places they visit regularly outside the Samburu and the Buffalo Springs National Reserves, owing to human interference.

One of Save The Elephants' main activities is that of monitoring elephant deaths in Isiolo and Samburu Districts. Most such deaths are from natural causes. Scientist Onesmas Kahindi has so won over the trust and confidence of the Samburu that they have even 'adopted' him. He is therefore well placed to gather statistics on elephant deaths for the KWS.

With the help of local people around Isiolo, the Karisia Hills, the Mathews Range and the Kipsing Valley, Onesmas has been able to view all the carcasses of dead elephants. KWS personnel, by contrast, are still widely feared, as they are





All in a day's work: Save The Elephants' researchers monitor an elephant herd (top) **in the Samburu National Reserve. Visitors can relax in the nearby Elephant Watch Camp (mess tent,** above**), before retiring to one of the camp's unusually large and distinctive tents** (centre right)**. The researchers can now identify, individually, nearly all of the region's 900–1,000 elephants.**

said to be aggressive with the local people. Within the Samburu–Laikipia ecosystem, Onesmas counted 151 elephant carcasses in 2002, 131 in 2003, and 126 in 2004. Of these, about 35 % had been poached.

Although most elephants in the region die of natural causes, they are still being poached in some areas, including a few just outside the Buffalo Springs National Reserve. Poaching has also been occurring about 60 km NW of Samburu in the Karisia Hills, and 120 km to the west of the Reserve on the Ol Ari Nyiro Ranch – all places that fall within the traditional migratory range of Samburu's elephant groups.

The poachers sell the tusks to traders who take them either to the Ethiopian border, where they are sold for US$ 28/kg, or southward to Nairobi or Mombasa for export. Prices for tusks have altered little over the past few years.

Save The Elephants' most recent research has taken the form of an examination of stable isotopes measured from the tail hairs taken from 35 elephants between 2001 and 2004 during immobilisation operations in and around the Samburu Reserve, while the animals' collars were being fitted or repaired. This gives information on their diet, which in turn can help explain their migration patterns. Such information is vital in determining which migratory corridors need to be kept open for elephants.

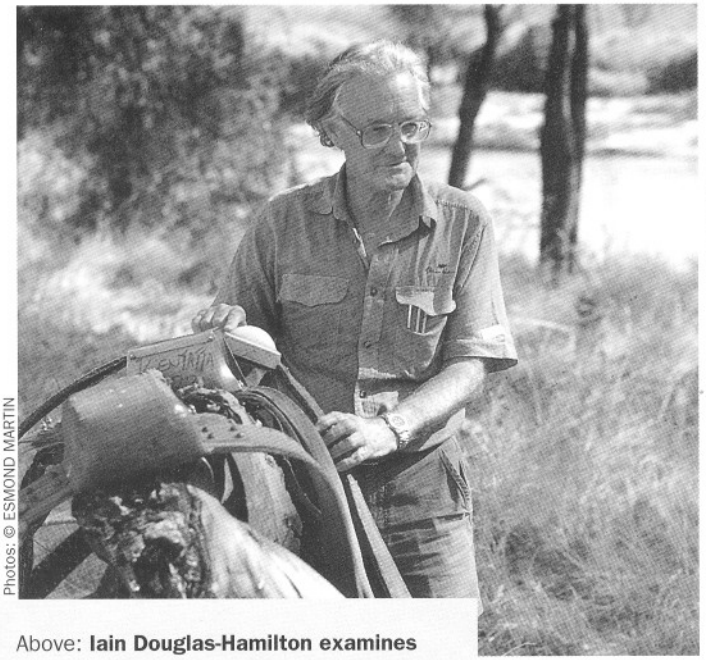
Another important aspect of Save The Elephants' work has been in documenting elephant damage, and trying to reduce this problem, especially along the Ewaso Ngiro River. Over a recent six-month period, the organisation's field scientists counted 45,000 trees along the river running between the two reserves. Alarmingly, a quarter of these trees were found to be already dead, due mainly to damage inflicted by elephants.

Save The Elephants has found that wrapping tree-trunks in chicken wire offers a viable protective strategy for saving the trees, and is persuading some camps and lodges to follow suit. This example of co-ordination between a research body and various tour and lodge operators should be emulated elsewhere.

The Reserve is benefiting from Save The Elephants' work, as both wildlife viewing and safety have improved, so allowing the safari companies to give their clients an altogether more rewarding wildlife experience. This is especially true of Elephant Watch Camp; the close co-operation that exists between this camp and the nearby research centre is of increasing benefit to all.

The camp attracts wealthy visitors who lend generous support to elephant research, help generate bursaries for Samburu children, and give other assistance to the local communities. In return, the tourists are able to experience a unique closeness with elephants that is enriched at every turn by the knowledge they gain from Save The Elephants' ongoing research.

Perhaps this almost symbiotic relationship between a tourist camp and a research establishment could provide a model way forward for other protected areas within East Africa and elsewhere.



Photos: © ESMOND MARTIN

Above: **Iain Douglas-Hamilton examines old elephant radio collars at his research centre beside the Ewaso Ngiro River in the Samburu National Reserve.** Above right: **This vehicle was smashed by an enraged elephant in musth; the two researchers inside at the time were lucky to survive.**

Raging bull

Carrying out field research on wild elephants can be risky. This is especially true if one is around male elephants in musth, a hormonal condition whereby the increased level of testosterone induces a frenzied state.

During the musth period, male elephants become very aggressive, sometimes killing other males – and humans also. On 19 June 2002, **George Wittemyer** and **Daniel Lentipo**, working for Save The Elephants, encountered two male elephants in musth and were lucky to escape with their lives.

The incident occurred while George and his assistant Daniel were looking for elephants in the Buffalo Springs National Reserve. They came across a large 30-year-old male in musth called Rommel, who was fighting another male in musth called Abe Lincoln over a female called Donatello who was in oestrus.

Rommel was eventually defeated, but suffered a serious eye injury and torn lips. He turned in anger towards George and Daniel's nearby Toyota Hilux, ramming it several times with his tusks before twice flipping the vehicle over. Both terrified occupants feared for their survival. Wisely, they chose to remain inside the battered vehicle. If they had tried to run away on foot, then most likely they would have been killed.

The attack on the Toyota ended only after Abe Lincoln returned and once again started fighting Rommel, who eventually fled after receiving further injuries. Only then did George and Daniel feel it was safe to get out of the smashed vehicle. Fortunately, they suffered only bruising; neither had any broken bones.

– Esmond Martin

© Courtesy FFI

Kidike – Roost of the Pemba Flying Fox

A community-run eco-tourism project on Pemba Island is paying dividends, says ***Eleanor Carter***

The **Pemba Flying Fox**, *Pteropus voeltzkowi* a critically endangered species of bat endemic to Pemba Island, is best seen near the village of Ole Mjini, on the NE of the island, at a place called Kidike, where their largest colonies are found.

In the daytime, trees at this site are smothered in the giant bats with their red-chestnut coloured fur – hanging upside down, just snoozing the daylight hours away, or else squabbling among themselves over the best roosting places. As one of the largest of all fruit bats, having a wingspan that may be as wide as 70 cm, these animals present quite a spectacle when they launch themselves *en masse* at dusk, for a night out foraging.

These bats have a troubled recent past, however. In the early 1990s they were on the brink of extirpation. The colony then numbered no more than about 200 individuals, as their preferred roost trees were being felled at an alarming rate, and even the few surviving bats were being hunted as a food delicacy.

The Zanzibar Department of Forestry (DCCFF) came to the rescue of these creatures – with support from the global conservation NGO, Fauna & Flora International. Years of awareness campaigns and local conservation efforts followed. And with time, people have come to appreciate the importance of their winged friends.

The presence of these bats is critical in maintaining the integrity of the area's forest, for it is their feeding patterns that result in the dispersal of the seeds of many of the forest trees. Indeed, the seeds of some trees need to pass through the digestive system of the bats before they will germinate.

Without the Pemba Flying Foxes, the island's fragile forest ecosystem would begin to crumble, resulting in the loss of harvestable food plants, fuel wood, and medicinal plants for people, while depriving the numerous other species that are dependent on the forest of a habitat in which to live.

