



'Back on track'

*'Free release' of Black Rhinos from the **Ngulia Rhino Sanctuary** within Kenya's Tsavo West National Park is under way. **Nana Grosse-Woodley** reports.*

'Rhino heartland': View over the Tsavo West National Park's Ngulia Rhino Sanctuary, which in May last year was expanded to 91 km² as part of a phased programme that will culminate in the eventual 'free release' of rhinos from the Sanctuary.

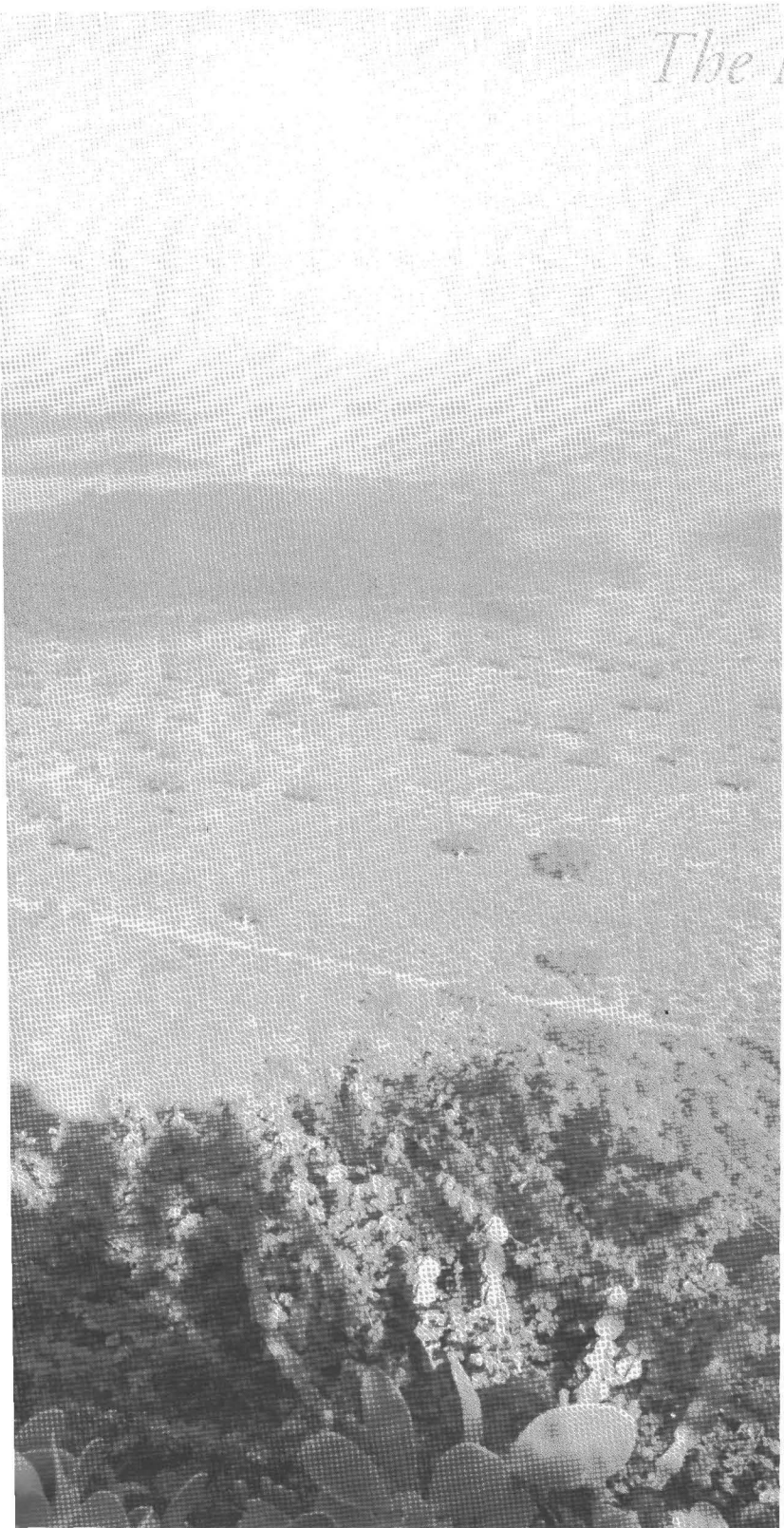
Rhinos are notoriously poor colonisers. So, following last year's 26-km² enlargement of the Ngulia Rhino Sanctuary in Kenya's Tsavo West National Park, the Black Rhinos there are going to need a massive push – if they are to start taking advantage of the extra habitat on offer.

