PROVISIONAL

KING CHEETAH: THE CASE FOR THE EVOLUTION OF A NEW RACE

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Abstract: In the 1920s, much excitement arose in zoological circles over the appearance of a number of boldly striped and blotched cheetahs in Rhodesia, the like of which had never before been recorded. They eventually came to be regarded as a new species of cheetah, ***Acinonyx rex*** *(Pocock). They were later placed in the completely new genus* ***Paracinonyx*** *(Kretzoi). This latter, generic status still stands. But the original species classification was revoked in 1939 on the basis that the animal was little more than a freak aberrant of the common cheetah* ***Acinonyx jubatus.*** *Yet the appearance of spontaneous mutations in cheetah in the 5000 years man and cheetah have associated have been so rare, as to be virtually non-existent. Thus the* ***King Cheetah's*** *appearance, standard across thirty-five specimens recorded to date south of the Zambezi in a portion of southern Africa where the common spotted cheetah has been near exterminated, is unprecedented in such a felid species that was formerly so widely distributed throughout Africa and across south-west Asia to India.*

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Fig. 1 Common cheetah *Acinonyx jubatus* (right) compared with a King Cheetah at the British Museum (Natl. History).

INTRODUCTION

***King Cheetahs** are the most unexpected, uniquely patterned big cats to be chronicled in modern times. With a uniformity of pattern across thirty-five specimens recorded to date in the bold black-brown and cream markings of a pelage characterised by softer, silkier, longer hair, broad dorsal stripes, irregular blotches and a striped and ringed tail, it is a consistent combination of features that remains unchanged in all **King Cheetah** specimens available for examination beyond what is the acceptable degree of deviation between members of the same patterned mammal species. Their regular appearance this century in southern Africa is particularly remarkable in one of the most monomorphic species yet discovered.*

*The common cheetah is probably the most specialised of felids, differing much more from all other cats, as St. George Jackson Mivart would have it, than any two other cats differ from one another. With its unique taxonomic classification as the only species **jubatus** in the felid genus **Acinonyx**, there exists no intermediate coat patterns to speak of between it and the **King Cheetah**; nor is there any record of a freak cheetah pattern remotely like it. No felid species in Africa or Asia has been documented as producing at intervals a consistently uniform and similarly distinctive pattern variation that displays such a marked divergence from the norm, and which is also consistent in its occurrence over a wide yet restricted geographic area. Despite this, many scientists are disposed to consider the **King Cheetah** a simple pattern aberration, comparable to any one of a variable number of usually individual, hit or miss cases of abundism commonly found in leopard in Africa where the variety of melanism occurring appears to spring from a greater increase in the size of the spots, rather than a darkening of the ground colour as in the usual melanism. It is a significant comparison.*

*The modern species of cheetah **Acinonyx jubatus** has shown remarkable uniformity in both type and markings throughout its formerly wide distribution in much of India, in Africa from the Cape to Cairo, and all suitable regions between in south-west Asia. Even cheetahs from the late Pleistocene in China are almost undistinguishable from the modern animal. Smaller or paler spotting, or variegation in coat base colour from pale yellow-grey through to tawny fawn occurs according to the demands of environment. A select number of cheetah known to have been living several years back in the cold, arid reaches of north-west Iran for example, and strictly protected by the Shah's government, had long hair. Pattern variations of notable conformation are, however, uncommon enough in **A. jubatus** as to be considered rare. In the 5000 years man and cheetah have associated in what is perhaps one of the most unique relationships between man and animal recorded, we know of five reported cases.*

A PHENOTYPIC DESCRIPTION AND COMPARISON

Description of pattern in King Cheetah

*Accorded species status **Acinonyx rex** in 1927 on the evidence of five skins by British zoologist and authority on the felines Reginald I. Pocock; and two years later in 1929 full generic status under the new genus **Paracinonyx** by Hungarian taxonomist Miklos Kretzoi, the **King Cheetah** - so named by Pocock to emphasise its splendidly regal appearance - differs from the common cheetah **A. jubatus** in more detail than just the general overall style of coat markings that are unique to the **King Cheetah** alone across all specimens of it recorded to date.*

The pattern on all specimens examined is consistent. All have a minimum of three bold, broad dorsal stripes (15-20mm wide) running longitudinally along the spine from the thick ruff, between the nape of the neck and the shoulders, to the rump, splaying outwards dramatically on their approach to the tail. The maximum number of dorsal stripes observed is five. The long tail is unique among the felids in that it is both striped and ringed. The basal half is boldly barred in two horizontal stripes (150-200mm in length) which, at the proximal end of the tail in imitation of the dorsal stripes at the base of the spine, also splay outwards on their approach to the rump, forming the impression of a triangle as both sets of stripes roughly converge on the top of the rump. The remaining distal half of the tail is ringed in vertical stripes, characteristic of striped cats and spotted cheetah alike. On the rump of every specimen examined, two elongated spots flank the main dorsal stripe, merging with the two secondary stripes at the pinnacle of their curve, or with the tail stripes.

*The markings on the flanks, shoulders and hindquarters consist of large, distinctive, irregularly shaped blotches of unequal size, looped and branched and interspersed with bold, large spots, both elongated and round. The latter are considerably larger than those of **A. jubatus** (Fig. 1). The head markings are not dissimilar to **A jubatus** with spots of comparable size. All specimens display the characteristic cheetah tear-marks on each side of the face running from the anterior corner of the eye to the mouth. The ruff, or mane, in **A rex** is considerably darker and longer than in **A jubatus**, and generally more prominent except in those specimen skins showing wear due to exposure. The base colour of the pelage is consistently cream to light beige, or buff, on all specimens observed, and contrasts vividly with the rich blackness of the overlying stripes and blotches which have the appearance of being embossed, viz. standing clearly raised above the ground fur of the pelage (Fig. 2), the result of the black hairs of the markings being at greater angles to the skin than those of the background. The fur, which is soft and silky to the touch, is long, giving the **King Cheetah** the appearance of being a heavier animal than **A jubatus**. On the evidence of three skins measured that have suffered no undue stretching in curing, and which average out at 7ft. 2ins. (2.18m) from nose to tail-tip, the biggest just topping 7ft. 8ins., the **King Cheetah** is a big cheetah.*

Fig. 2 The stripes and blotches on the King Cheetah skin are consistently jet black and clearly raised, as in this photograph by the South African Museum, Cape Town.

A Comparison with Cheetah

*With considerations of genotype and habitat aside, the King **Cheetah's** markings alone are strikingly dissimilar from anything recorded before or since the first documented skin was collected in Rhodesia in 1926 and made publicly known (Cooper, 1926). Its distinctive development, uniform across all specimens reported, is all the more significant in a cat like the cheetah.*

*Threatened, with numbers sparse and a trend in recent times towards population deceleration, two recent parallel studies among southern African cheetah (O'Brien, Wildt and Bush, 1986) have demonstrated that cheetah display strikingly low levels of genetic variation, markedly lower than levels in other cats and mammals generally, and possibly a consequence of severe habitat contraction, or population bottlenecks, followed by inbreeding (O'Brien et al. 1983). Dramatic proof of the cheetah's monomorphism is that even skin grafts transplanted from one cheetah to another were readily accepted without rejection, with tests indicating not a general failure of the cheetahs immune system, but extreme uniformity at the cheetahs major histocompatibility complex (MHC) which precipitates the symbiosis of antigens with white blood cells during an immune response to infection; making cheetahs throughout Africa, as O'Brien and his colleagues suggest pending further study, to look to be virtual genetic twins. Thus vulnerable to disease, it competes poorly for survival, with a low conception rate in captivity when some 30% of cubs can die before the age of six months. Concurrent seminal analysis showed sperm counts to be 10 times lower in cheetah than in related **Felidae** species, with 70% of the sperm structurally abnormal; a finding that has generally been linked in other mammals to pronounced infertility (Wildt et al. 1983). While it is established that sperm development and morphology are under strict genetic control, population bottlenecks have had the qualitative effect of actually reducing the natural buoyancy of variation in a wild population, possibly accounting for the number of species of **Acinonyx** that we know to have become extinct in the past. That such significant findings should occur in the one, spotted felid considered the least adaptive in times of ecological stress, and the least able to produce spontaneous aberrations and mutations, is striking. Hunting companions to ruler man from as early as 3000BC to recent times and, ironically, the one big cat science has taken longest to know, it is as equally striking that, as hunting companions to the princes and Pharaohs, Emperors and kings, Khans, Maharajahs and sheikhs of culture and influence whom history has generously chronicled and colourfully depicted on ancient Mesopotamian seals to rich Renaissance tapestries as keeping cheetahs and hunting with them, no known written or pictorial record has come down to modern times of an unusual cat remotely resembling the **King Cheetah**. Given the general esteem in which cheetahs were held by their masters - when even Akbar the Great raised one to the rank of "chief" following an exceptional kill it made, ordering that a drum be beaten in front of it in special honour whenever it went out - it is not naive to assume that a cheetah as singularly different and handsome as the **King Cheetah**, as regally adorned as Pocock so eloquently observed, would excite some extra special royal admiration or attention, enough for it to be recorded for posterity. That this could happen, and thereby produce the earliest credible record of albinism in cheetah, has proof in Jahangir the 16th. Century Mogul Emperor and naturalist, who wrote about a strange cheetah brought to him at Agra, the first and only one he ever saw: "its spots which are usually black were of blue colour....the whiteness of the body inclined to bluishness".*