Many villages on Pemba have established 'Pemba Flying Fox Clubs', and the bats' population today has recovered to around 11,000 individuals.

The Kidike roost site is one of only a very few locations where these bats can be seen year round. The local community has established a visitor's centre at the site. And some local villagers are studying to become guides, available to show you to the roost and to tell you about these fascinating creatures.

This is the first community-managed eco-tourism venture on northern Pemba. Its success will hopefully set a precedent for future operations. At around just US$ 3.00 per person, Kidike is certainly worth a visit. Moreover, all proceeds from visitors go to a community fund. Already, the fund has been instrumental in providing this rural village with its first grey water disposal system.

For further information, ***Mohammed*** *– Secretary of* ***Kidike Pemba Flying Fox Club*** *– can be reached on Tel. + 255 (777) 470521. Prospective visitors are reminded to dress appropriately, as this is an Islamic region.*

Paradise lost

When the day comes for the historian to have access to all the records which are now out of reach even of the eyes of a Colonial Secretary, it will be possible for a remarkable story to be written of the way in which, beneath the shelter of a British Protectorate, the hands of Sir Having Greedy have been stretched out to seize the possessions of a savage tribe, unhappy in their too great wealth.

– Anonymous article published in *The Nation*, BEA, 21 June 1913

Moving the Maasai:
A colonial misadventure

by **Lotte Hughes**

Palgrave, Macmillan, in Association with St Antony's College, Oxford (Basingstoke & New York; 2006)

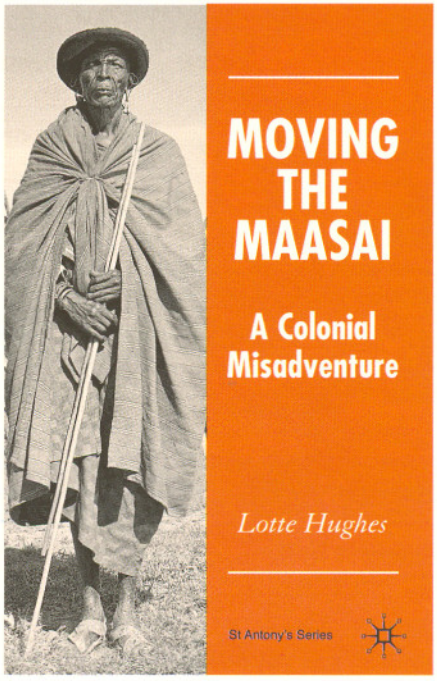
pp. 240
ISBN 1–4039–9661–X

Reviewed by ***D L Manzolillo Nightingale***

Poor Sir Charles Eliot! Things did not go his way. Taking a dim view of 'Masaidom', he wished it gone forever: "The sooner it disappears and is unknown, except in books of anthropology, the better." Instead, it was Sir Charles who disappeared. He resigned over dubious land grants in Kenya's best grazing areas, which coincidentally had been occupied for hundreds of years by the Maasai.

Wresting the land from the Maasai was easier said than done, thanks to obstructing colonial officials, British MPs, uncooperative senior warriors, and one extraordinary age-set spokesman. The Maasai eventually lost out. Making them vanish altogether has proved impossible, however. Shuffled from reserve to reserve, they continue to be pursued around the country by missionaries, settlers, agriculturalists, development experts, conservationists, anthropologists, photographers, journalists, donors, tourists, speculators – and, of course, groupies.

Lords of this land before they were relegated to its inhospitable wastelands, the Maasai have ended up in possession of East Africa's most renowned asset: its wildlife. Unwilling participants at first, they are getting into the game. Branding the country with red *shukas*, spears and shields, they have become its trademark. The human face that Kenya presents to the world is, more often than not, Maasai.



Positioned at the epicentre of Kenya's vibrant tourism industry, the Maasai are determined to start collecting the windfall. Anything that affects the Maasai will eventually have an impact on wildlife, and on the tourism business that is so vital to Kenya's economy. The recent unrest over Magadi, Amboseli and Laikipia has its roots in historical actions that must be scrutinised anew. This saga has not yet played itself out. There are still scores to be settled. *Moving the Maasai: a colonial misadventure* tells this story.

The book is the culmination of years of research by Lotte Hughes, a historian at the Open University. Its focus is on the forced moving of the Maasai out of key areas in Kenya, two Agreements made with the British (in 1904 and 1911), and the landmark legal case the Maasai initiated to render the second Agreement void.

Until now, information about this episode in Kenya's history had come from colonial sources. The rich oral history of the Maasai community had received scant attention until Hughes painstakingly took down testimony from survivors of the second move, some on their deathbeds. She unearthed letters from one of the key protagonists in the saga, a colonial doctor by the name of Norman Leys. Fulfilling the prophecy of the anonymous writer to *The Nation* (who, it turns out, was the British MP Edmund Harvey), she has come up with the goods. And these goods are, as she says, "more shocking than fiction".

The first Agreement was a rather flimsy affair, but it did give the Maasai some guarantees and made certain provisions for them – including a land grant to the Chief who facilitated matters. The second Agreement was an absolute outrage. It essentially negates the first Agreement, was signed by a minor and by representatives of only one section of the Maasai. The age set spokesman (Parsaloi ole Gilisho) signed under duress. What is even more shocking, however, was the insertion of a clause by Sir Percy Girouard on 26 April 1911 – 13 days *after* the last Maasai had signed the Agreement.

This clause allowed an exception for 'mining or other public purposes' in the Maasai reserve. I doubt the Maasai ever *saw* the clause. A 99-year lease had been granted to a new company, the Magadi Soda Company, on 12 April 1911. Shares in the Company had been sold earlier that year, obviously in anticipation of getting the Maasai out of the way. The issue is especially dubious, as the second Agreement dealt mainly with Laikipia, but was clearly targeting the resources in Magadi as well. Hughes' conclusion: the paperwork and facts suggest that the Company and its successors at Magadi "probably have no legal right to be there".

Moving the Maasai out of Laikipia was pandemonium. Norman Leys and others protested over the move and its conditions. Letters appeared in the press. Ole

Gilisho refused to go. The move stopped, and started, stopped and was reversed. Key reports were lost in transit. Girouard lied to the Colonial Office. In London, Lewis Harcourt was becoming increasingly exasperated with Sir Percy's tales.

Chapter Four, *The Court Case*, is a treat. The Maasai opted to sue. Leys hooked Ole Gilisho up with lawyers. The Administration blatantly obstructed due process. The lawyers for the Maasai protested to the Colonial Office, which ordered the Governor to stop interfering. The plaintiffs set out arguments based in self-evident truths. The Crown clowned around with definitions, contradictions and absurdities. The score: Clowns 2, Reality 0. The cost: mobility, resources and rangeland for pastoralists and wildlife. While the Maasai were given leave to appeal to the Privy Council, records state that this provision lapsed when they failed to provide security.

Hughes, though, relates another, rather more sinister reason for their loss of interest: Ole Gilisho was threatened with drowning if he set sail for Britain.

A hundred years have passed since these events, but the forces they set in motion, and their impacts, continue to make waves. *Moving the Maasai* provides the backdrop to recent Maasai agitation, adding a new dimension to issues surrounding their demands. Despite their reputation as 'cultural conservatives', and despite constraints posed by illiteracy, the Maasai did not hesitate to confront the colonial power in its own arena. Out-maneuvered at the time, the Maasai have continued to insist on having their day in court.

Had the British understood and respected Maasai culture and governance structures, they would have realised that the signatories to the Agreements had no authority to alienate Maasai interests from the land. Nor did the British anticipate how the imposition of nonsensical structures of authority on a people who already had a well-developed sense of democracy and effective power sharing arrangements would continue to cause problems fully a century later.

Had Olonana's counsel been less vested in self-interest, things might never have come to such a pass. This is something for the Maasai to contemplate and consider when choosing new leadership.