That push will take the form of a series of translocations, set to begin later on this year, whereby ten of Ngulia's 70-odd rhinos – all

carefully pre-selected individuals in some of the more degraded areas of the original Sanctuary – are to be captured and moved to new territories closer to the periphery of the extended Sanctuary, which today covers an area of 91 km².

Both the Sanctuary's recent expansion – completed in May 2007, after almost one year in the making – and the impending outward dispersal of its rhinos are key phases in a longer-term programme that

will eventually see the Ngulia Rhino Sanctuary re-integrated into the wider Tsavo West ecosystem, as part of what is known as an Intensive Protection Zone (or IPZ). This is an area where, in the absence of fencing, the security of a 'free released' population is maintained through a combination of radio monitoring and round-the-clock physical surveillance, both from aircraft and from vantage points on the ground.



The 'free-release' programme is expected to restore Tsavo West's pre-eminent role as a safe haven and wild breeding ground for the endangered Black Rhinoceros, while at the same time addressing the serious deterioration witnessed over recent years in the state of Ngulia's natural habitat.

That deterioration is the result of continuous high concentrations of elephants and other herbivores around artificial waterholes in the Sanctuary over a period (2003–2006) of prolonged drought. The degradation has greatly reduced the Sanctuary's carrying capacity for rhinos. By early 2006, some animals were severely malnourished, while others had stopped breeding altogether.

An earlier translocation operation – spread over three phases and completed in October 2006 – saw a total of 255 elephants moved out of the Sanctuary in a desperate bid to relieve the intensifying pressure on the vegetation.

Ngulia, with its year-round supply of fresh water, had become a magnet for large and permanent concentrations, not just of elephants, but of buffaloes, giraffes, elands, zebras, and other herbivores as well. The low-slung electric fence around the original Sanctuary had presented no obstacle, as this was designed only to keep the rhinos in, while allowing other mammals (of all species) to move freely in and out – although mostly they were moving *in*.

Another strand of wire, added to the fence in 2006 in an effort to spur habitat recovery through keeping elephants out of the Sanctuary, succeeded only in aggravating the problem by confining elephants already inside the fence, effectively trapping them. And the rate at which Ngulia's natural habitat was being destroyed was accelerated.

Two new waterholes, meanwhile, were built *outside* the Ngulia Rhino Sanctuary to provide the ejected elephants, many of them now roaming the nearby Ngulia Valley, with an alternative that

To this end, the progress of the ten rhinos that are moved will be monitored closely over a two-year period. If the animals settle down and are found to be doing well in their new surroundings, another ten rhinos from the inner Sanctuary will be added to their number. Sections of the Ngulia perimeter fence will be dismantled, setting in motion a natural 'trickle-out effect' that will complete the 'free release' of the Sanctuary's rhinos.

These steps form part of a *Strategic Plan* drawn up by an expert committee consisting of Park management authorities, the Research Department of the Kenya Wildlife Service (KWS), independent rhino specialists, the Endangered Species Working Group, and other NGOs engaged in rhino conservation. The plan has the endorsement of the KWS Director and Board of Trustees, as well as that of Kenya's Minister for Tourism & Wildlife.

© NANA GROSSEWOODLEY

might deter them from continually breaking the fence in seeking to gain renewed access to one, or more, of the core Sanctuary's five main waterholes. (Three of these waterholes are maintained artificially in the dry season months, using gravity-fed borehole water piped down from springs in the nearby Ngulia Hills, while the other two – both natural – are entirely seasonal in character.)

'Outer limits': Part of the Ngulia Rhino Sanctuary's extended perimeter fence line.

Outward dispersal of rhinos from some degraded areas of the original Sanctuary is to be achieved through a series of translocations, set to begin later this year.

In the meantime, it emerged that Ngulia's Maximum Productive Carrying Capacity (or MPCC) for Black Rhinos had fallen by *two-thirds* – from a high of 1.5 rhinos/km² in 1984, when the Ngulia Rhino Sanctuary was established,

when good browse is scarce even at the best of times, more and more of Ngulia's rhinos were suffering from malnutrition. And little wonder it is, too, that these animals were no longer able to breed.