A later recorded cheetah variant that exercised the minds of eminent naturalists in Victorian Britain was the "woolly cheetah", records of which seem to have both gained and lost a great deal in the re-telling. In Secretary Philip Sclater's first report on a live animal newly arrived at the Zoological Society's Gardens in London (1877), he gives it temporary specification as ***Felis lanea****, describing a heavier cheetah that on first impression reads suspiciously like a forerunner to the* ***King Cheetah****, with woolly fur and dark blotches on a pale background and no traces of the black spots he had always found so conspicuous in cheetah. St. George Jackson Mivart (1881) adds a stripe to just one side of the same animals muzzle. Richard Lydekker reaffirms it has blotches in place of normal spots (1895), but twice alters its taxonomic name (1893-94 after Blanford; 1895). It has finally come down to us in contradiction of previous descriptions as the "red-spotted" cheetah; a so-called case of partial albinism (Pocock, 1921; Shortridge, 1934), increased from one to three specimens with definite differences between them (Sclater, 1878; 1884).*

In a freak example of a small-spotted cheetah skin from Tanzania (Pocock, 1921), and now in the collection of the British Museum of Natural History, merely the mane and spotting in the forequarters is scant, making for a generally paler cat. Just two other unsubstantiated sightings of a black cheetah in Kenya, and a melanistic individual in Zambia (Guggisberg, 1975), can be added, tentatively, to an already sparse list despite not being even as remotely divergent as the ***King Cheetah*** *in pattern, nor in any way representative, as might be claimed (Hills et al. 1980), of a frequency of aberrations in cheetah beyond the accepted phases of a general variation in spot size.*

Comparison with other related Felidae

On the question of the incidence and variety of aberrations in the spotted cats, the imbalance between ***A. jubatus*** *and the leopard couldn't be more sharply contrasted. Out of the infinite degree of variability in ground colour and markings in leopard which in ranging from pale, very sandy and small rosetted individuals, through heavily patterned, large rosetted jaguar-like types, to partial and full melanism has led modern taxonomists to describe and name as many as some 30 sub-species alone, no two particular leopard variants could better illustrate that imbalance between cheetah and leopard, and thus by extension cheetah and* ***King Cheetah****, than the mutation* ***melanotica*** *(Gunther, 1885) and the so-named* ***P.pardus adusta*** *(Pocock, 1927d).*

Melanism is considered to differ in leopards from Asia to Africa, a darkening of the base colour, in which the rosettes can still be traced as in the watered pattern in some silks, being of the more usual kind. Often, however, the darkening of the more extreme examples of leopard in Africa, the not uncommon abundism, is entirely different, generally appearing to result, not from a darkening of the base colour, but more from a disintegration or break-up of the rosettes into smaller spots which multiply and extend to coalesce into a relatively uniform blackish mass over much of the body. In the ***melanotica*** *form first described in some leopards from South Africa (Gunther, 1885; Sclater, 1900) , rosettes had broken up into small solid spots which had fused to give a flecked, blackish appearance over the greater part of the back and flanks. Of some seven specimens ascribed to the* ***melanotica*** *variety, just two are alike (Gunther, 1886; Pocock, 1926), the rest being either much darker versions of these, or a more moderate development (Ansell, 1967). One of the latter bears a*

*striking resemblance to the **King Cheetah**. Looped striping on the shoulders, flanks and hindquarters of a melanotic specimen of moderate development from Somalia (Pocock, 1935) is startlingly reminiscent of the **King Cheetah** blotches, its distinctive dorsal stripes being replaced by the saddle, or black dorsal band of **melanotica**. The same phenonomen is displayed again on another specimen of moderate development from the lush Inyanga district in Zimbabwe (Ansell, 1967), but to a markedly less degree on just the lower back and basal area of tail. (Fig. 3).*

*The distinction to be drawn here is clear. What matters is not so much that two variant leopard skins of the same supposed aberrant strain should display a similarity in their markings to the **King Cheetah**, but that they should be as each different from one another as they are from others of the **melanotica** variety, which in turn are as different from the typical leopard form of dark rosettes on a beige to tawny hide, as the **King Cheetah** is from the remarkably uniform common spotted cheetah **A. jubatus**. Put another way: **melanotica** can in no way be considered a standard variation across all described representatives of its form in the same way **King Cheetah** is standard across all specimens of it known.*

*This definite variety within a variety of **melanotica** is even more pronounced in the large, dark, supposed race of leopard of the Ethiopian Highlands **P.p.adusta** in which very nearly every darker variation seems to be met with from full black and those resembling **melanotica**, through blackish backed, chocolate flanked individuals, to dark tawny specimens sporting large, almost solid rosettes reminiscent of jaguar markings (Pocock, 1932). Apart from size and pattern colouring, the conditions on which the naming of sub-species or races, certainly among the **Felinae**, has almost invariably seemed to have come down to, this so-called race of Ethiopian leopard with its enormous variation, appears to differ little in skull dimensions from leopards in Kenya and Tanzania. These differences in spotting size and base colour, while nowhere near as variable as they are in leopard yet have still to a large extent been responsible for the sub-specification that has occurred in cheetah - 6 in Africa of which 3 are doubtless artificial classification (Eaton, 1974) - has an interesting parallel in Serval that serves to highlight further the division between the **King Cheetah** and common cheetah.*

***Felis serval** has displayed throughout its relatively wide distribution in Africa, such diversity in its pattern of barring and spotting even within populations from limited areas, that much false sub-specification has resulted. Long-legged and medium sized, it is also the one cat oft mistaken in the past for **King Cheetah**. Such is the diversity in a pelage colour of anything from near white to dark rusty ochre, body spots small, large, elongated or joined, broad or narrow shoulder barring continuing onto the flanks or broken into short bars and spots, and dorsal stripes either there, or completely replaced by spots, that in a population of some 46 specimens in a restricted area of some 230 sq. miles (600km), most if not all of these characters, used previously to distinguish sub-species, were found in wide distribution. (Smithers, 1978). Hence the servaline, the small-spotted or speckled serval in which the spots are so minute it appears almost plain coated, was for a long time considered a separate species. In fact the servaline is merely at one extreme end of a very wide colour and pattern range, there being intermediates of all stages between the two types.*

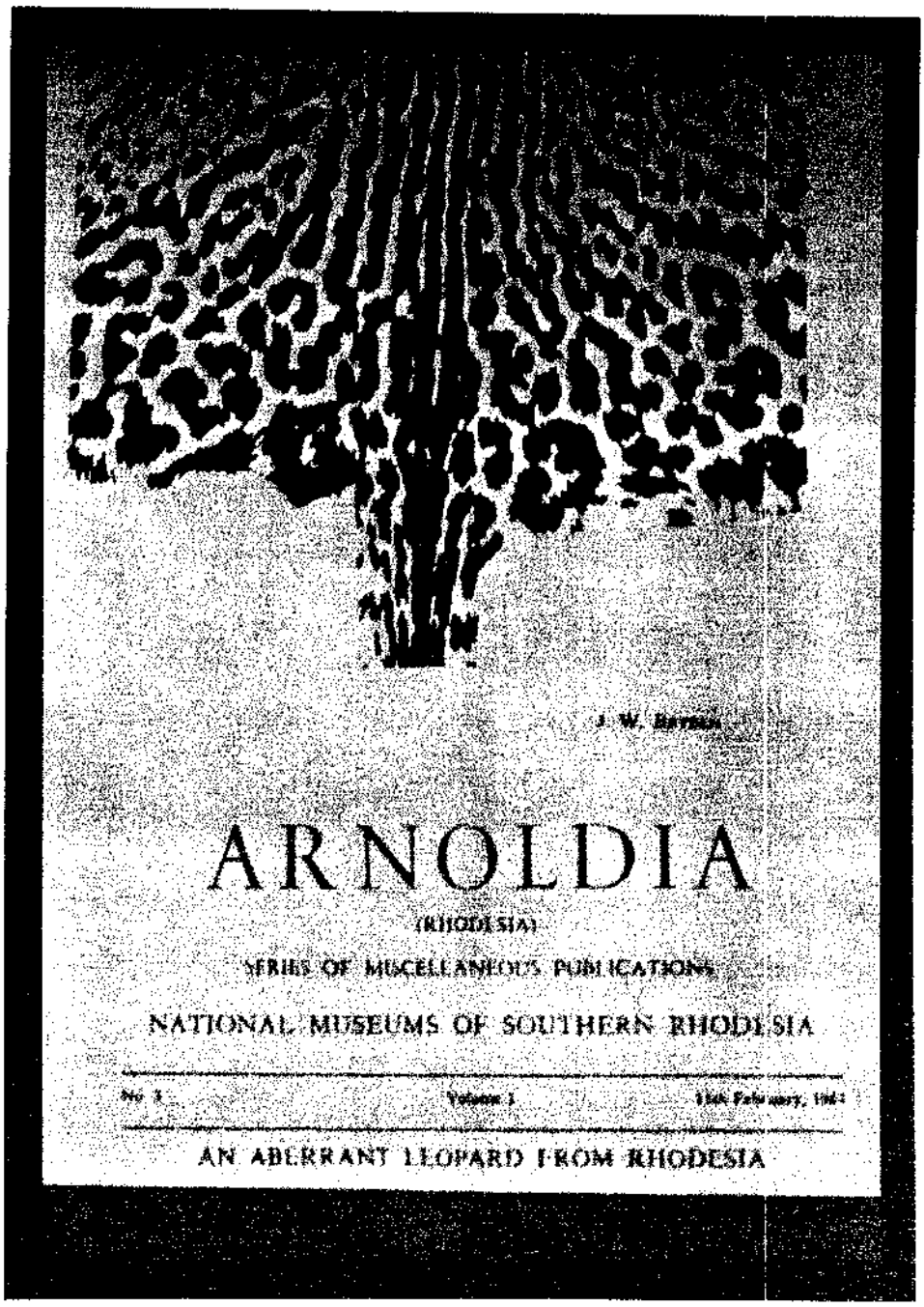

Fig. 3 Skin of aberrant leopard with blotches and stripes on the rump.