'Out of the woods'

TECHNIQUES FOR WILDLIFE INVESTIGATIONS AND MANAGEMENT

Clait E Braun (Ed)

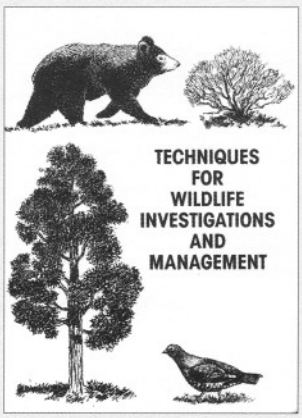
Published by ***The Wildlife Society***
5410 Grosvenor Lane, Suite 200,
Bethesda, MD 20814–2144, USA

(Maryland, US; 2005)
Hardcover; pp. 974

ISBN 0–33564–15–5

US$ 75 (in the US)
/elsewhere US$ 95

Reviewed by ***Malte Sommerlatte***



When I started studying forestry and wildlife management in the early 1960s at the University of Goettingen in Germany, one of the reasons for my doing so was that, at that time, such a course involved precious little by way of mathematics, physics, and chemistry – all subjects I was not very good at.

In those days, the four-year degree dealt with topics such as woodland ecology, plantation establishment, timber harvesting, wildlife biology, and game control – all seen as important if you were going to manage a forest estate for both wildlife and tree production.

The extent to which things have changed is graphically demonstrated in the latest edition of *Techniques for Wildlife Investigations and Management*, whose 34 chapters describe all the very latest wildlife management techniques, as applicable to North American wildlife. The main difference from when I was a student is that wildlife management has become an exacting science in itself and, as such, employs a wide variety of highly sophisticated techniques.

I bought my first copy of *Techniques for Wildlife Investigations and Management* in 1969, when the book had only 24 chapters. The field of wildlife management has moved on from the basic subjects (estimating wildlife numbers, population dynamics, and wildlife control), to include such aspects as radar tracking, geographic information systems, and satellite photography. All this has brought wildlife managers well and truly out of the woods – and into the domain of what a business consultant might call 'state-of-the-art' or 'cutting-edge' technology.

Techniques for Wildlife Investigations and Management is a useful reference book for wildlife managers wanting access in their fields to the latest methodology (albeit from a North American perspective). An added advantage is that each chapter gives a detailed list of references, many of which, thankfully, are now also available on the Internet.

The book is written in a dry, technical style, however, and some chapters make for heavy reading, as they are full of complicated equations and formulae. Some of the contributions are very detailed, while others are not, which leads to an unevenness in the breadth and quality of information presented. The chapter on game capture I found rather disappointing in that it does not mention the enormous contribution South African game capture techniques have made to overall wildlife management over the past 20 years.

Another technique that deserves greater attention in the book, as it has revolutionised wildlife management, is game fencing and its role in allowing populations of large mammals to exist in close proximity to human settlements. I was also surprised to find that fire management, or controlled burning, techniques are barely mentioned, despite a long tradition among North American foresters of fire management for regenerating pine forests.

The chapter on managing forests for wildlife is a useful new contribution, but it does not do justice to how a forest's biodiversity can be managed (the coppice system, for example, used in countries such as Germany and England for 700 years, has proved highly beneficial to wildlife diversity).

To sum up, this is a valuable reference work that every wildlife biologist should own, or at least have access to. While the book deals specifically with North American wildlife, many of the techniques it outlines can be adapted and refined to suit African conditions.

It is unfortunate that there exists no equivalent manual for any of the East African countries. Indeed, even South Africa still has no such manual. So much of the pioneering work done in the field of wildlife management originated here on the African continent, so the production of such a book – written from an African perspective – would be of inestimable value to the continent's wildlife managers. Bodies like the East African Wild Life Society and the African Wildlife Foundation should perhaps take note.

Based in Naro Moru, Kenya, ***Dr Malte Sommerlatte*** *has for many years been providing Consultancy Services in Wildlife Management and Forest Conservation across Africa.*

'Invaluable'

POCKET GUIDE TO THE REPTILES AND AMPHIBIANS OF EAST AFRICA

by **Stephen Spawls, Kim M Howell,** and **Robert C Drewes**

A&C Black, London; 2006

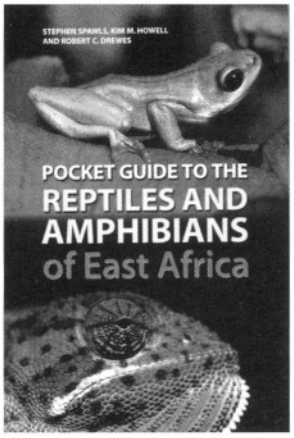
pp. 240, illustrated

KSh 2,100 (US$ 30)

Reviewed by ***Brian W Finch***

It is only four years ago in 2002 that these same authors – together with the late James Ashe (1925–2004) and in association with the late Alex MacKay (1939–2003) – made the East African reptile fauna accessible as never before in their definitive *Field Guide to the Reptiles of East Africa*.

My first experience of using that *Guide* in the field (and it was not even my own copy, but that of my companions at the time, Richard and Ann Bishop) led to the discovery of a new Agama species. This went on to be described in 2005 (report in SWARA Vol. 28 No. 4 / October–December 2005). Were it not for the *Guide*, however, I should almost certainly have dismissed this Agama as simply another form of the familiar Red-headed Rock Agama, *Agama agama*.



I subsequently made a point always of taking a copy of the *Guide* (my own) with me on my field trips. For me, as for other roving naturalists, the book has greatly expanded my knowledge of, and interest in, the East African reptile fauna. Being comprehensive, the original *Guide* is bulky, however – and also expensive. And, although it has since been reprinted (at least twice, to my knowledge), it has not always been very easy to obtain. Demand for the book has continued to outstrip supply, it seems – and deservedly so.

For all these reasons, the advent of the new Spawls *et al. Pocket Guide* comes as a very welcome development. The *Pocket Guide* has the considerable added appeal of including in its treatment, not only the reptiles (snakes, lizards, worm lizards, chelonians, and crocodiles) of our region, but *also* the amphibians (including the caecilians, as well as the various frogs and toads).

Until this year, there was no readily available literature – and certainly no field guide – dealing with the East African amphibian fauna. Now, suddenly, we find ourselves blessed with two such publications: this one and the Alan Channing–Kim M Howell *Amphibians of East Africa* (Cornell University Press), reviewed in the preceding issue of SWARA (Vol. 29 No. 1 / January–March 2006).

It came as a relief to find that Common Names given in the new *Pocket Guide* are consistent with those in the original Spawls *et al.* work. Such uniformity is important when introducing any hitherto comparatively obscure fauna – in this case the herpetofauna – to a broader popular audience. Name changes such as those reflected in Bill Branch's *Photographic Guide to Snakes, Other Reptiles and Amphibians of East Africa* (Struik, 2005), reviewed last year in SWARA (Vol. 28 No. 3 / July–September 2005), can be confusing, to say the least.

On first opening the *Frogs and Toads* section of the new *Pocket Guide*, my eyes alighted immediately on an image of one of the *Hyperolius* Reed Frogs that I have photographed repeatedly around Naro Moru, Mweiga and Nyahururu in central Kenya, but which I had never before been able to identify – even with the help of the Channing–Howell book. The frog in question, *H. glandicolor patherinus*, appears on p. 192, as part of an attractive spread showing Common Reed Frogs of the *Hyperolius viridiflavus*/*Hyperolius glandicolor* complex.

For some species, the Common Names in Channing (including those of the first three species treated) differ from those in the *Pocket Guide*, which surprises me inasmuch as the same expert – Kim Howell – is a co-author of *both* books! I did once explain (in *What's in a Name;* SWARA Vol. 27 No. 2 / April–June 2004) why I am a bit of a stickler for *uniformity* in the use of Common Names.

In general, colour reproduction of the photographs featured in the Spawls *et al. Pocket Guide* is refreshingly clear and light throughout, with none of the over-inking that, sadly, has rendered so many of the images in the Channing–Howell book quite obviously too dark. In the new *Pocket Guide*, the images – at least of those species that I know well – really are true likenesses of their subjects.

In a compact, 240-page pocket guide, one might expect to find accounts of only a selection of the more commonly encountered species. Cleverly, the authors of this *Pocket Guide* have incorporated – at the end of certain sections dealing with particular families, or (in some cases) genera – brief outlines of related species that also occur in East Africa, but which are not illustrated in the *Pocket Guide*.