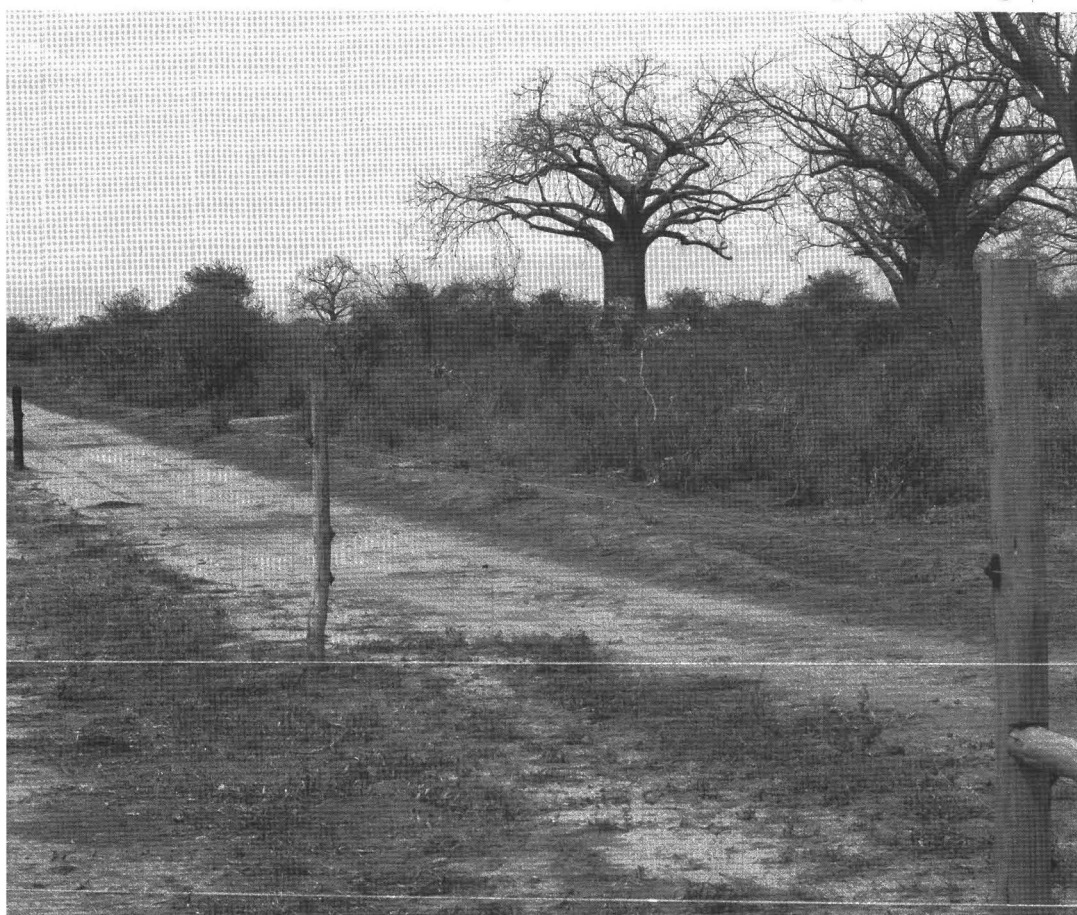
Stress brought on by the ever-fiercer competition over water and diminishing browse was reflected in frequent fights – usually between elephants and rhinos – that would flare up at waterholes in the Sanctuary. Such altercations made the night monitoring of Ngulia's rhinos (*Separate Article, pp. 58–59*) very hazardous at times, while the elephants, for their part, would resort to digging up and breaking the water pipes and fittings, thus

Park outside. Intervention on the ground, while acknowledged to be an urgent priority, was repeatedly deferred, at a time when the KWS was itself undergoing internal difficulties, financial and otherwise.

This coincided with a period of renewed interest in rhino horn, as reflected – in neighbouring Tsavo East National Park – in a sharp increase in poaching incursions by Somali bandits, leading to the deaths, in running gun battles, of several KWS rangers.

A phased expansion of the Ngulia Rhino Sanctuary, culminating in the eventual 'free release' from there of rhinos into Tsavo West had always been central to the vision of the Sanctuary's founder, Bill Woodley, one of the driving forces behind the Kenya Rhino Project that in the 1980s was instrumental (*Separate Article, pp. 56–57*) in saving the country's Black Rhinos from the ignominy of almost certain extinction over most of their remaining range in the country.

In 2006, as Tsavo was experiencing its fourth successive year of drought, a 'rapid action' plan was formulated. This saw Danny Woodley (youngest of Bill's three sons) promoted to the post of Senior Warden, Tsavo West, and Ben Okita become KWS Rhino Coordinator. Appalled by the poor condition of all the pachyderms – elephants as well as rhinos – in the Ngulia Sanctuary, a thorough investigation was launched, with support from the African Wildlife Foundation (AWF) and the Zoological Society of London (ZSL).