*The contrast with the **King Cheetah** couldn't be greater. Not only are there no intermediate patterns to speak of between the **King Cheetah** and the common cheetah. But just as the cheetah has shown remarkable uniformity in pattern and coloration throughout its once wide distribution, the **King Cheetah** is even more scrupulously uniform in the regular reappearance from one specimen to the next of a standard 1) minimum of 3 broad dorsal stripes running the length of the spine and flaring on the rump, 2) heavy irregular blotches over flanks, shoulders and hindquarters, 3) a tail always striped in its basal half, ringed in the remainder and 4) the striking colour markings of a black-brown on cream pelage of softer, longer, silkier hair that only varies in quality in collected skins suffering the effects of ageing and exposure.*

THE KING CHEETAH IN AFRICAN MYTHOLOGY

*Like some disreputable rumour, myth will attach itself to a subject long after it has been proved to exist. All that is required is a little mystery and the pre-requisite incredulity of the human condition. Such was the case with the **King Cheetah** as late as the 1970s, despite irrefutable evidence of its existence in skins; and more recently, in film and photographs. But fact and legend, like reluctant conspirators, keep very close company.*

*Long considered the person responsible for first bringing the existence of the **King Cheetah** to public attention (**The Field**, 1926), Major. A.L. Cooper, writing a year later in the **South African Journal of Science**, says of it: "That this animal was known for some time past is borne out by the fact that...mention used to be made round camp fires...of a beast that was neither lion, leopard nor cheetah, and, though considered by a number of people to be as mythical as the huge horned water serpent that is supposed to exist in some equatorial swamp, I believe was referred to as the **Mazoe leopard**...apparently commoner in those days than it is now."*

*A sentiment shared by many who have ever been involved in the discovery or pursuit of an unknown animal, Cooper found it extraordinary that such a remarkable beast could exist and yet, like the Okapi, not be known to science; more so, as he remarks in private correspondence to Pocock, that such keenly observant hunter naturalists the likes of Frederick Courteney Selous and others, who operated long and well-documented expeditions after rare specimens in the very areas of south-east Africa **King Cheetah** have come from, should not have mentioned it, or at least an animal answering the **King Cheetah's** description. (Pocock, 1927c). Yet for many years Africans had told white hunters of an animal that did just that.*

*According to Captain William Hichens, an officer with the Intelligence and Administrative Services of East Africa, and himself a keen sportsman who had traipsed on the trail of many a mystery beast, it combined all the fearsome ferocity of the leopard with the hyena's skulking cunning. Both swift and clever, the notorious "hyena-leopard", or **nsuifisi** as it was known, had many peculiar tales weaved about it, believed, as it was to be by the Africans, a cross between a leopard and a hyena. It raided kraals at night, often devastating the pens where stock were kept as it slaughtered indiscriminately, before making off with a sheep or goat. Though lithe, and with non-retractile claws, it was said to look like a leopard, but in place of spots was boldly barred in black and white not unlike the striped hyena.*

Hichens, in writing of native legend and its mystery beasts, says of ***nsuifisi*** *in* ***Wide World*** *(1928): "Nearly every big game hunter worthy of the name has trekked on the trail of this strange animal; but none had the luck to kill or capture it". Many of course ridiculed the stories as just the superstitious myths of Africans, comparable to the prowling, brindled* ***nunda,*** *or* ***mngwa,*** *known for over six centuries to the Africans of the East African coast; the mysterious* ***ntarago*** *of Kenya; the Uganda forest's savage howling* ***ndalawo*** *and other fearsome cats of native folklore (Heuvelmans, 1958). "But", Hichens concludes, "the* ***nsuifisi*** *proved to be no myth". Several specimens were secured, proving, as he claims, that it was no isolated freak, and that subsequently one of Britains foremost zoologists had identified it as an entirely new species of cheetah. As he expands later in* ***Discovery*** *(1937): "No less an authority than Mr. R.I. Pocock was able to lay on the table of the Zoological Society a skin of the* ***nsuifisi,*** *one of a number obtained in Rhodesia. It was shown to be a new species of cheetah* ***(Acinonyx rex),*** *not spotted but striped as the kraalsmen had been saying for years!". He continues: "The natives were wrong in supposing the* ***nsuifisi*** *to be a leopard-hyena cross, but that is certainly what it would look like to anyone other than a skilled zoologist".*

That the legendary ***nsuifisi*** *and the* ***King Cheetah*** *should be one and the same animal as Hichens contends is not surprising. Cooper and Pocock both wrote of the* ***King Cheetah*** *having native names, though they elaborate little beyond it being called* ***Mazoe leopard*** *after an area in north-east Rhodesia; while elsewhere in southern Africa where* ***King Cheetah*** *skins have been obtained and sightings made, in north-eastern Botswana for instance, tribesmen speak of the "ordinary cheetah" and the "other cheetah" quite separately as* ***lengau*** *and* ***lethosi.*** *In a final summing up in* ***Discovery*** *(1937), Hichens makes the hopeful observation that "like the* ***nsuifisi****....it is by no means impossible that the* ***mngwa*** *and* ***ndalawo*** *may yet prove to be as real". But as the pursuit of the wild's more mysterious and 'hidden' animals frequently shows, native names and a place in folklore are no more a guarantee than skins, photographs or plaster casts of tracks, against an animal so large, distinctive and remarkable looking remaining, as Pocock would have it of the* ***King Cheetah,*** *"for so long unknown".*

HISTORICAL BACKGROUND

When in 1926 Major A.L. Cooper of Salisbury, Rhodesia, first sent a photograph of a curious, striped felid skin to ***The Field*** *in London, he knew only that it was of an animal killed by Africans near Macheke in the north-east of the country, and said to be, significantly, one of four or five in a troop. That they were all* ***King Cheetahs*** *in the troop is clearly indicated by Cooper (1927) and repeated by later authors (Harper, 1945; Roberts, 1951). Coopers informant was fellow museum committee member, and Chief Justice of Rhodesia at the time, Sir Clarkson Tredgold who, as committee Chairman, had first shown Cooper the striped pelt on its presentation to Salisbury's Queen Victoria Memorial Library and Museum by the collector. Neither man could identify it, the unusual pelt being "absolutely unlike anything I knew" (Cooper, 1927). Only a matter of weeks later, this very singularity, in concert with the neck ruff and non-retractile claws of the cheetah, and a shape suggestive of the stockier build and powerful limbs of the leopard, prompted Cooper in a letter accompanying the photograph to The* ***Field,*** *to declaim the animal a hybrid, "a fact in itself nearly unique", It's how many a layman may have been tempted to see it. And not only*

laymen. A second copy of the photograph with an accompanying letter was sent simultaneously to the British Museum of Natural History. Oldfield Thomas, a well-known zoologist on the staff, promptly replied to Cooper in a letter dated 21st. Sept. 1926: "I should think you are right as to its being a leopard/cheetah hybrid - I never saw the like of it. I am turning it over to Mr. Pocock who is now writing on the Carnivora to see if he can make anything of it". Pocock replied in **The Field** *(1926). On the evidence of Cooper's small photograph, which he said showed none of the obvious characteristics of the cheetah Cooper had cited, he could not accept it being a hybrid but more likely an aberrant leopard, a species he considered liable to extraordinary variation in pattern (1927b;1927c) especially in southern Africa. Cooper didn't hold with that view. On securing permission from the Salisbury Museum Committee, he had the skin sent to London. Four months later in February, in the Proceedings of the Zoological Society (1927a), Pocock described a new species of cheetah* ***Acinonyx rex*** *"..to emphasise the splendour of its livery". Reminiscent of the ermine clad splendour of kingship, its easy to see why. Cooper had in fact traced four more skins. "A total of five skins" Pocock contends, "all alike and procured in different places at different times.....pretty well disposes of the theory of the skin being that of an aberrant animal". He later reflects in* **The Field** *(1927c) on the possibility that while known for many years to Africans and some Europeans,* **King Cheetah** *skins falling into the hands of people believing them to be little more than freak variants of leopards and therefore of no particular interest, might well have accounted for the unsuspected and unknown existence of what he later dubs the* **Rhodesian Cheetah** *(1928), and plainly believes to be "..the handsomest member of the cat-tribe" (1972c). Variously referred to by a number of other colloquiallisms from* **Cooper's cheetah**, *to* **Striped cheetah**, *as well as* **Royal Cheetah**, *this early history of the* **King Cheetah** *is well-documented. Captain Guy Dollman gives a comprehensive account of it (1929) based on Cooper and Pocock. Later references, some expansive (Harper, 1945; Roberts, 1951), others brief (Astley Maberley, 1959; Eaton, 1974; Guggisberg, 1975; Shortridge, 1934) , ascribe the wrong provenance to a skin, or a specimen to the wrong museum, with the result that* **King Cheetahs** *have been listed where there are none, or treated as two or more when only one. Most merely suffer from what has been described by Reay Smithers (1978) as that "tendency for statements made in the past to perpetrate themselves in literature by repetition".*