This allows the publication to cover all reptiles and amphibians known to occur in the region, which besides Kenya, Tanzania, and Uganda also rightly includes both Rwanda and Burundi. In the past, the latter two countries have often been omitted from field guides purporting to cover 'East Africa' – more because they are French-speaking nations than for any zoogeographic reason. It is good to see the authors of this book follow zoogeographic, rather than linguistic, principles!

The Introduction includes Altitude and Vegetation maps of the region, as well as clear guidelines on how to locate, observe, and (where necessary) collect reptiles and amphibians. The accent, however, is on identifying species in the field. The authors stress the importance of environmental education as a means to ensuring the continued survival of species through countering the (usually) baseless fears that are everywhere threatening our region's reptile fauna, especially.

The species accounts include concise notes under the headings: Identification, Habitat and Distribution, and Natural History. The accompanying distribution maps are easy enough to follow. There is a helpful Glossary at the back of the book followed by a list of Names and Addresses for Herpetological Institutions in East Africa, and finally Indices of both the Scientific and Common Names.

Portable, user-friendly and relatively inexpensive, *Pocket Guide to the Reptiles and Amphibians of East Africa* is an indispensable field companion for anyone who may be interested in learning more about East Africa's herpetofauna. Used in conjunction with the Spawls *et al.* original *Field Guide to the Reptiles of East Africa*, or (for the amphibians) with the recent Channing–Howell *Amphibians of East Africa*, this invaluable book will doubtless also spawn exciting new discoveries.

'Against all the odds'

THE STORY OF ASIA'S LIONS

by **Divyabhanusinh**

Marg Publications, Mumbai; 2005

ISBN 81–85026–66–1

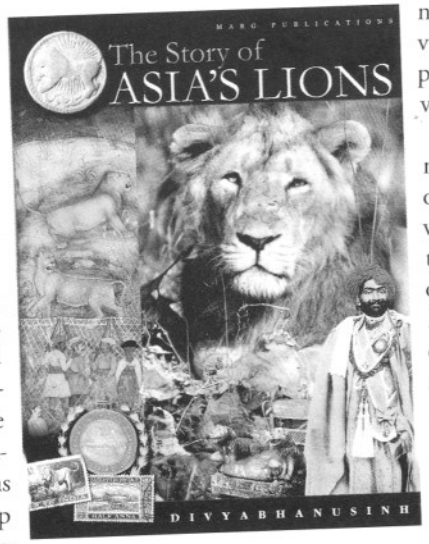
pp. 264, illustrated

US$ 49 / UK£ 30

Reviewed by ***Gordon Boy***

The estimated 330 lions that today – against all the odds – still frequent the 1,412-km² Gir National Park and Wildlife Sanctuary and its immediate environs on the Saurashtra (Kathiawar) Peninsula in India's western state of Gujarat make up the only remaining relict population of a race, *Panthera leo persica*, the Asiatic Lion, that until as recently as the 19th Century ranged widely across SW Asia from Syria in the west to NE India's Bihar Valley.

Incredible though it may seem, this figure – for the total number of Asiatic Lions in existence – represents an *increase* of anywhere between 200 % and 500 % on the population (of perhaps just 55–110 animals) that occurred here 100 years ago in the early 20th Century. The Asiatic Lion had by 1892 been exterminated from all other enclaves within its vast traditional range on the Indian subcontinent. (A few animals are reputed to have held out for slightly longer, until the 1940s, near Dezful and along the banks of the nearby Karun River in SW Iran.)



The race's recovery in and around the Gir National Park and Wildlife Sanctuary has always been precarious, given the genetic problems associated with centuries of in-breeding (which has turned these lions into virtual 'clones', more inbred even than today's Cheetahs), coupled with the risk of exposure to epidemics of disease. It has come against a backdrop of unprecedented human population growth. (India's human population, now one-sixth of the planet's total, passed the 1-billion mark in 2001, up from about 284-million in 1901: an increase of more than 250 %. The human population of Gujarat alone, a state roughly the size of Uganda, now exceeds 45-million.)

The 259-km² Gir National Park is nestled within the very much larger Gir Wildlife Sanctuary, encompassing 1,153 km². Until the 1970s, the National Park was – like the Sanctuary – dotted with human settlements. Today, in the Sanctuary, there are 54 Maldhari nesses (or forest camps), accommodating a total of 2,500 people with 13,000 head of livestock (buffaloes and cattle), as well as 14 forest villages, which collectively support a further 4,500 people with 4,200 head of livestock.

There are also three Hindu religious shrines inside the Sanctuary, including one (Kankai) that now extends to 24 permanent structures spread over 9,516 m², and which in one year-long period (spanning 1997–98) was visited by nearly 50,000 pilgrims in 1,049 motor vehicles.

Within just six kilometres of the Sanctuary's outer boundary are 79 villages with a collective human population of 136,000 and with livestock numbering in excess of 100,000 animals. Annually, come the dry season, thousands of these outsiders with herds of tens of thousands of livestock routinely invade the Sanctuary.

Such grazing pressure, over and above that applied by resident livestock, triggered a collapse during the late 1960s in the lions' natural prey base of wild herbivores: Chital and Sambar deer, Chinkara gazelles, Nilgai and Chowsingha antelopes, and Wild Boar. At this time, over the dry seasons, domestic buffaloes and cattle were found to outnumber the wild herbivores by a ratio of nine to one.

Between 1968 and 1971, domestic livestock animals were found – not surprisingly – to account for a staggering 75 % of the diet of the Gir lions. (The lions got to eat less than one-quarter of their livestock kills, however, as watchful groups of Dalit tanners would move in smartly to retrieve the carcasses so as to be able to salvage the whole skins for curing.)

A phased resettlement programme inaugurated in the early 1970s saw all Maldhari nesses evicted from the National Park, while 75 (out of a then total of 129 nesses) were relocated away from the Sanctuary. As the habitat recovered, so the count of wild herbivores rebounded, from around 5,500 animals in 1969 to 15,000 in 1979, by which time the proportion of domestic livestock in the diet of the Gir lions had dipped below 50 %. By 1996, with a wild herbivore population of 33,000 animals, the lions' reliance on livestock prey had further diminished – to 25 %.

In the meantime, in a bid to attract tourists, some local 'guides' had resorted – during the 1970s – to staging 'Lion Spectacles', using tethered live baits (unwanted bull buffalo calves or goats) to 'anchor' the lions to chosen viewing sites. 'Show' lions took to congregating in uncharacteristically large (and indolent) prides, sometimes numbering 20 or more animals. The infamous 'Lion Shows' were finally outlawed in 1987, following years of public outcry and ridicule.

Come the late-1990s, the Gir lions were attracting 60,000 tourists a year, bringing in annual revenue of some Rs 14 lakhs (the equivalent of about US$ 30,000). Most tourists confine their visits to a 400-hectare chain-link-fenced 'Lion Safari Park' at Devalia, so reducing pressure on the rest of the Sanctuary. This vast enclosure sits incongruously amid some of the Sanctuary's prime lion habitat, however, with the result that needless skirmishes through the wire mesh between the caged lions and their wild counterparts are commonplace.

Historically, that part of India's Gir Forest that remains has *never* supported more than 300 lions. So, in the 1990s, as the lion count was approaching the 300-mark, the lions – inevitably – started to disperse in ever growing numbers, seeking new territories outside the protected area. This brought them into direct conflict, on the intensively tilled land around the Sanctuary, with villagers and their livestock.

Today, as many as 56 (17 %) of the 330-odd surviving Asiatic Lions live in small satellite populations *outside* the National Park and Wildlife Sanctuary, where they depend for cover on plantation forests, patches of natural vegetation, and scattered thickets of invasive *Prosopis* and *Lantana* scrub, while preying almost exclusively on domestic livestock. Of 1,902 cattle and

buffalo losses for which compensation claims were lodged in one year (spanning 1998–99), 1,329 verified claims were settled (573 were adjudged to be fraudulent) at a total cost to the state of Rs 1.15 crores (about US$ 250,000).