© NANA GROSSE-WOODLEY

Nana Grosse-Woodley has for the past eleven years lived in one or other of Kenya's Tsavo National Parks. Based for much of this time at Ithumba, in the remote northern sector of Tsavo East, she now lives in Tsavo West, where her husband, Danny Woodley, is currently the Senior Warden.

to one of barely 0.5 rhino/km² in 2006.

Yet there were, in 2006, still about 70 rhinos cooped up in the then 65-km² Sanctuary, meaning the latter was being expected to support a population density of about *one* rhino per km² – which is *twice* that area's current maximum carrying capacity. It is little wonder, then, that in the dry seasons,

incurring huge additional maintenance costs.

Alarm over the Sanctuary's deteriorating habitat was first expressed as early as 2002, when the KWS Rhino Programme, together with researchers Rob Brett and Keryn Adcock, noted the distressing contrast on view from the air between the impoverished Sanctuary inside the fence and adjoining areas of the

A detailed habitat assessment focusing on the more than 80 rhino food plants (out of a known total of roughly 200 such plants) that are documented as occurring at Ngulia revealed a decline of 59% since 1991 in the extent of all available browse.

The health status of all rhinos seen during the investigation was rated 'Fair to Poor', whereas in 1991 (when such a comprehensive evaluation had last been carried

The Ngulia Experience

out) the body condition of Ngulia's rhinos had been pronounced 'Good' without exception.

And, whereas in 1991 the reproductive status of the Ngulia rhinos had exceeded the targeted national population growth rate of 5 % per annum, this was found

The 2006 investigation lifted the lid on a huge crisis then festering within the Ngulia Rhino Sanctuary. Its grim findings injected a new urgency into reviving the expansion plan for the Sanctuary and *implementing* its provisions – without further delay.

are using the new water points, it should be possible – during 2009 – to start phasing out some of the old water points in degraded areas of the core Sanctuary.

An unexpected bonus, in the form of exceptionally good rains in late 2006/early 2007, has greatly



Photos: © KENYA WILDLIFE SERVICE



in 2006 to have declined – to the point of being non-existent. Again, this was attributed to a combination of malnutrition and drought, resulting in poor health, exacerbated by the unsustainably high density of rhinos in the Sanctuary – and by the greater competition they now faced, both from one another and from other large herbivores, for dwindling browse and water.

Some of the elephants in the Sanctuary were not much better off. Indeed, one early attempt at driving elephants out of Ngulia using the KWS helicopter had to be abandoned after it became obvious that some of the animals had become so weak they were starting to collapse. So it was decided that darting the elephants from the air and then moving them out of the Sanctuary on trucks would be a kinder option.

By October 2006, as the last phase of the elephant translocation was drawing to a close, work had begun in earnest on enlarging the Sanctuary. Completion of the expansion phase in May 2007 was to have been followed – in January 2008 – by translocation of the first few rhinos into outlying areas of the Sanctuary.

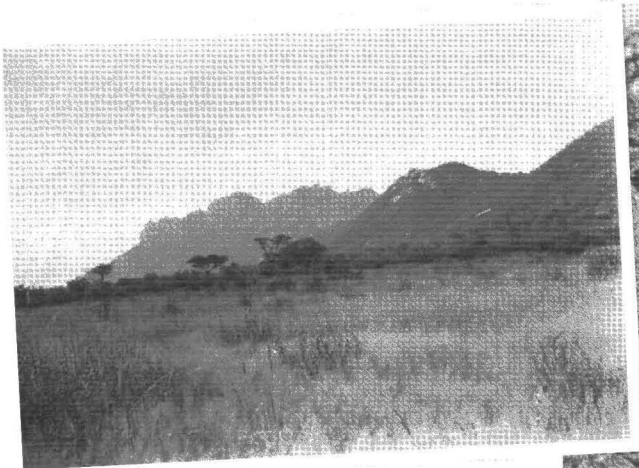
This exercise had to be deferred, however, owing to the political crisis then afflicting Kenya in the aftermath of the December 2007 General Election.