By 1932 Pococks classification had been challenged. The number of recorded specimens, all skins from what was then Southern Rhodesia, stood at **seven.** *But not one* **King Cheetah**, *be it live specimen or pelt, had been reported in the four years since 1928 when the seventh skin had been collected by a Native Commissioner and later mounted for the South African Museum, Cape Town. The same Native Commissioner had in fact been responsible for collecting, three years previously in the same district in the south-east of Southern Rhodesia where further skins and sightings were later to be reported, two other* **King Cheetah** *pelts, each now a mounted specimen in the British Museum of Natural History and the Natal Museum, South Africa. The Chief Native Commissioner of Rhodesia had previously agreed, at Cooper's behest, to have specimens sought through all commissioners in the outside districts. Provided with a description of* **A. rex**, *they were asked to report any encounter with similarly striped cheetahs. A skull was also being sought by Lord Rothschild for his remarkable private museum at Tring Park in Herefordshire, England, now an*

annex of the Natural History Museum in London. None was ever forthcoming, but in 1927 he did obtain a ***King Cheetah*** *skin for £150 through Cooper; an excellent specimen later to become part of the museums study collection. Pocock's prediction, "It will command a high price, whether alive or dead; and the result will be persecution by hunters and trappers on such a scale as to threaten its extinction " (1927b) had barely dried on the paper. Its area of provenance in a district backing onto the Chimanimani Mountains on the Rhodesia/Mozambique border reflected strongly both the sighting of a skin at a Mission station and of live specimens reported half a century later in the same area. Another pelt collected the previous year just south of what is now Harare and exhibited there at the 1926 meeting of the* ***South African Association for the Advancement of Science*** *hasn't been traced since, though a photograph of it was published (Cooper, 1927). It demonstrates something of the superficiality of research if in sixty years a skin officially exhibited and photographed can remain untraced, what else remains untraced, or even never recorded. One conspicuous event of the period concerned a sighting of two* ***King Cheetah*** *in country long associated with the* ***Mazoe leopards*** *first mentioned in official literature by Cooper. While motoring with a friend through the Umvukwe Range, an area long confused with Macheke as the provenance of the type specimen, John Buckmaster writes of an encounter at just a few feet with a pair of* ***King Cheetah****, a full-grown male and a young female sunning themselves on an antheap in typical cheetah pose. In a long and detailed letter to Cooper dated July 14. 1928, it appears the animals didn't shy off, allowing them time to observe the cats closely and even attempt a photograph. "I have never had such a magnificent sight of wild life" he wrote to Cooper, "as that presented by the pair of* ***Acinonyx rex****", describing the coat as richer than any cheetah or leopard he had seen, the tail extraordinarily long and thick and the male huge, its long fur giving it a very heavy appearance. "I consider the male" he continues, "a more handsome animal than the leopard, tiger or lion, his general appearance being less coarse". Buckmaster had for years traded in skins in Bechuanaland (Botswana), and having once kept a leopard as a pet, and "handling thousands of leopard and cheetah skins" was doubtless a good observer who could tell the difference between a leopard, a spotted cheetah, and a striped and blotched one. Echoing African attitudes that the* ***King Cheetah*** *is a "cheeky" animal, he didn't class them as shy, citing the boldness of the two he encountered, and mentioning a farmer at Concession between Mazoe and the Umvukwes who had lost several calves. He managed to shoot the marauder; a cheetah he regarded as a freak but which was apparently a* ***King Cheetah****. Significantly, a newspaper report of some years back claimed a* ***rex*** *pelt was collected seven or eight kms drive from Concession, but no official record exists. Never seeming to yield a* ***King Cheetah*** *pelt, Buckmaster's handling of "1000s" of felid skins offers a timely reminder of how the slaughter this century of cheetah, threatened enough by its own genetic vulnerability, may have hindered the development of the* ***King Cheetah*** *to a degree we will never be able to judge.*

In 1932 Angel L. Cabrera, in his ***Los Mamiferos de Marruecos****, was the first to challenge Pocock's specification, suggesting the King Cheetah was little more than an abnormal variant of the common cheetah. Seven years later Pocock finally acknowledged. In a footnote (1939) in which he is as conspicuous in his brevity as one passing sentence, he begs the question by stating that the animal is doubtless a mutant, not a distinct species, citing no evidence for his change of mind beyond an ironic comparison with the frequency of aberrations in leopard. Possibly Pocock was unaware of*

*either the new **King Cheetah** skin collected in 1935 (James,1962) in an area of Zimbabwe that had already yielded four of the pelts on record, or of the reported sightings of the time from the same south-east corner of the country (Shortridge, 1934; Hills et al, 1980). Certainly the skin, possessed of all that remarkable **King Cheetah** regularity of pattern the previous recorded skins had displayed, may never have been reported to any authority. No record of it seems to have appeared in any official literature on the **King Cheetah** until 1962, when Sir Archibald James, a keen sportsman who had chanced upon the skin on a shooting trip and purchased it, published a review in **The Field** (1962).*

*Despite Pocock's retraction, a number of authorities writing since 1939 are on record as still clearly accepting the original specification. F. Harper (1945) in **Extinct & Vanishing Mammals of the Old World** clearly considers the **King Cheetah** distinct from the common cheetah. In his **The Mammals of South Africa** (1951), Austin Roberts also accepts it as a separate species. As recently as 1980 Rowland Ward's, the famous Game Measurers, in a limited edition of fine art plates titled **Game Animals of Africa**, illustrated and listed the **King Cheetah** as a separate species **Acinonyx rex**, as distinct from the common cheetah and the leopard. Forty-five years previously in Rowland Ward's definitive 10th. Edition **Records of Big Game** (1935), editors Guy Dollman and J.B. Burlace had written: "Unless more evidence of a systematic nature comes to hand in support of the specific determination of this Chita (sic) it may be necessary to regard these darkly marked skins as mutations or, at the most, as representing a race of the common African Chita." Bernard Heuvelmans offers a deeper assessment, first mooted in his prognostication in **On the Track of Unknown Animals** (1958). More recently in a foreword to the senior authors forthcoming book **King Cheetah, The Story of the Quest**, he argues that genetical or ecological factors may possibly be favouring the development of the **King Cheetah** parallel to the common cheetah of the savanna as a geographical race, that is a sub-species, which in the long run might some day reach a level of specificity.*

*A prescient judgement not well known and even harder to find from over half a century ago remains singularly noteworthy. Miklos Kretzoi in an unanticipated classification of the **King Cheetah**, gives it full generic status under the new genus **Paracinonyx** (1929), suggesting a form more advanced rather than more atavistic or primitive as favoured by Pocock (1927a), which as a group in comparison to its ordinary relative **A. jubatus**, is stagnating on an epistatic level while closely related and showing parallel development. Unanticipated it may have been, but not so unexpected from the wider viewpoint of cheetah. The differences between the cheetah and the other known cats were already of enough generic importance to some zoologists (Dollman, 1929) to be regarded as evidence for completely separating the genus **Acinonyx** from that of the cats in the sub-family **Felinae**, and creating for it a special sub-family of its own.*

*In 1940, the year following Pococks retraction, a **King Cheetah** was killed south of the Limpopo in South Africa, the first recorded outside Rhodesia. A specimen "lost" to science for decades until relocated (Hills et. al. 1980) with a skull in 1979 by the authors , it took **King Cheetah** for the first time out of a range believed restricted to eastern Rhodesia, shot at bait in the same richly covered habitat of rolling thorn bush and scattered woodland that appeared to suit the **King Cheetah's** heavier pattern,*

*and which in areas **King Cheetah** had been found, could run to quite dense, even lush cover. The "Messina skin" as it came to be known after the area in which it was taken, indicated an extension in the range habitat of the **King Cheetah** later vindicated by other reports of sightings and skins. There were rumours in the 1950s of **King Cheetahs** being seen in the north of Kruger Park as well as elsewhere in the northern Transvaal (Meester, 1962). Later in the 1960s west of Messina, just over the Limpopo and Shashe rivers in Botswana in country fanning out and down from the confluence and virtually identical in vegetation type, a **King Cheetah** was said to have been shot in the Tuli Block and its pelt sent for auction in Johannesburg. Another skin had been seen in a store on a plantation in northern Tuli just south of the Motloutse River; while a little further south in Tuli two **King Cheetahs** had been reported seen running on a farm (Smithers, 1971). Several **King Cheetah** skins were reputed to have been obtained in the same area over a period of ten years and made up into a coat (The Star, 1966). Meantime, with more reports of sightings in Rhodesia in areas where **King Cheetahs** had previously been recorded, a pelt, the tenth collected but in poor condition after being chewed about for years by dogs, was sold to the Kaffrarian Museum in King Williams Town, South Africa, purchased back in the 1940s in south-west Rhodesia from Africans hawking skins and its provenance a mystery (Dacomb, 1974).*

*Much of these new reports, and more besides in the 1950s, '60s and on into the early '70s, were to be largely ignored by the scientific establishment (James, 1962). The euphoria of the days surrounding the **King Cheetahs** discovery had long passed. More particularly, the implications for further appearances of **King Cheetah** outside Rhodesia, prefigured by a **King Cheetah** shot at bait in the Northern Transvaal in 1940, were not to be acted upon for over three decades.*