Between 1977 and 1991, Gir lions attacked 193 people – killing 28 of them. Forty of these attacks took place within a single one-year period (in 1987–88), following a severe drought. In some cases, local people have retaliated: 14 lions are known to have been poisoned between 1985 and 1995, all but three outside the protected area. Over roughly the same period, 11 lions were accidentally killed after being hit by trains on the railway skirting the Gir Forest, while trucks and other vehicles plying the 89 km of public roads that traverse the forest have accounted for further lion fatalities.

As early as 1901, there was talk of re-introducing *Panthera leo persica* to parts of its former range, using translocated Gir lions to create a second viable population. A forest near Gwalior, in what is now India's northern state of Uttar Pradesh, was initially proposed as a second home for the lions. (The Gwalior plan is historic in being the first known effort to re-introduce a locally extinct large carnivore to its former habitat.)

Nothing came of this plan, however, which was ill timed in that the Gir lions, still reeling from a population crash brought on by the genetic 'bottleneck' of the late 19th Century, had just been further decimated by the calamitous drought of 1899–1900. Not unreasonably, the then influential Nawab Rasulkhanji of Junagadh – the enlightened ruler responsible for instituting the protective measures that ultimately saved the Asiatic Lion – declined to make any pair of 'his' precious lions available for the translocation exercise.

Instead, Maharaja Madho Rao Scindia of Gwalior, the architect of this translocation plan, resorted (in 1920) to introducing, into Gwalior's Shivpuri Forest, four pairs of African Lions imported from Kenya. (To look at, African lions differ only very slightly from their Asian counterparts. The 'belly fold' of loose skin so prominent in Asiatic Lions of both sexes is comparatively rare among African Lions. Asiatic Lions – separated from their cousins in Africa for some 200,000 years – also have generally more conspicuous dark tail tufts and bushier tufts of elbow hair. And the manes of Asiatic males are generally shorter, on the top of the head especially.)

Two of the introduced African pairs took to killing livestock and were promptly shot. The male of another pair came to grief at the claws of a Tiger. The three remaining animals too were eventually shot, but not before they had strayed far from their intended Gwalior refuge. There might even have been some breeding in the wild, for there are credible reports, extending well into the 1930s, of additional 'Gwalior lion' sightings in the region.

The political upheavals associated with Partition following Indian independence in 1947 saw the Shaurashtra Peninsula torn between whether to stay a part of India or whether to accede to Pakistan. Junagadh's last Nawab, Mahbatkhanji III, who had continued with his illustrious predecessor's conservation measures, fled into exile in Karachi, Pakistan, when it became apparent that Shaurashtra's allegiance would be to India. The resulting power vacuum proved catastrophic for Gir's wildlife.

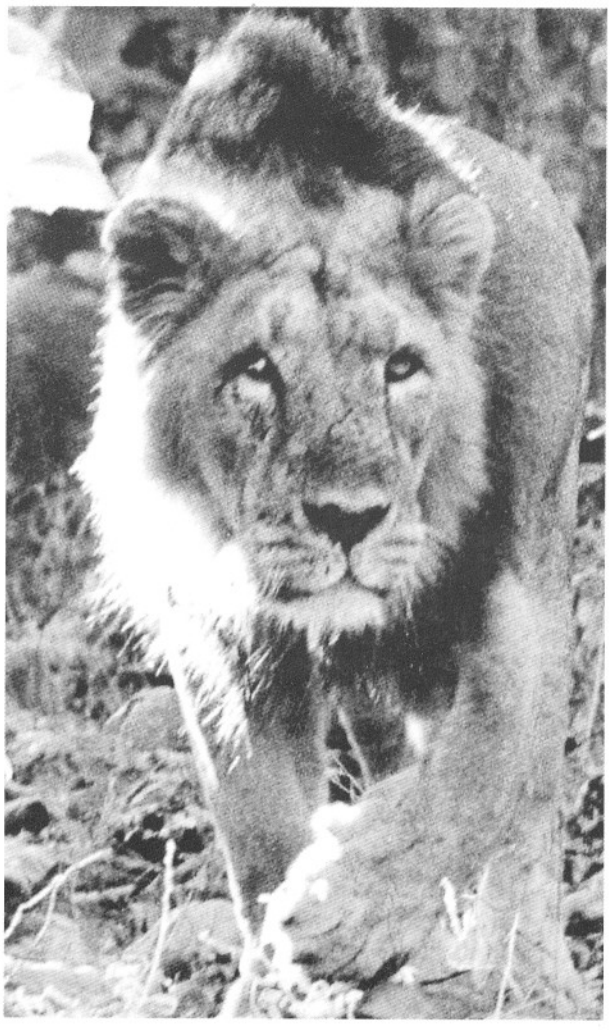
Opportunistic shikaris (hunters) moved in, not only shooting some of the Gir lions (then numbering some 200 animals), but also slaughtering most of the area's wild antelopes (for venison), thus depriving the lions of much of their natural prey and triggering their subsequent dependence on domestic livestock.

The first – and, so far, only – translocation of Asiatic Lions took place in 1957, ten years after India's independence. Under the aegis of the Indian Board for Wildlife, one lion and two lionesses were taken from Gir and released in the Chandraprabha Sanctuary, a 96-km² refuge in the Chakia Forest close to Varanasi in Uttar Pradesh State. The early signs were promising, and by late 1964 Chandraprabha's Asiatic Lion population had swelled to 11 animals.

Then, in 1965, all 11 Chandraprabha lions suddenly disappeared. Some were shot, others poisoned – all after coming into conflict with humans through predation on livestock. The abiding lesson of the 'Chandraprabha Experiment', as this came to be called, was that, as a second home for Asia's Lions, a sanctuary of just 96-km² is far *too small* an area.

Another, very much grander translocation plan has since taken shape. In 1993, the Wildlife Institute of India proposed that Madhya Pradesh State's 345-km² Kuno Wildlife Sanctuary be expanded to 700 km² (that is, six times the size of Kenya's Nairobi National Park), and that the entire resulting entity be gazetted a National Park, with added provision for a Sanctuary *cum* Buffer Zone taking in a further 3,000 km², so creating a protected area that would be more than twice the size of the Gir National Park and Wildlife Sanctuary. The area would be re-stocked with Chital, Nilgai, and other prey animals, and the lions – when they arrived – would be radio-collared, so their movements could be tracked.

Under this plan, which would begin with the introduction of two or three lions and up to five lionesses (all from stock-raiding Gir satellite groupings), the creation of a second population of 30–50 Asiatic Lions was envisaged within the first decade. To this end, 24 villages (around 7,000 people) have been moved out of the existing Kuno Sanctuary and re-settled outside the proposed Buffer Zone. The re-stocking with wild herbivores has not occurred, however. And some of the relocated families, unhappy that amenities promised to them as inducements to vacate the Sanctuary have not materialised, are threatening to return, livestock and all.



The Kuno translocation plan has run into an unexpected obstacle: Gujarat State is refusing to supply the lions!

The state is intent, it seems, on jealously guarding its *exclusive* ownership of an animal that, after all, is the national emblem of all India, arguing that, were it to lose this cherished exclusivity of ownership, the incentive for its people to go on protecting the Gir Forest would be compromised, thereby jeopardising the *existing* lion population.

This remarkable story has been told before, notably in one of the chapters (*Once There Were Lions*) of David Quammen's *Monster of God* (W W Norton and Co, 2003; pp. 17–124). Never though has the saga been presented in such detail, or to such riveting effect, as it is here – in Divyabhanusinh's *The Story of Asia's Lions*

Divyabhanusinh's book is unique in that it follows the plight of the Asiatic Lion from antiquity to the present day, drawing on a wealth of records – both written and from the visual arts – to trace the rich interplay, through Asian civilisation down the ages, between lions and humanity, culminating in the story of how, in recent times, the subspecies has been all but eliminated from its historic range.

The book shows how the lion – which had not featured prominently among the carved animal motifs on the steatite (soapstone) seals of early Indus Civilisation (c. 3000–1500 BCE) – came into its own as a royal symbol during the Mauryan Period (322 BCE–320 CE) of Persian influence that, under the Emperor Ashoka, saw the establishment of the first Indian Empire (and also the last) to span the entire Indian subcontinent.