The translocation process is now expected to commence only in August 2008. Water points have meanwhile been established in the extended part of the Sanctuary, and observation posts – from which Park rangers can go on monitoring the soon-to-be-moved rhinos – are under construction. Once the rhinos have been moved, and

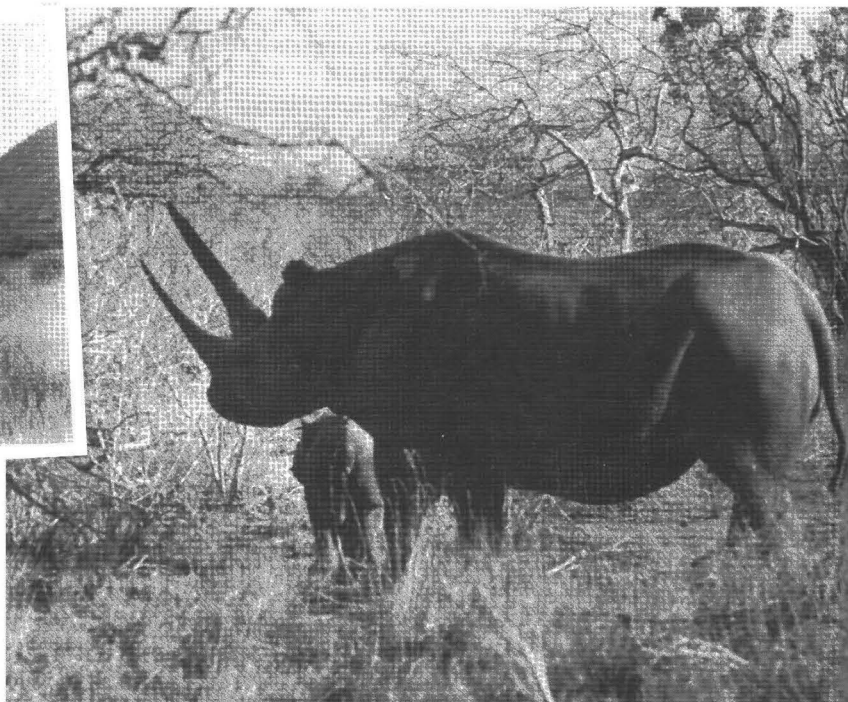
bolstered the recovery process. The sudden emergence, after four years of unbroken drought, of natural waterholes all over Tsavo West came as a huge relief in encouraging Ngulia's wild animal herds to disperse of their own accord. The health of the translocated elephants, too, has greatly improved. And the degraded habitat within the Sanctuary, now under less pressure than before, is already showing signs of a marked recovery; so much so that, in February 2008, four new rhino calves were observed, while another four of Ngulia's female rhinos are in the advanced stages of pregnancy.

Hopefully now, with the expansion programme back on track, it will not be long before the even larger Intensive Protection Zone comes into being, and the dream of 'free release' proper will at last become a reality.

'In the dark': Nocturnal visitors to waterholes in the Ngulia Sanctuary include a number of 'clean' rhinos (rhinos, that is, which – like this one (above left) – have not been ear-notched for identification purposes). Notched rhinos, such as 'Mtoro' (right) are easily identified, even at night, from images taken by Ngulia's monitoring teams.



Nana Grosse-Woodley reflects on the background and early history of Tsavo West's **Ngulia Rhino Sanctuary**.



Photos: WOODLEY FAMILY ARCHIVE

The Ngulia story

'Early days': Archive photograph (top left) showing part of the site within the Tsavo West National Park chosen in 1984 for what would become the Ngulia Rhino Sanctuary. Top right: One of the first Black Rhino calves known to have been born in the Sanctuary.

The Ngulia Rhino Sanctuary in the heart of Kenya's Tsavo West National Park has been pivotal in securing a future for the Black Rhinoceros, *Diceros bicornis*, in a part of the country that – until as recently as the 1970s – could still boast one of the largest and most successful populations of this species on Earth.

In the process, the Sanctuary has become a world-famous tourist attraction open to visitors between 4:00 and 6:00 p.m. daily.

For many of the visitors who – year in, year out – come streaming in through Ngulia's main security gate (which fittingly bears the original Kenya National Parks' emblem of a trotting rhinoceros), the chance of observing one, or more, of the Sanctuary's 70-odd Black Rhinos at close quarters is a once-in-a-lifetime experience.

Yet, given that these 70-odd animals now represent a substantial proportion of *all* the Black Rhinos that remain in today's Tsavo ecosystem, it may seem hard to imagine a time, in the 1940s and '50s, when the rhinos here were so numerous they were regarded simply as a

dangerous nuisance, and were shot in large numbers.