CONTEMPORARY RESEARCH

*In the course of the six year mammal survey in Botswana Reay Smithers documented in his **Mammals of Botswana** (1971), he writes of coming across the only **King Cheetah** skin he had ever seen there to date. It was at Moijabana in the possession of a storekeeper, whose family had been dealing in skins for over forty years. Situated in the semi-arid, spiny steppe of the Central District, its western edge marching on the Kalahari and hardly the country **King Cheetah** appeared to favour, Moijabana is little more than a trading post some 150kms (94mls) west of the more fertile bushveld and woodland of Tuli. Pelts can travel vaster distances in the skin trade than even when hawked to the farm door, and Moijabana was within easy access of both Tuli and Zimbabwe(Rhodesia). Unlike South Africa where they could still be shot on sight as "vermin" well into the 1970s, cheetah in Zimbabwe, including **King Cheetah**, had been officially protected as Royal Game since as far back as the 1950s, with severe penalties for those caught poaching. This of course didn't prevent cheetahs being poached and their roughly salted pelts slipped out of authorities way across the more broachable border into Botswana where circumstances allowed for easier disposal. One can only surmise just how many of the **King Cheetah** skins that were later discovered in a 13-month field exercise undertaken by the authors to have begun turning up in Botswana via skin traders in outlying districts as early as the 1960s, had in actual fact made it into Botswana via that circulatory route.*

In 1971, the Moijabana skin was donated to the National Museum of Botswana in Gaborone. It was the eleventh ***King Cheetah*** *skin to be listed, and only the second since the one shot near Messina in 1940. Then in May/June 1974, in Kruger National Park but a few kilometres from the Lebombo Mountains, a tourist photographed a live* ***King Cheetah****. Not publishing news of the event, nor the excellent colour close-up of a fine adolescent male until some six months later (de Graaf, Nov. 1974), the parks authorities were taken by surprise, never believing* ***King Cheetah*** *could be found in Kruger Park despite the rumoured reports of sightings, even from members of parks staff, that had circulated for years. It is odd indeed, that the shooting of the first known* ***King Cheetah*** *outside Zimbabwe just west of the park in 1940, even seems to have escaped the notice of such authorities as Colonel Stevenson-Hamilton (James,1962), for thirty years Game Warden of Kruger National Park. In 1947, in his book* ***Wild Life in South Africa*** *he writes of the* ***King Cheetah*** *as a handsome variety of cheetah occurring in the south-east of Zimbabwe, making no mention of the one shot not far from the north end of the park seven years previously. Odder still is the photograph that appeared in the 1941 guide to the wildlife of Kruger Park,* ***Our South African National Parks,*** *edited by Stevenson-Hamilton. Purporting to be representative of the cheetah resident in the park, it is clearly a* ***King Cheetah;*** *the mounted* ***King Cheetah*** *from Cape Town Museum in fact, deceptively photographed "en plein air" to give it a life-like, outdoors look.*

Nothing could have emphasised more the patent need for some systematic research and fieldwork. The live ***King Cheetah*** *in Kruger Park was photographed within range of the lush traces of the Lebombo Mountains flanking Mozambique. Hardly the type of forested, hilly habitat associated with common cheetah, especially last century when their range habitat hadn't been threatened to the extent of forcing them to retreat into an environment more appropriate to* ***King Cheetah****, it was here that references from a hundred years ago (Lydekker, 1893-94) spoke of the cheetah that "in South-east Africa is very rare, although found more commonly than elsewhere in the rocky gorges of the Bombo (sic) Mountains where it lies concealed in the dense jungle, from which it occasionally ventures forth onto the open plains".*

FIELDWORK AND SEARCH FOR KING CHEETAH

In 1978, following 18 months research and planning, the authors launched an expedition to southern Africa with the aim of increasing the current field knowledge of the ***King Cheetah*** *and in effect re-open the question of the animal's status. The evidence of fifty years collated in our research, already pointed to a preferred habitat for the* ***King Cheetah*** *of thorn bush and woodland running into forest that was not the country generally associated with the ordinary spotted cheetah. With the number of officially recorded specimens of* ***King Cheetah*** *standing at twelve, including the live animal photographed in Kruger Park which the authorities there claimed hadn't been seen since (Hills et. al. 1980), our prime objectives during a subsequent thirteen month exercise of fieldwork and search were to trace, evaluate and collate any previously unrecorded sightings and skins collected; trace and verify any new reports of sightings and skins; demonstrate that the* ***King Cheetah's*** *habitat range of thorn bush and woodland - as opposed to the open tropical grassland and savanna generally associated with cheetah - was not confined to a small local region in eastern Rhodesia as claimed (Eaton, 1974); trace a skull, and*

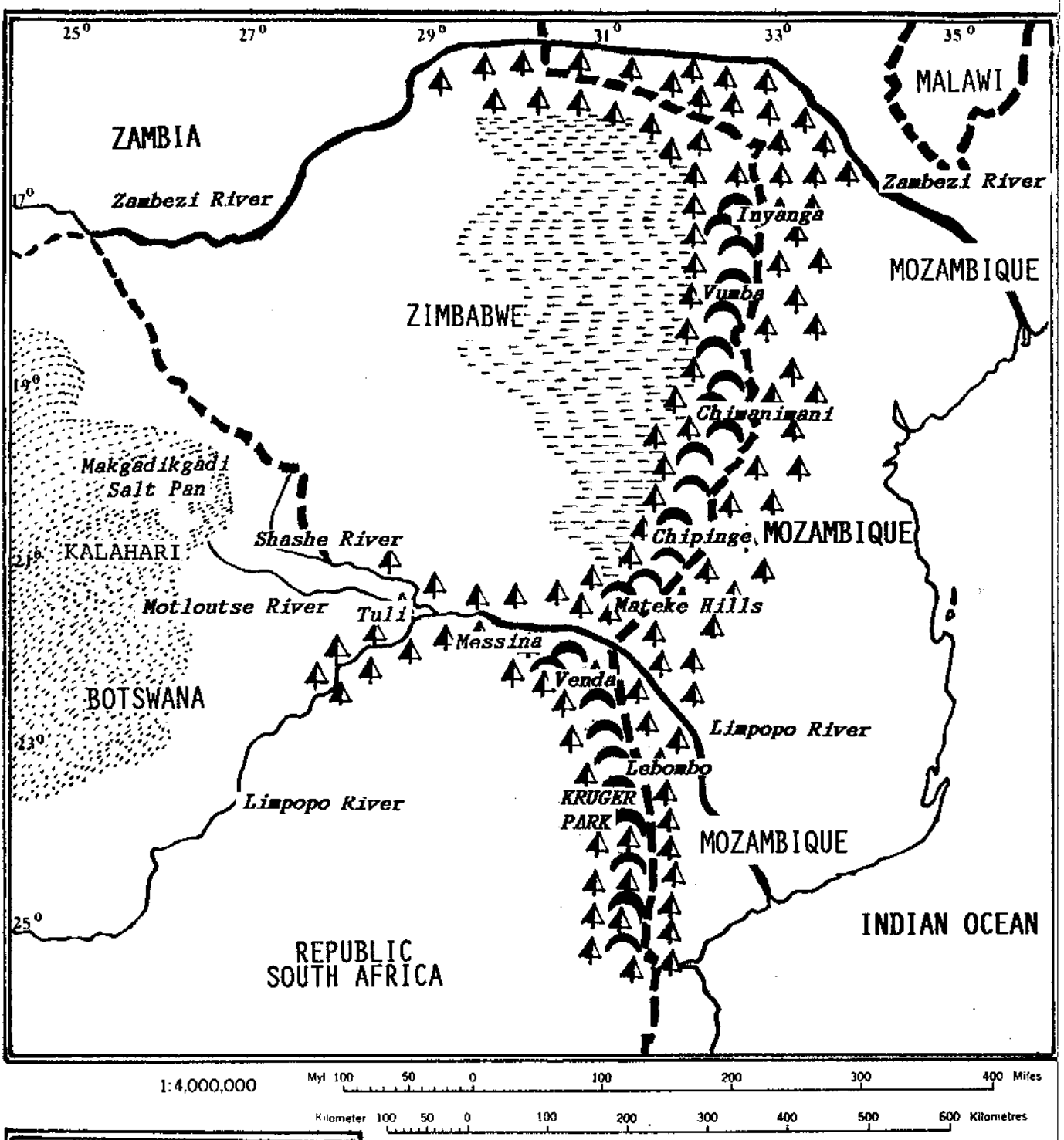

Fig. 4 Geographic area - King Cheetah.

*either all or part of a skeleton for osteological analysis; finally obtain more recent photographs and film of live **King Cheetah**, capturing one if practicably possible, and holding it temporarily to extract samples of blood and skin tissue for genetic analysis. An adjunct to this was to encourage an appropriate wildlife body, preferably established in the southern African sub-continent, to institute a breeding programme to isolate the strain.*

*Fieldwork involved a systematic ground search of a specific area based on an overview of where **King Cheetah** had been shot or sighted since 1926. This confirmed three areas of search: the north-east corner of the Tuli Block in Botswana between the Shashe and Limpopo rivers where in 1977 the latest reputed sighting of **King Cheetah** just south of the Tuli Circle had occurred; central Kruger Park edging north-east toward Mozambique along the lush Lebombo strip where it was claimed that because the **King Cheetah** photographed there hadn't been seen since, a search was irrelevant; and the fertile eastern district of Zimbabwe verging on Mozambique which had catalogued the most appearances of **King Cheetah** to date, and where the escalation of the guerilla war added a dimension that put any plans for a search in doubt. Apart from a topographic proximity that interconnects through a region of country roughly forming a triangle from north-east Zimbabwe south down to north-east Botswana and across the Northern Transvaal to Kruger Park and Mozambique (Fig. 4), the three areas were significantly interlinked by virtue of vegetation type and a tropical climate characterised by the long 'dry'.*