Heraldic lions formally seated atop lotus designs on the capitals of Mauryan stone pillars were the symbols of Ashoka's reign. *The Story of Asia's Lions* shows how, on being assimilated into the iconography of the Buddhists and the Jains, these lion figures were adapted to reflect a stylistically more indigenous, dance-inspired Indian exuberance and sensuality, culminating in the lion's being accorded pride of place amid the vigorous expressionism of Hindu temple art.

The revival, meanwhile, of Sanskrit – the ancient language of the *Vedas* (hymns dating from before 1000 BCE, making them India's earliest religious writings) – sparked a renaissance, over the first few millennia of the Common Era, in Indian literature and art. And the great Hindu epics of the period abound with references to lions.

In *The Story of Asia's Lions*, Divyabhanusinh explores Sanskrit references to the killing of lions (often from horseback using either lances or bows and arrows, or else with the help of elephants) and to the consumption of their flesh. The image of the 'lion-slayer', reserved for kings on coins and other contemporary artefacts, was more a symbol of self-professed royal power and bravery, however, than an indication that any of these early kings might actually have hunted lions.

Hunting, as a royal pastime, really took hold in India with the coming of Islam in the Middle Ages. Under the Delhi Sultanate (1206–1526), the established pursuits of falconry and coursing with Cheetahs broadened to include the shikar (hunting) of lions and tigers, initially from horseback mainly, using a combination of lances and bows and arrows. Lion hunts, under the great Mughal Emperors Akbar (1542–1605) and Jahangir (1569–1627), who of course possessed the added weaponry of matchlock and early musket guns, took on the proportions of massive expeditions, involving veritable armies of attendants.

The lion-hunting exploits of the Mughal Emperors are immortalised in some of the era's exquisite miniature paintings, several fine examples of which are reproduced in *The Story of Asia's Lions*, beautifully vindicating the author's stated feeling that "There is nothing like visual material to illustrate the finer nuances of the past …"

The *coup de grâce* for India's remaining lions (excepting those on the Shaurashtra Peninsula) came under British imperial rule, which began in 1757 (ironically, with another conquering lion as its symbol). Over the ensuing 125 years, as the British consolidated their Empire, so the lion – shot by field officers and administrators at every turn – was eradicated from one after another of its haunts. Lion shoots were used as catalysts for acts of political brinkmanship with local dignitaries, in much the same way as a round of golf may be used as a 'softener' today.

Until the 1890s, the slaughter (by now focused on the Gir lions, since only stragglers remained elsewhere) continued with no regard at all for the subspecies' imminent demise. The alarm – finally sounded towards the end of the 19th Century – came amid (exaggerated) reports that there could be as few as "one dozen" lions left. In 1900, George Nathaniel (Lord) Curzon, then Viceroy of India, famously heeded this alarm by publicly declining to participate in a viceregal lion shoot laid on for him during a state visit to Junagadh.

Viceroy Curzon's subsequent letter to the Burma Game Preservation Association in 1902 (reproduced verbatim in the appendices of Divyabhanusinh's *The Story of Asia's Lions*), coming as it did from within the British Empire's top échelons, was hugely influential in enabling Junagadh's last two Nawabs to mount the rearguard conservation measures that ultimately succeeded – against all the odds – in saving the Asiatic Lion.

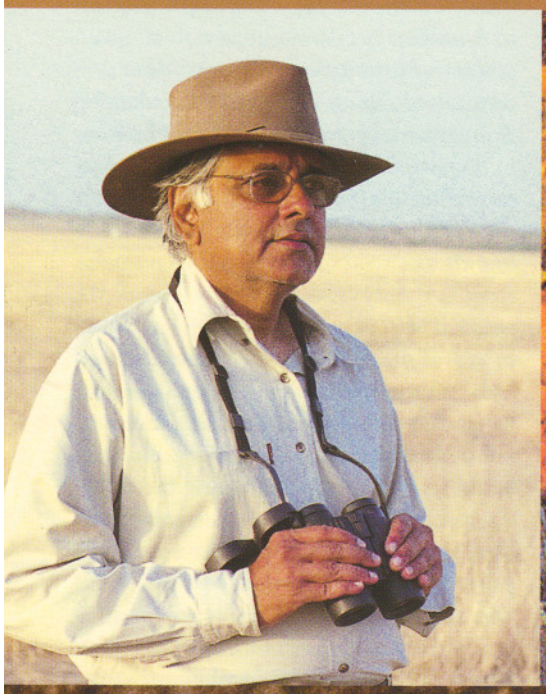
The lion shikar did not end here, however. Archive photographs reproduced in the book (nearly all from the author's own private collection) show maharajas posing with trophy lions shot in the Gir Forest both before and after Indian independence. And there are photographs too of the last viceregal lion shoot (which took place in 1942, with India's last Viceroy, Lord Linlithgow, and his family as the guests).

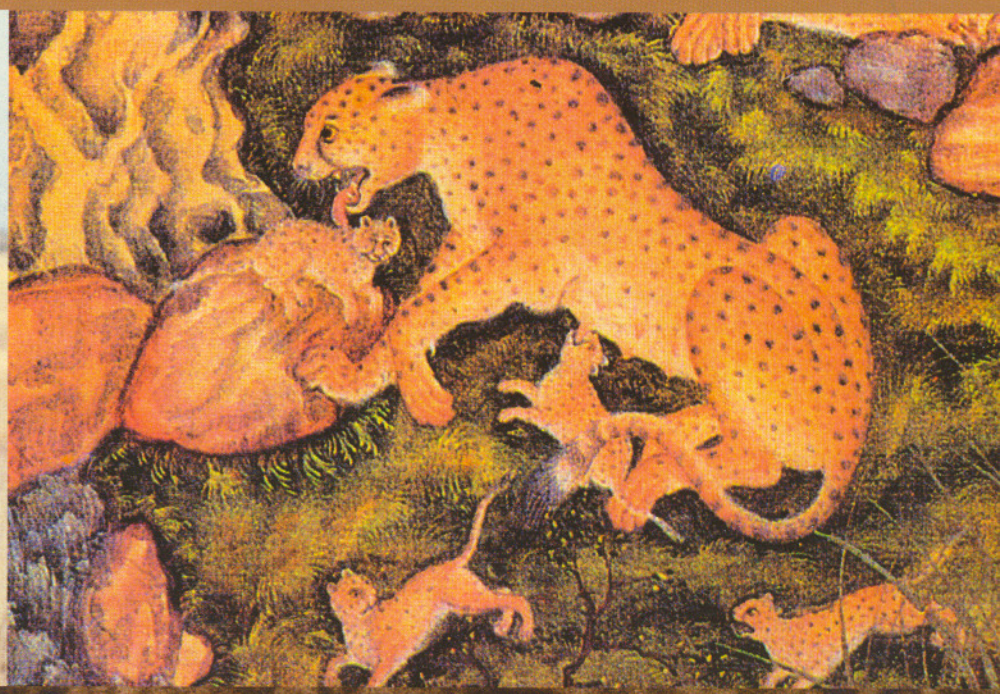
The Story of Asia's Lions also showcases more than 60 of Divyabhanusinh's own more recent photographs of the Gir lions, including several compelling studies in black-and-white. This beautifully designed book, with its sumptuous illustrations and lucid, insightful text, is clearly a labour of exeptional love. Five percent of the net value of each copy sold goes to the Gir Welfare Fund. Not for nothing is the book dedicated, in part at least, "To Asia's lions, which survive in spite of us."