To appreciate how abundant rhinos once were in the Tsavo area, one has only to read the published accounts and diary entries of some of the region's early visitors, such as Theodore Roosevelt (1858–1919), the former US President and big-game hunter who wrote of being able – on his 1909–10 Africa Expedition – to bag rhinos almost at will between here and nearby Kilimanjaro.

Such accounts were instrumental in bringing a succession of other big-game hunters to the area. The sportsmen included the famous J A Hunter, who later (during the Second World War) undertook a commission from the Game Department of the day to 'clear' an area near Tsavo of rhinos, so as to create space for the settlement of people of the Kamba tribe. Hunter went on, in the course of a single year and with the help of just two game scouts, to shoot no fewer than 996 rhinos!

It seemed inconceivable, even then, that there might come a day when most of the Tsavo ecosystem

would be entirely devoid of rhinos. The expectation, even in the early 1960s, was that a day spent in the wilds of the Tsavo National Park without having to face *at least one* charging rhino would somehow be incomplete. And hair-raising accounts of how, amid billowing clouds of dust, snorting rhinos with their heads down would – like steam trains possessed – come charging out from path-side thickets, sending foot parties scurrying off in all directions ... were legion still.

Over the course of a single morning on the Yatta Plateau, Bill Woodley (1929–1995) – the pioneering warden whose lifelong dedication to wildlife and its conservation began with the inception of the Kenya National Parks in 1948 – once counted no fewer than 64 Black Rhinos along the Athi River basin.

That was back in the early 1960s, when Tsavo's rhino population – then put at between 12,000 and 15,000 animals – was still by far the largest in Kenya. The grim prospect of a Tsavo National Park almost wholly depleted of rhinos

The Ngulia Experience rhino conservation

was not that far away, however. And, come the mid-1970s, an unprecedented poaching onslaught saw heavily armed Somali gangs enter the 22,000-km² Park and set about indiscriminately slaughtering its elephants and rhinos – for their tusks and horns respectively.

The carnage went on over much of the 1980s as well; and when, eventually, these poaching gangs withdrew, all but a mere handful of Tsavo's rhinos had been wiped out. The few surviving animals were to be found holed up in pockets of dense habitat in some of the area's more remote and inaccessible valleys. Even there, they were no longer secure, however; for supplanted over their tracks were the boot marks of other poachers, clearly still in hot pursuit.

The annihilation was mirrored elsewhere in Kenya, as well as in other African states. And in 1984, when Bill Woodley was put in charge of the Kenya Rhino Project, the Black Rhinoceros was on the verge of extinction. Predictably enough, a series of protracted debates ensued over proposed 'plans of action'. Yet Bill Woodley was not prepared to wait: He immediately set to work on erecting a 'rhino fence' at Ngulia, and then went about capturing Tsavo's few remaining 'free' rhinos and putting them inside this fence.

Danny Woodley, youngest son of Bill Woodley and now himself Senior Warden for the Tsavo West National Park, remembers this operation well, as he was in the habit, then, of assisting his father with many of the daily chores in and around the Park. "One of the first rhinos brought in to the new sanctuary had a poacher's arrow through its lip," Danny now recalls. "We later found out that this particular rhino had managed to take its revenge: It had killed the poacher in question."

This, then, was the beginning of Tsavo West's now world-famous Ngulia Rhino Sanctuary. What happened next is best described in the words of Bill Woodley himself,

whose *Brief Review of Forty Years in Tsavo National Park*, written in April 1988, includes the following summary:

"The Kenya Rhino Project started in 1984, brought about by the serious decline in the rhino population countrywide. Several isolated rhino were identified in areas outside Tsavo Park, and in October 1985 three females were captured at Kibwezi and moved to a small sanctuary of three square kilometres wired in by a powerful electric fence in an area of thick bush near Ngulia.

"In October 1986, a further three females captured at Taita Hills were also moved into the sanctuary. In July 1986, a wild male broke in through the fence, bringing the number to six females

up year on year, turning the Ngulia Rhino Sanctuary into a model refuge and breeding ground for the animals. Following Bill Woodley's retirement in 1992, overall responsibility for the Ngulia Sanctuary fell to Ted Goss (1936–2002), himself a former Warden at Tsavo West (between 1969 and 1978), but then acting – until he died in 2002 – in his capacity as Director of the Eden Wildlife Trust.