Botswana

*Tuli became our primary area of operation, combining an intensive search for live **King Cheetah**, one for unrecorded skins, and follow-up on reported sightings and pelts not verified. A day-to-day search over a three month period commencing at the advent of the 'wet', was confined within a relatively remote patch of country, of generous Mopane woodland and thorn bush, nestled snugly in the northernmost corner of Tuli in the confluence area of the Shashe and Limpopo Rivers between Zimbabwe and the Northern Transvaal. Lush riverine landscape of Wild figs, evergreen Mashatus (ebony trees native to the area) euphorbias and palms merge into tall stands of Mopane woodland and thorn bush spreading westward beyond the Tuli Block's so-called "back-line" into the thick scrubland of the vast Bamangwato tribal territory. In sub-tropical Tuli, a short wet season offered the most advantageous time to carry out our work there. With game dropping their young, predators were noticeably more active and conditions generally more pleasant for the task in hand. Utilizing four-wheel drive vehicles as a means of access only, the search was contained within an area of roughly 1000 sq.kms in a triangle of land between the Shashe River and Tuli Circle to the north, and the Limpopo and Motloutse Rivers to the south, working on a basis of two three-man teams on separate recces in designated areas operating foot patrols looking for signs of **King Cheetah**, in concert with spotting from dominant vantage points, such as kopjes or ridges, over a single day, or several days if an area appeared promising.*

*In what was four months overall spent in Botswana, the expedition traced and verified five additional, previously unrecorded skins, each distinguished by that remarkable uniformity of pattern between specimens that had been demonstrated in all the examples of **King Cheetah** recorded to date. The first was in central Tuli Block in the hands of a white rancher*

at Zanzibar, a turn in a dirt road marked by no more than a ranch and an antique petrol pump. Though purchased for a meagre amount from an African hawker, it was a fine specimen, reputedly collected some distance north on the perimeter of the Tuli Circle. The remaining four constituted the unique collection of a small businessman in Palapye, a village rail-link 150kms west of Zanzibar on the line north to Francistown and Bulawayo. A rough provenance for each could only be guessed at. The four had been purchased together as a lot from a skin trader out west of the Makgadikgadi salt pans at the desert trading post of Rakops in the northern Kalahari. A hostile environment in a desert far drier than the Sahara, they were not collected in the vicinity; rather they had travelled hundreds of kilometres west from the direction of Tuli and Zimbabwe and a more fertile and likely provenance. Though the sex of each was not evident from the pelts - as has been the case with other ***King Cheetah*** *skins examined - four* ***King Cheetah*** *skins turning up at a remote skin traders store where no others have been handled before or since, is strongly suggestive of the four having either been killed together, or as near to that in range and time, making for a possible colony or breeding nucleus, and thus an indicator of* ***rex*** *being more than just a freakish aberration of the common cheetah whose own poor reproductive abilities, low level of genetic variation and threatened extinction were significant comment alone. Reports of two or more* ***King Cheetahs*** *being seen together challenges the conventional theory of the* ***King Cheetah*** *being just an abnormal variant. The first clear example is Buckmasters encounter with the two* ***A. rex*** *he so convincingly described in his letter to Cooper (Buckmaster, 1928). Cooper himself wrote of the holotype skin being taken from a* ***King Cheetah*** *among a troop of* ***four*** *or* ***five*** *animals he clearly implies are all* ***King Cheetahs*** *(1927). It is significant that in the course of our investigations we should cross-reference the one report from Botswana recorded to date (Smithers, 1971) of a sighting of two* ***King Cheetahs***. *Smithers in fact quotes not one sighting, but "sightings" of two* ***A. rex*** *on a farm in the southern Tuli Block, later confirmed by us to be called* ***Stevensford***. *He considered his informant a good observer of wildlife, and above all reliable. We visited the property in question, but it wasn't till some time afterwards under circumstances quite removed from our investigations at the farm, that a man who had spent many years teaching in Botswana and neither knew of our visit, Smithers, nor the source of Smithers' information, told us how he had once seen two striped cheetahs actually running together across a farm in the southern Tuli Block. It was the same property visited by us and mentioned to Smithers simply as "Van Riet's", confirming to any reasonable degree the validity of the sighting.*

During the period of the search for live ***King Cheetah*** *in Tuli, four sightings were reported to us, three of cats seen in the time we were there. The first concerned Joseph, an African tracker, who came to us claiming that in the winter of the previous year, he had seen a* ***King Cheetah*** *at a place in amongst thick mopane bush dotted with scattered openings about ten kms cross-country from our base-camp on the Limpopo. It was a clear morning, and crossing his path through a clearing between some trees, the cat was in range long enough for the tracker to note something he had never seen before in cheetah: a bold pattern, with dark, distinctive stripes running the length of its back. Judging it to be a heavier cheetah than normal, he watched, struck by markings not even remotely like the serval as it hurried in the direction of a stream he knew to lie a short distance on. Respected as an accurate observer by those he worked with, black and white alike, we showed him photographs of the mounted* ***King Cheetah*** *specimens in*

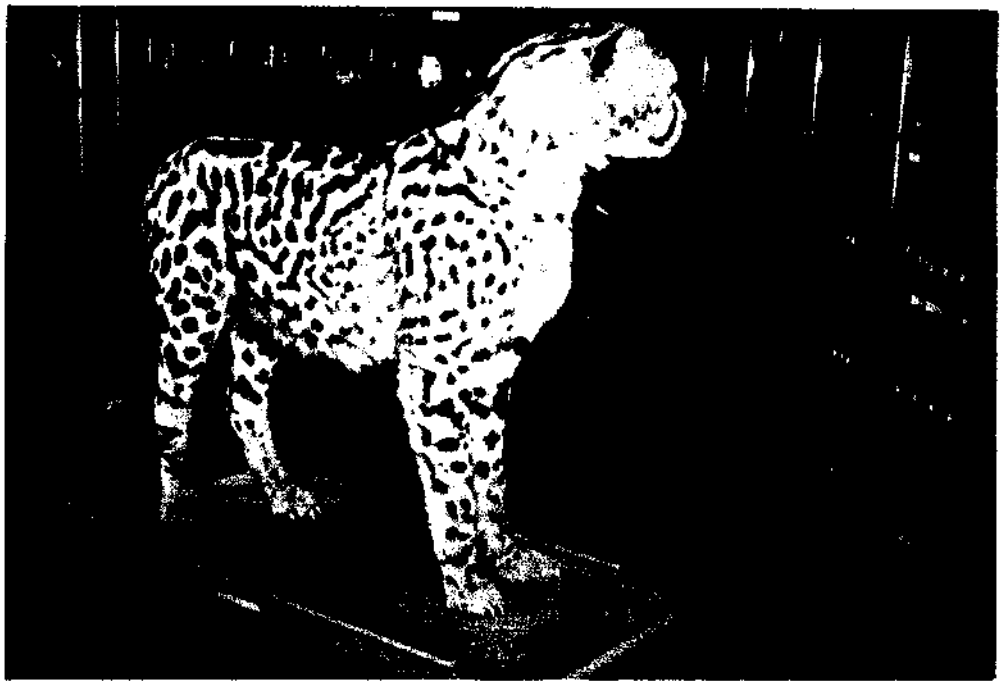

Fig. 5 A King Cheetah resembling a leopard more than a cheetah. Mounted specimen at the British Museum (Natl. History).

the Museums of Natural History London, and Capetown. There is a marked difference between the two in the way each has been mounted. The former resembles a leopard with stocky legs, heavy neck and head due to the theory popular in 1926/27 that the ***King Cheetah*** *might be a leopard/cheetah hybrid (Fig. 5). The later mounted Capetown Museum* ***King Cheetah*** *bears a greater resemblance to cheetah in the way it has been modelled (Fig. 6). What was significant about the tracker's reaction on being shown the photographs was that he was the only person to date from out of a succession of wildlife professionals and laymen to brush aside the British Museum* ***King Cheetah*** *with a contemptuous retort that "it was not a leopard" he saw "but a cheetah with stripes and blotches like the one in the other photograph". He didn't report the sighting to any official source as he felt the fact of it simply being a cheetah was the limit of their interest; a sentiment aided by the apprehension with which native people regard authority, and which as a hangover of the colonial era still continues to bedevil the work of the researcher after the hidden and mysterious. Guilty oftentimes of the very tendency to embroider they readily ascrib to Africans, whites in Africa most sceptical of native reports are usually the biggest embroiderers of all. Shortly after Joseph's report to us, news calculated to raise emotions reached our Tuli base-camp from over the Limpopo. Three* ***King Cheetahs*** *had reputedly just been shot and killed by a white farmer in an area of the Northern Transval between the border and Messina. Immediate follow-up revealed that two, not three cats had been killed, with only one reputedly a* ***King Cheetah.*** *To effect authentic mounts, the carcasses had been retained and sent with the salted pelts to a taxidermist in the south. It was a first-class opportunity for some significant osteological and biochemical analysis. The taxidermist was a renowned professional who could be relied upon to know the difference between the common cheetah and the* ***King Cheetah.*** *Monopolising two days of valuable search time, the report had already proved wide of the mark on two counts, and chances were it could well do on the point that mattered. Verification confirmed it was a false alarm. The supposed* ***King Cheetah*** *shot was simply a very big spotted cheetah - the "king-size" cheetah which in the popular imagination of white South Africa was all* ***A. rex*** *had ever been.*

A group of nine Government Game Scouts visiting the area from the south were en route to our camp at the time of the next sighting, and able to report the incident in fresh detail. Being night, they had marked out the spot with a boulder. Dazed by the glare, a big cat had been momentarily caught in the headlights of their truck. "Like no other living animal we had seen before in the bush.." was how their spokesman described it. The scouts in the cab of the vehicle judged it to be approximately as large as an Impala, and when it broke free of the glare of the headlamps and scooted down the side of the vehicle, all of the scouts sitting in the cab and standing in the open back were struck by the vivid black and white colouring, and its stripes, thick and bold in contrast to the serval, running the length its spine. Though many animals appear deceptively larger at night with the diffused play of light from headlamps and shooting-lamps giving a false illusion of distance, they reckoned the serval, the one partly striped cat they knew with its trademark erect ears, was only about half its size. At first light we examined the area for fresh spoor and other sign. But being so severely startled the animal had not stayed around, moving swiftly over rock-hard ground that showed nothing.