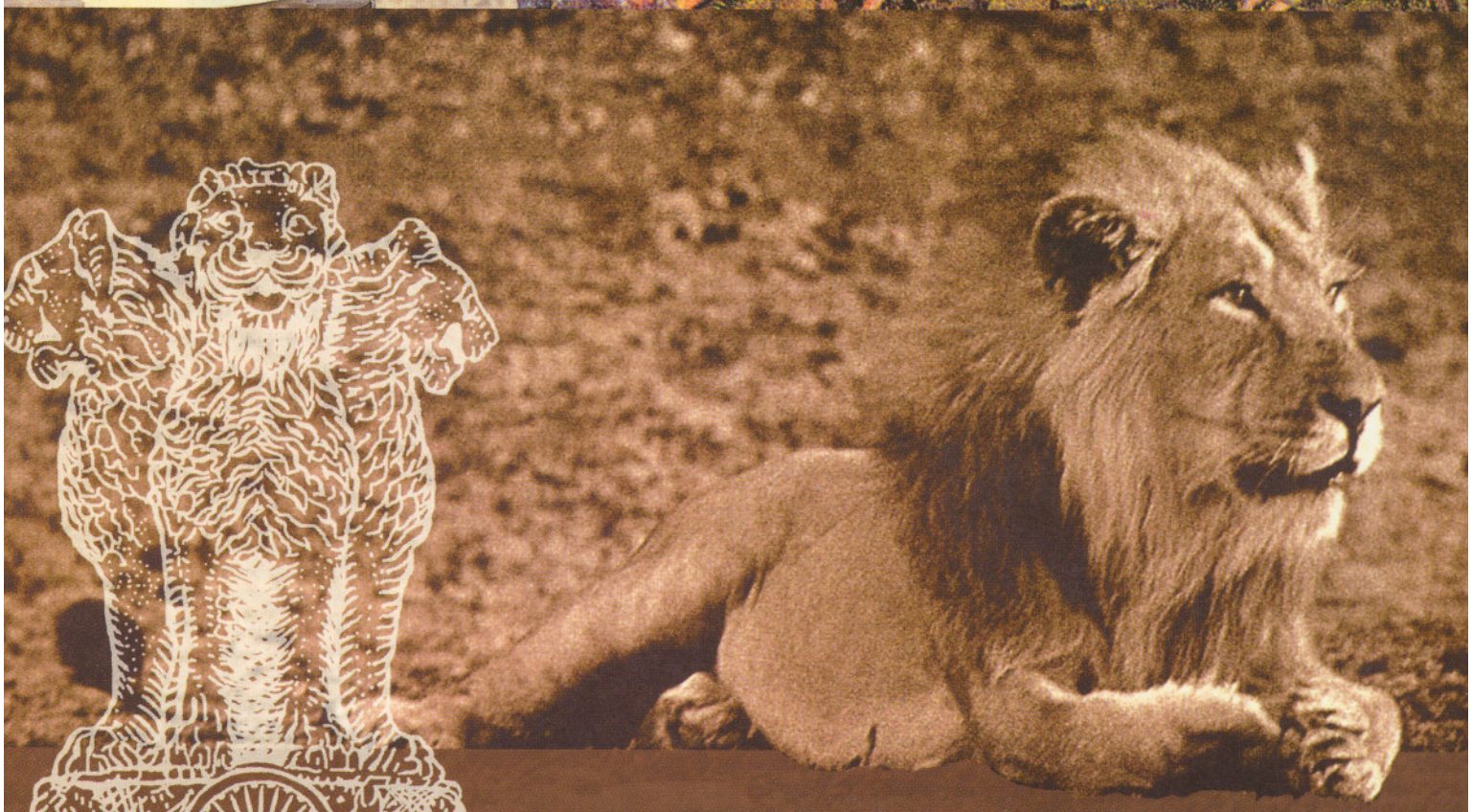
D I V Y A B H A N U S I N H

on

'THE STORY OF INDIA'S LIONS, CHEETAHS ... AND OTHER CATS'







Join DIVYABHANUSINH, retired Chief Operating Officer of the TAJ Group of Hotels, distinguished author, former Vice-President of WWF India and of India's Bombay Natural History Society, for BRUNCH (9:00 a.m. – 12:00 noon) on Saturday, 7 October 2006 at the Jockey Club Restaurant, Ngong Race Course, Nairobi. Tickets: EAWLS members KSh 1,200 per head. Non-members KSh1,500.

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Where there's a will...

In June this year I was invited to Antananarivo, Madagascar, to present a paper on *Protected Areas in Africa* with the added brief that I – like the other speakers who had been invited – should focus my presentation on the question of '*How best can PAs in Africa be made to work?*

Of course, I conceded at the outset that there exists *no* formulaic panacea for getting a Protected Area to 'work', whether in Africa or anywhere else. We do all accept, I think, that while the objective – that of safeguarding the biodiversity of such an area – should always be of paramount concern, the most effective means to achieving this end can vary enormously from place to place, even within a single country.

I therefore used my presentation to illustrate this point, drawing on a few contrasting examples from within East Africa to show how a protective strategy that works well in one place may fail utterly in another. I did point out, however, that there are some 'macro' considerations that can affect the success, or failure, of PAs more generally within a country. Not the least of these has to do with the fundamental 'disconnect' we see – between ordinary citizens across Africa and their politicians – over issues relating to the conservation of a country's natural resources.

At the risk of stating the obvious, African politicians – with their short-term interests (guided largely by immediate self-preservation) – are oblivious, by and large, to any notion of sustainability in the longer term of the communities they supposedly serve. Instead of being mainstreamed as one of the strategic pillars of the national interest, then, conservation across much of Africa has, as we all know, become marginalised to the extent of receiving very little, if any, real political support or attention.

'PA systems': EAWLS Executive Director Ali A Kaka addresses delegates at June's Symposium in Antananarivo, Madagascar.

What I saw and heard in Madagascar was, for me at least, refreshingly new – and altogether different. And yet the end result even there, it seems, is despairingly familiar, as I shall go on to explain.

In Marc Ravalomanana, Madagascar has that rare being: a President who has, and who continues, in his conservation *actions* (not just words), to buck the trend. Here is a leader who, during his two terms in office to date, has not only single-handedly increased his country's network of Protected Areas from 1.7-million hectares to 3-million hectares, but who – at a succession of international forums – has also committed his government to enlarging this network by another 3-million hectares by the end of 2008, so PAs will then cover something like 37 % of the entire island!

For his clarity of vision and unwavering 'top-down' commitment, Mr Ravalomanana is rightly held up as a model of the *political will* that conservation across so much of mainland Africa conspicuously lacks. You might be forgiven for assuming, given this degree of government commitment, that Madagascar might by now be a world leader in the conservation field.

Ironically, it was the Malagasy President himself (not surprisingly, one of the prime movers at the recent conference) who punctured this myth – by speaking candidly of the many difficulties he is experiencing in trying to translate his vision into practice.

The main problem Mr Ravalomanana faces arises from the 'disconnect' between the conservation measures enshrined in his vision and the interpretation, among ordinary islanders, of what this vision entails in practical terms. President Ravalomanana gave a telling example: During a recent helicopter flight across the island, the President told delegates, he noticed some farmers cutting down some forest trees in a Protected Area. Being the conservation-minded leader that he is, he instructed the pilot to land nearby, so that he could

EAWLS MEMBERS IN THE U.S.

The East African Wild Life Society has new **Financial Representation** in the United States. **Harry** and **Carol Ewell,** of Spencerport, New York – both dedicated, long-serving US representatives of the EAWLS – are with immediate effect assuming the *added* responsibility of collecting and processing EAWLS Membership Subscriptions and Renewals from within the US.

For the past 20 years, **Peter A Bakker** has fulfilled this duty – with considerable enthusiasm and flair. Peter, though, retired in 2003, and has since returned to live in his native country, the Netherlands. His help in setting up and administering an EAWLS account in the US has been instrumental, among other things, in enabling the Society to protect US members (who make up about one-third of the EAWLS global family) from any possible risk of exposure to credit card fraud.

The EAWLS is very fortunate in having committed people of the calibre of Harry and Carol Ewell to step into the breach.

Subscription and Renewal Payments from the U.S. should now be mailed to:

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The latest edition of the scientific journal of the East African Wild Life Society – the ***African Journal of Ecology*** (Vol. 44 No. 1; March 2006) – contains the usual, widely varied selection of original and authoritative research papers on aspects of the plant and animal ecology of eastern Africa and beyond.

Articles dealing with animal ecology include: ● **Notes on the distribution and abundance of the caecilian** *Boulengerula uluguruensis* **in Tanzania's Uluguru Mountains** (John Measey, John Mejissa, Henrik Müller); ● **Life history strategies of the Nile Tilapia in Lake Victoria, Kenya** (M Njiru, J E Ojuok, J Okeyo-Owuor, M Muchiri, M Ntiba and J Cowx); ● **Elevational variation in land-snail diversity and composition in a Tanzanian forest** (P Tattersfield, Mary B Seddon, Christine Ngereza, B Rowson); ● **Spatial and temporal patterns in [the rodent]** *Arvicanthus niloticus*, **as revealed by radio tracking** (Anke Hofmann, Katja

personally go over and "talk to" these irresponsible citizens ...