The Sanctuary's first (and so far, only) major setback came soon after the onset of the prolonged drought of 2003–2006, which led to a continuous high concentration of elephants and other animals around the artificial waterholes. The resulting habitat destruction dramatically reduced the Sanctuary's carrying capacity

'Plotting the future' (below): Ngulia's Rhino Warden Adan Behre (centre) discusses the impending outward dispersal of some of the Sanctuary's rhinos with KWS Senior Warden for Tsavo West, Danny Woodley.



© NANA GROSSE-WOODLEY

and one male. In 1987 the sanctuary was extended to 20 sq km, and on 16 February 1988 the first calf born inside the sanctuary was observed. During 1988 we plan to enlarge [the sanctuary] to 65 sq km, and to bring in additional rhino from outside."

The planned 1988 extension duly went ahead, and for more than ten years afterwards the breeding rate continued to pick

for rhinos. Some were malnourished; most had long since desisted from breeding.

Some big lessons have been learned, however. And a major programme of corrective measures set in motion during 2006 (*Lead Article, pp. 52–55*) will hopefully build on the Ngulia Rhino Sanctuary's key role in securing a bright future for the Black Rhinoceros here in its Tsavo heartland.



'Track records'

The monitoring of Ngulia's rhinos has never been the simplest of tasks. **Nana Grosse-Woodley** explains.



'Night shift': For a few nights each month, over the full moon, members of Ngulia's Rhino Team monitor animals that visit the Sanctuary's three principal waterholes. So poor is a Black Rhino's eyesight that at night a cameraman (top) can usually advance, undetected, to within ten metres of a drinking animal. His colleagues, meanwhile, keep a detailed record of the night watch.

It is still not possible to say *exactly* how many rhinos there are in the Tsavo West National Park's 91-km² Ngulia Rhino Sanctuary. Today's official figure, then, of about 70 animals, is at best an informed estimate, based on current monitoring data.

Most of the rhinos in the Ngulia Sanctuary have been ear-notched for identification purposes. On animals that were released into the Sanctuary, this has been done as a matter of course. Such animals are easy to recognise – even from photographs in which both ears are clearly visible. At present, there are 49 of these marked rhinos in the Sanctuary. All are well known to Ngulia's rhino monitoring teams, which see the animals regularly: daily, in most cases.

There are in addition, however, a number of 'clean' rhinos in the Sanctuary. (A 'clean' rhino is one whose ears are without notches or other distinguishing marks.) These are likely, for the most part, to be

animals born inside the Sanctuary, but which have yet to be captured for ear notching. In recent months, more than 70 'clean' sightings have been reported from various parts of the Sanctuary.

How many of these sightings, though, are of the same individuals, seen again and again? And how many are likely to be of different animals?

An assessment, based on the respective geographical co-ordinates (and thus probable territorial limits of each 'clean' rhino seen), as well as on comparisons of the different sets of tracks, where these have been measured and photographed, suggests that the 70-plus 'clean' sightings now on record represent at least 11, and probably twice that number of, additional rhinos. Hence the official rounded total for Ngulia of around 70 animals.

Although the Sanctuary is fairly small (by Tsavo standards, that is), some of its habitat – where not 'thinned out' by elephants in

the recent past – is still extremely dense, rendering the tracking, identification, and monitoring of rhinos very difficult. A history of persecution has turned many of these rhinos into exceedingly shy and elusive beasts that will venture out into the open only under the cover of night.

The researcher who first took up the challenge of documenting Ngulia's rhinos was Rob Brett, who in the late 1980s and early 1990s adapted some of the monitoring techniques pioneered by Hitchins in 1960, and refined the ageing, sexing, and identification methods that are still in use today. The bush within the fenced area was then so thick that the rhinos, seldom ever seen, had to be monitored from their tracks alone.

Finding 'good tracks' on the few roads and elephant trails inside the Sanctuary can be taxing enough in itself. From the tracks, it then has to be possible to take measurements (lengths and widths),

The Ngulia Experience rhino conservation

not just of the print of each foot, but of that of each toe on each foot as well, giving a total of 32 measurements for every rhino! In the process, any distinguishing mark – a small crease on the back of one foot, say, or a telltale crack in a particular toe – would be duly noted down.

This was a laborious exercise, given that the chances, on the dry, hard, often stony ground, of being able – in any one instance – to collect a *complete* set of measurements were slim indeed. It is no wonder, then, that the task of 'ID profiling' Ngulia's rhinos from their tracks called for endless patience, and much detective work besides. Even the tracks of the same rhino, found on two different surfaces (soft sand, say, and solid ground), might yield altogether different measurements.