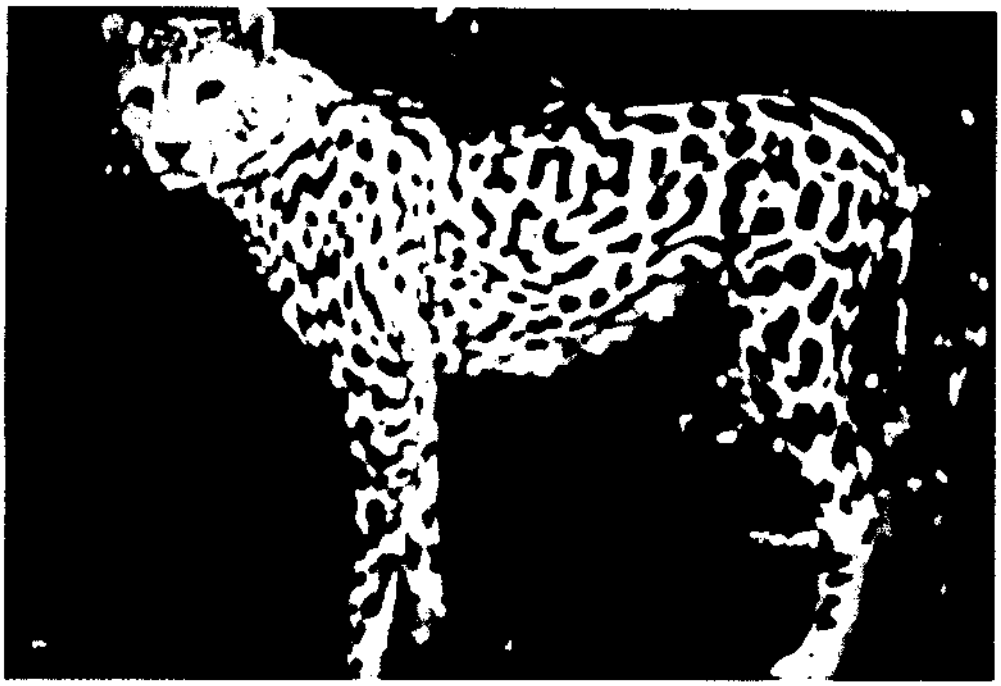

Fig. 6 A King Cheetah resembling a cheetah. Mounted specimen at the South African Museum, Cape Town.

Tracks of cheetah were spoored on a number of occasions. On others the actual animals were tracked. One group of four, heavy, dark cheetahs the authors followed closely on foot for well over a kilometre until losing trail of them in a part of Tuli where a local African had reported seeing three oddly-marked cheetah early one morning from his donkey cart. He claimed they had been running together and took great trouble seeking us out to personally report news of it. In the words of one old chief in Tuli when speaking of the ***King Cheetah****, "there were many around in the old days". On a particular dawn patrol in the same vicinity, a big, darkish cheetah bolted out of thick scrub straight into the glare thrown by the shooting lamp attached to the vehicle in which the authors were travelling. It loped off through the opposite flank of three-foot high grass with its head repeatedly bobbing above the grass. Other similar sightings were as difficult to clarify. Following one of the more tenable reported sightings of a* ***King Cheetah****, a bait was staked out. The animal did not oblige. Whether cheetah, alone among the big cats, will go to bait, has always been a moot point. But we were dealing with the little known* ***King Cheetah****. One* ***King Cheetah*** *is in fact on record as having been shot and killed at midnight at bait intended for lion. Indeed, of the pug-marks we spoored it was impossible to confirm which were* ***King Cheetah****, and which spotted cheetah; those of* ***King Cheetah*** *not necessarily being any different, with both animals having the same partially non-retractile claws and elongated pads. Rumoured reports of certain flat skins collected in Tuli, one reputedly taken near the Tuli Circle, another auctioned in South Africa, were likewise difficult to clarify. The likelihood is that out of three credible reports, one skin at least had been collected in the area. The African store mentioned in connection with one of the reports certainly existed, giving it credence and the name "Red Shields" to the pelt. Its Indian owner had sold up some years before and gone to live in South Africa which possibly explained the report of another* ***King Cheetah*** *pelt from Tuli auctioned in Johannesburg. Investigations into a new report of a third flat skin collected in the area and pinned up on the wall of a nearby homestead met only a stony silence, laws forbidding the procuring of "spotted skins" - into which loose category* ***King Cheetah*** *fell - outside of designated hunting concessions, doubtless having good their effect. Another flat* ***King Cheetah*** *skin supposedly collected in eastern Botswana, officially recorded by Wrogemann (1975) as a full jacket made up inconceivably from the single pelt and later listed by Hills and Smithers (1980), turned out on proper investigation to be not the skin of one* ***King Cheetah****, but three or more serval pelts, as an extant photograph clearly shows.*

Zimbabwe

In a remote area of bush amid lush terrain in the Eastern Highlands of Zimbabwe where a civil engineer and his wife lived for some two years supervising the construction of a road and causeways, a "colony" of ***King Cheetahs*** *lived. They reported seeing upwards of twenty* ***King Cheetahs*** *in the period, singly, sometimes in pairs, occasionally exceeding two, but never in the company of ordinary cheetah which, though not uncommon in the area, kept to more open country further south-west. Furnishing us with precise map references and detailed written descriptions, we received permission from the Rhodesian Department of Wildlife to enter the area for a search. It was environment that perfectly complemented the* ***King Cheetah's*** *heavy patterning and longer fur, raising to a new status the argument for a breeding nucleus of* ***A. rex*** *which the remarkable Palapye collection of four pelts had marked*

out. It had been in a similar environment further south in the Melsetter and Mt. Selinda areas amid the strip of lush hills, mountains and undulating bush country that marks a continuation of the Eastern Highlands region that two previous ***King Cheetah*** *skins had been recorded. They lent weight to a sighting of* ***King Cheetah*** *near Mt. Selinda Mission in 1970, which was reported to us by Smithers, and considered by him to be reliable.*

Tucked into country rich in green forest and wooded downs, with rushing rivers, numerous waterfalls and streams and the highest rainfall in Zimbabwe, the area of the "colony" sighting was a type of depression some 400 kilometres square near the Mozambique border: a region of lush bush and forest rising from below 2000ft to in excess of 6000ft (1800m) between the Honde and Pungwe rivers where one of the highest single drop falls in the world is found. A flat skin was reluctantly collected by the engineer and handed over to a District Commissioner, taken from a ***King Cheetah*** *he'd found killed by local tribesmen. The sightings themselves were later cross-checked by two other people: one, a Selous Scout who reported encounters with the "strange cheetahs" while on covert patrols in the Pungwe in the latter part of the Rhodesian conflict; the other, a South African hunter who several years earlier in 1974 shot a* ***King Cheetah*** *in the remote region of thick bush on a direct line east across the border in Mozambique, selling the pelt to a collector in Japan, but later retrieving it.*

Their first sighting occurred at night. Caught in the headlights of their landrover on a narrow dirt track cut through the bush to the works site, two big cats lying in the way were at first taken to be young lions, echoing Lydekker's reference from last century about the cheetahs in the Lebombos that were often taken on sight for "immature lions". On drawing closer, it was the remarkable black blotches on the animals flanks that immediately took their attention; that, and an apparent heavier build than the common cheetah. In another sighting in broad daylight, they watched a ***King Cheetah*** *take to water and swim upstream, later emerging on the opposite bank some distance up. They were adamant the animals were not leopard, there being none to speak of co-existing in the particular areas they had sighted* ***King Cheetahs.*** *Nor serval. It was a region of secluded terrain, very sparsely inhabited with scattered kraals and tribal villages, where a rare animal could develop undisturbed. Yet while folklore illuminates, primitive superstition, like secluded habitat, can further insure the rare and hidden remain hidden. So secluded was the area where the cats were sighted, even a whirlpool at the base of the falls in the heart of it was believed by local tribesmen to be possessed of evil spirits, making it and its immediate environs taboo. In 1979 it was also a war zone, under strict martial law and reputedly heavily mined, from where its few scattered villagers had already been evacuated, and which in the closing months of the war with the increased escalation in the conflict, ensured no search in the region going ahead without military support. With Government forces at full stretch as hostilities peaked at the wars climax, it was not forthcoming. A prime exigency of the time, a major terrorist war that had escalated out of all proportion during the period of the expedition's operations in southern Africa, made any knowledge of the long-term effects on the development of* ***King Cheetah*** *in the area one of the lasting casualties.*