The explanation given by the startled farmers, after being suitably chastised, was: "Most Worthy, Excellent President, as you can see ... we are only testing out our new machetes." These farmers had absolutely no conception, Mr Ravalomanana said, that any one of them could possibly be at fault, for they had never thought of themselves as having *individual* parts to play in helping to *make a PA work*.

The obvious point is: that, while it may be easy for an enlightened political elite to make bold proclamations concerning conservation, such proclamations will prove fiendishly difficult to implement, if the people who depend on a country's natural resources for their day-to-day survival are not first consulted on, and then involved in, the conservation process. Unless this happens, precious conservation time and money will continue to be squandered.

'Community-based Natural Resource Management' – the catch phrase widely bandied about at the recent Antananarivo symposium, which had been organised by Conservational International – might just offer a pointer in the right direction.

While conservation solutions cannot, even with the best will in the world, simply be imposed on a populace, it does help – and this is the other 'macro' enabler I mentioned in my presentation – to have a clear, well formulated legal framework within which to operate. This may not be a problem right now in Madagascar. Here in Kenya, however, as many of us will know (to our cost), the absence of such a legal framework to harness, facilitate, and safeguard best practices is continuing to cripple conservation efforts on the ground.

I am referring, of course, to Kenya's long awaited (only to be repeatedly stalled) Wildlife Policy and Legislation Review. This is something the East African Wild Life Society, and others, have been pushing for as a matter of urgency. A Steering Committee has at last been formed, and this committee is due to start convening in July. A new Draft Policy should be forthcoming (we are told) before the end of the year. I hope only that the members of this Select Committee will, just for once, be able to put aside their personal differences in the interests of all Kenyans.

Back at the symposium, finally, the renowned researcher and author Jeffery Sachs noted in his speech at the closing ceremony that, while resources abound in Africa, there are always just as many problems, self-inflicted and otherwise. Conservation, he said, would go on being neglected in Africa because its crucial role in daily life is still neither understood nor appreciated.

"Even where there is the will, there isn't the 'wallet'," he said, adding that, "In the West, where there are certainly the wallets, there isn't always the will." Yet, as some fellow with a bushy beard once said, a long time ago: *Aluta continua*, 'The struggle goes on.' So, yes: we must go on fighting to secure a place for conservation in the mainstream of our daily public life.

– Ali A Kaka

African Journal of Ecology

Eckhoff, and Hans Klingel), and ● **Patterns of den occupation by the Spotted Hyaena** (Ernin Boydston, Karen M Kapheim, Kay E Holekamp).

On plants, there are articles on: ● **Harvest impacts and sustainability in Uganda's Bwindi Impenetrable National Park** (Robert Bitariho, Alastair McNeilage, Dennis Babaasa, R Barigyira); ● **Diversity of vascular plants on Lake Victoria's Ssese Islands** (Paul Ssegawa, D Nkuutu); ● **Forb diversity and similarity on kopjes in the Serengeti National Park** (Monica Poelchau, Shahroukh Mistry); ● **The role of salinity and sodicity in the dieback of** *Acacia xanthophloea* **in the Ngorongoro Caldera** (A J Mills), and ● **Tree euphorbias: Will they survive the impacts of Black Rhinoceros browsing in South Africa's Great Fish River Reserve,** (Linda C Heilmann, K de Jong, Peter C Lent, and Willem E de Boer).

Edited by **Prof F I B Kayanja** and published quarterly for the East African Wild Life Society by **Blackwell Publishing Ltd** in the UK, *African Journal of Ecology* can be accessed online at **Blackwell Synergy**, < www.blackwell-synergy.com/aje >.

Enquiries can be directed to < customerservices@oxon.blackwellpublishing.com > in the UK, or (in the US) to <subscrip@bos.blackwellpublishing.com >.

EAWLS members either living in, or passing through, Nairobi can of course always refer to issues of *African Journal of Ecology* – or *AJE*, as the journal is affectionately called – at the **Library** at EAWLS Headquarters on Riara (off Ngong) Road, Kilimani, where hard copies of the entire *AJE* back catalogue are available.

Karibuni

The East African Wild Life Society is pleased to welcome the following new members to its fast expanding global conservation family:

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Entebbe
L Bogoria NR
Isiolo
Meru
Bisinande - Bahole NR
L George
Ndere Isl NP
Kisumu
Nakuru
Nanyuki
Mt Kenya NP
North Kitui - Kora NR
Edward
Q Elizabeth NP
Masaka
L Nakuru NP
Abadare NP
Muranga
Tana
Kigezi GR
L Mburo NP
Ssese Isl
Ruma NR
Kisii
L Naivasha
Garissa
Mbarara
Mwea NR
Hell's Gate - Longonot NP
Thika
Kabale
Ol Donyo Sabuk NP
R Orugundu - Ibanda GR's
Bukoba
Migori
NAIROBI
Arawale NR
Mgahinga Gorilla NP
Maasai Mara NR
Nairobi NP
Athi
Boni NR
Ewaso Ngiro
Athi River
Musoma
Machakos
Dodori NR
L Magadi
Tana River Primate NR
Ukerewe Isl
L Natron
Lamu
Burigi GR
Serengeti NP
Namanga
Amboseli NP
Tsavo East NP
Biharamulo GR
Mwanza
Kilimanjaro NP
Galana - Sabaki
Malindi
Ngorongoro CA
Arusha
Arusha NP
Voi
Arabuko Sokoke NP
Malindi - Watamu Marine NP
L Eyasi
L Manyara NP
Tsavo West NP
Moshi
Ngeza
Mombasa Marine NP
Moyowosi - Kigosi GRs
Tarangire NP
Shimba Hills NR
Mombasa
Mkomazi GR
Gombe Stream NP
Kasulu
Kisite Marine NP
Tabora
Malagarasi
Pangani
Tanga
Pemba
DODOMA
Mahale Mts NP
Ugalla River GR
Sadani GR
Zanzibar
Lake Tanganyika
Mpanda
Katavi Plains NP
Kilosa
Rungwa - Kisigo GR
Morogoro
Dar es Salaam
Mikumi NP
Uwanda GR
L Rukwa
Sumbwanga
Ruaha NP
Iringa
Mafia
Udzungwa Mts. NP
Rufiji
Ruaha
Selous GR
Mbeya
Njombe
Matandu
Lindi
Mbemkuru
Lake Malawi
Songea
N
Map for Swara by Job Ballard
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House Guests

My geckos spend their day
in that lounge-lizard way
of theirs –
khaki stains on the wall:
surreptitiously, they crawl
behind pictures and pelmets...
...then hold staccato conversations
'tut-tutting!' in exclamation,
admonishing each other.

They're careless with their offspring,
haphazardly dropping
their eggs around the room –
small, white, papery balls
like miniature mint imperials
roll around my floor.

(I do 'egg patrols' – careful not to tread on any –
trying to rescue as many
as I can...)

The young are quite different
from their translucent parents –
all bug-eyed and brown.
They squiggle across empty walls
like terrestrial tadpoles
on the run.

The geckos wait for me, at night,
to turn on the light –
pale ghosts in the shadows...
...little by little inching out –
serpents' tails, blunted snouts –
into the open.

Attracted by the lamp's glow,
winged creatures tap the window
and fly in...
...whilst my tiny putty crocodiles –
with cartoon hands and knowing smiles –
plot cold-blooded murder!

Tails quiver excitedly,
heads swivel, eyes gleam brightly –
as the geckos watch
the corkscrewing spiral paths
of the oblivious moths'
last flights...

With all the speed of an eye's blink,
one wriggles in a high-speed slink
and – SNAP! ...
its smile stretches about the head
of a hapless insect – now quite dead –
and gulps it down – gone...

And I sometimes ask myself
whether geckos rue
power-cuts as much
as you and I do?

by Natasha Breed

Image: PAOLO TORCHIO

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