This pioneering early work also proved invaluable in plotting the approximate home ranges of the rhinos in the Sanctuary: clearly a major factor in planning day-to-day management of their security.

While rangers posted on hilltop vantage points scanned known rhino territories for signs of poaching activity, ground patrols – conducting daily inspections of the entire perimeter fence line – would be making sure no rhino had escaped through breaching the fence. Large gatherings of vultures (or of hyenas and other predators) were investigated to ascertain whether any rhino might have died, either naturally or at the hands of poachers.

With time, the benefits of this heightened security at last became apparent, and more and more rhinos were seen in the Sanctuary. All calves born here were recorded and monitored. And, with the help of ear-notch marking, it became possible – for the first time – to observe individual Ngulia rhinos over extended periods.

Monitoring procedure today, while still following all the trusted methods of the past, has been able – in addition – to draw on a

number of modern innovations, including night vision and thermal imaging equipment, as well as just plain old binoculars.

The rhinos visit the waterholes only in the dead of night; so on a few nights each month, over the full moon, Rhino Warden Adan Behre splits his Rhino Team into three groups, which then spend all night sitting up around the Sanctuary's three waterholes. The team's vehicles – covered with dark, non-reflecting tarpaulins so as not to spook the thirsty rhinos – are carefully positioned just a short way downwind from each waterhole. For the team members inside, wrapped in their warm jackets and hats, and equipped with night vision goggles and a digital camera with powerful flash, the watching and the waiting begins ...

Bats flit jerkily overhead, sometimes colliding with a car's radio antenna. Frogs at the water's edge croak noisily, while nocturnal rodents scamper and dash under the cars. The giraffes, buffaloes, and hyenas are among the first arrivals, but with their fine 'night eyes' they

that might startle the alert animal, slips silently into the shadows, inching forward to identify and to photograph the individual. So poor is a rhino's eye-sight that, under these conditions, the monitor can usually advance to within six or seven metres of the drinking animal: close enough to get a very clear digital image.

While a growing 'image bank' is certainly proving to be useful in helping to clarify the identities and movements of Ngulia's Black Rhinos, there is – clearly – still a lot of information outstanding.

A need to establish the *exact* number of rhinos in the Sanctuary is listed, for example, among the priorities of the *Strategic Plan* that in May 2007 saw Ngulia extended by 26 km² to its present area of 91 km². And to this end, it has been recommended that all 'clean' rhinos in the Sanctuary be captured at the earliest opportunity and be ear-notched – as a means of ensuring, among other things, that they can no longer be counted twice.

The development longer-term, under the free-release programme

'Track inspection' (below right): The measurement of tracks served for many years as the basis for monitoring Ngulia's rhinos. The researcher Rob Brett, who first applied this technique in Tsavo in the late 1980s, is here seen (at left) with Ted Goss (standing), then in charge of the Sanctuary, and Danny Woodley, now KWS Senior Warden for Tsavo West. Below left: The Offices of the Ngulia Rhino Sanctuary in Tsavo West National Park, with rhino skulls in the foreground.



© NANA GROSSE-WOODLEY

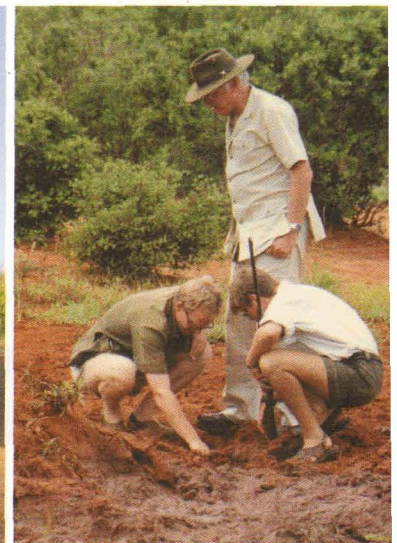


Photo: WOODLEY FAMILY ARCHIVE

quickly detect the human stakeout – and are content to lurk instead on the outer fringes: silhouettes out in the moonlight.

When eventually a rhino arrives, the monitors are careful first to allow the animal plenty of time in which to drink. Then, one of the monitors, timing his move so as not to create any disturbance

drawn up for Ngulia's rhinos, of the Tsavo West National Park's Intensive Protection Zone (IPZ) will see the introduction as well of wider radio tracking and stepped-up aerial surveillance. Most Ngulia rhinos that are captured for ear-notch marking and outward dispersal into the IPZ will, accordingly, be fitted with radio transmitters.