South Africa

An adherence to the secluded terrain found within a lush crescent of country sweeping westward from Mozambique across the Eastern Highlands and south-east of Zimbabwe to Tuli along the north/south watershed of the Limpopo, would certainly account for few recorded sightings of ***King Cheetah****. That the first reported photograph of* ***King Cheetah*** *in the wild should be taken, not in one of the remoter parts, but in an adjoining, world famous game reserve with a high turnover of visitors, is therefore not surprising. Natural barriers can sometimes cause genetic isolation. It is conceivable that the chain of hills and mountains linking sparsely inhabited and difficult terrain - where also tsetse fly and malaria has helped keep human occupation to a minimum - of forest and woodland melding to thick bush which runs north along the Lebombo Range flanking Kruger Park into Zimbabwe and on through the Chimanimani and Vumba Mountains to Inyanga, could have provided the geographic isolation to evolve a new race of cheetah which someday might reach species status (Fig. 4). An adjunct to this is the increased leopard-threat factor in such an environment. Leopard have been known to kill cheetah. U. de. V. Piennaar, Warden of Kruger Park, has a particularly fine photograph of one such example. On balance however, it is probably no greater threat than that posed to ordinary cheetah by the predator-competitors with which it shares savanna areas where human encroachment has not dramatically altered the state of equilibrium, with the* ***King Cheetah's*** *heavier markings making it look a bigger and more aggressive cat, thereby possibly acting as an additional defense mechanism. Add the parameter that it was the "different"* ***King Cheetah*** *under discussion, and the argument diffuses further. Not only in behavior, there was after all no strict yardstick on which to guage how much of a cheetah the* ***King Cheetah*** *was. Checking, for instance, the pattern of ordinary cheetahs for the appearance of stripes at sanctuaries such as, among others,* ***De Wildt*** *and* ***Loskop Cheetah Sanctuary*** *in the Transvaal, didn't evidence even a row of spots joining to form a line in over two hundred cheetahs examined.*

In response to a radio broadcast beamed there from South Africa, a trip to Namibia confirmed fresh reports that a cat recently shot in the north close to the border with Angola by a farmer who had kept its roughly salted skin and skull and claimed it was a ***King Cheetah****, was in actual fact a serval.* ***King Cheetah*** *in Namibia shunned all reason. Of mostly the wrong vegetation type for a start, from the earliest references to* ***King Cheetah****, no sightings or skins have ever been recorded coming from this part of southern Africa. Steering a course between the two extremes of a naive willingness to believe on the one hand, and incredulity on the other, can as a principle be about as untenable as believing that living in the bush automatically presupposes for people a reliable knowledge of its wildlife. A white South African game scout reported seeing a* ***King Cheetah*** *skin wrapped around an old African whom he took to be a chief or a witchdoctor, in a market in Sibasa in Vendaland when he had lived there as a teenager. Loskop's Desmond Varaday, author of* ***Gara Yaka, The Story of a Cheetah*** *(1964) who hoped someday to breed an* ***A. rex*** *from his stock of cheetahs, similarly reported to us seeing an old African man wearing a* ***King Cheetah*** *skin in a market-place, this time in Blantyre, Malawi.*

Animal pelts can travel hundreds of kilometres from their area of provenance, usually via the migrant labour system that annually sees thousands of Africans plying back and forth from Malawi, Mozambique and

Zambia to work in Zimbabwe and South Africa. This haphazard movement of pelts with migrant labour can't be discounted when setting out to judge the potential range of habitat of a little known group of animals in which reasoned analysis of the evidence to hand must also play a part. Other reports in South Africa from reliable sources of ***King Cheetah*** *skins seen for sale in Zambia on the Zimbabwe/Zambia border near Livingstone in the lush Zambezi basin, and again further north at Ndola on the Zambia/Zaire border, were cross-checked by a photograph of a pelt reportedly reproduced in a booklet of local fauna on the fringe of the Zambezi basin at Mazabuka, roughly centre of the rail-link between Livingstone and Ndola, and captioned as being that of the little known* ***King Cheetah*** *killed in the area. The region in question lay both within the* ***King Cheetah's*** *considered habitat type, as well as in access of the range of sightings of* ***King Cheetah*** *and skins taken to date. It was no coincidence that the Vendaland report crossed a legend of cheetahs which, in the high, wooded hills of Venda, were reputed to guard the graves of the Venda chiefs whose spirits lived on in the white crocodile. The legend was confirmed by an anthropologist who was also a Venda witchdoctor; and a German crocodile breeder who had a permit to enter Venda to capture full-grown crocodiles for his breeding station, the ultimate aim being the reintroduction of crocodile offspring to the wild. Hilly, wooded country in north-eastern Transvaal, rising in places to as much as 6000ft., and adjoining the upper boundary of Kruger Park and the southern watershed of the Limpopo along the border with Zimbabwe, Vendaland was reminiscent of the Lebombos which just east of the homeland, ran directly north along the Mozambique border towards Zimbabwe's Gona-re-zhou game reserve where it was once claimed* ***King Cheetah*** *only ever occurred (Meester, 1962).*

Fieldwork to date had produced a gradual increase in the number of known ***King Cheetah*** *skins from eleven to nineteen. Investigating the whereabouts of further unrecorded skins, a second remarkable* ***King Cheetah*** *collection, this time of three pelts, was traced to Pretoria. Notable not least for their superb condition and large size, the provenance of each pelt was shrouded in double-speak. While perversely reputed to have all been collected together, the owner indicated to us in a somewhat vague, veiled fashion, that each had, on the contrary, been collected at intervals in the 1960s "somewhere" in eastern Botswana. Whether killed in the same place, in roughly the same period, or even all together in the same group, it was yet another example (we knew about) of* ***King Cheetahs*** *having been killed in numbers that had to be detrimental to their development. One of the three skins clearly displays teats, countering the theory that arose even in the light of the female* ***King Cheetah*** *skin collected by Cooper and reproduced in the* ***South African Journal of Science*** *(1927), that* ***King Cheetah*** *are only of the male gender. With these three, we had doubled the number of* ***King Cheetah*** *skins officially recorded to twenty-two.*

With the relocation of the Messina specimen after 40 years by the authors (Beeld, 1979), the first authentic ***King Cheetah*** *skull was recorded. In the collection of Mr. J. Jourbert of Krugersdorp South Africa, it had been mounted as a floor rug with a full head mount by Messrs. J.R. Ivy of Pretoria, South Africa in 1940, who confirmed that the original skull had been used, stating in evidence that one of the canines had been broken and replaced by a wax reconstruction, a feature noticeable in the mount. At least two skulls previously had been listed in literature as that of* ***A. rex*** *(Roberts, 1951). One said to be from south-western Rhodesia collected by*

the Vernay Lang Kalahari Expedition in 1930, and preserved in the Field Museum, Chicago together with the post-cranial skeleton and skin, has been confirmed as that of an ordinary cheetah individual (Hills et. al. 1980). There is no evidence that the second skull mentioned by Roberts as a rex, preserved in the Queen Victoria Memorial Museum, Salisbury around 1940, and matched in size with skulls of other Zimbabwean specimens of ***A. jubatus****, is that of anything other than an ordinary cheetah. Due to the brittle condition of the Messina skin from years of exposure and wear, extraction of the skull from the mounted head was not permissable. We therefore X-rayed the mounted head on the expedition's portable X-ray unit, and later as back-up on the termograph at the Cancer Research Institute in Johannesburg. It is worth bearing in mind that morphological variation in cheetah skulls has a high level of asymmetry as recent research has confirmed (O'Brien, Wildt & Bush, 1986), when features normally the same in size, such as the left and right sides of a skull, can differ noticeably in a single individual. Be that as it may, the results revealed no obvious cranial variation from that of* ***A. jubatus****, although the kaolin used to pack the skull having turned to porcelain after forty years did affect the overall quality by reflecting back and blurring the sharpness of the X-ray photographs. The mouth mounted open allowed for excellent teeth moulds to be taken with the assistance of the University of Witwatersrand Dental School. When subsequently compared to* ***A. jubatus****, these too were found to be similar. The observations were confirmed at the Mammal Research Institute by Reay Smithers (personal communication).*

The Messina ***King Cheetah*** *had been killed in quite exceptional circumstances. It had been shot at midnight at a lion-bait. Farmer Steven Van der Walt had staked out the carcass of a full-grown cow in a final attempt to draw out the predator that had been troubling his stock for months. Assuming it to be a lion or at least a lioness or immature male owing to the size of the calves he'd lost, Van der Walt had been convinced, even as he'd fired from the hide, that what he saw emerge from the bush, deliberate a moment, then head across to the bait, was big cat the likes of lion; unwittingly recalling those observations at night of* ***King Cheetah*** *mistaken for lion. It postulated one question. As seemingly different in habit from the common cheetah as it was in appearance, how much of a cheetah was this* ***King Cheetah****, it being a moot point among some observers whether cheetah will even hunt at night, let alone go to bait? The richly wooded country around Messina itself excites comment, tucked into the lusher traces of the northern curve of the Limpopo where it forms the border with Zimbabwe, and admirably suited to a heavier patterned cheetah; a patterning that would provide as much excellent camouflage in a thickly wooded environment as it would at night, thereby cross-referencing other reports of sightings of* ***King Cheetah*** *at night in wooded and forested areas where, by virtue of the environment, it would have to become a more nocturnal hunter, which would arguably account for so few sightings.*

The softer, longer and silkier hair of the ***King Cheetah*** *contrasts strikingly with the coarser quality of the ordinary cheetah's. Without any live specimen as yet to work from, the microstructure of sample hair from identical locations on three cured* ***King Cheetah*** *pelts was studied. Samples of* ***A. rex*** *guard hair and underfur were taken from the neck, dorsal region behind the shoulders, and mid-belly region, and under magnification their structure compared with that of a similar selection of hairs from common cheetah* ***A. jubatus****, and leopard* ***P. pardus****. Hairs were examined in cross-*

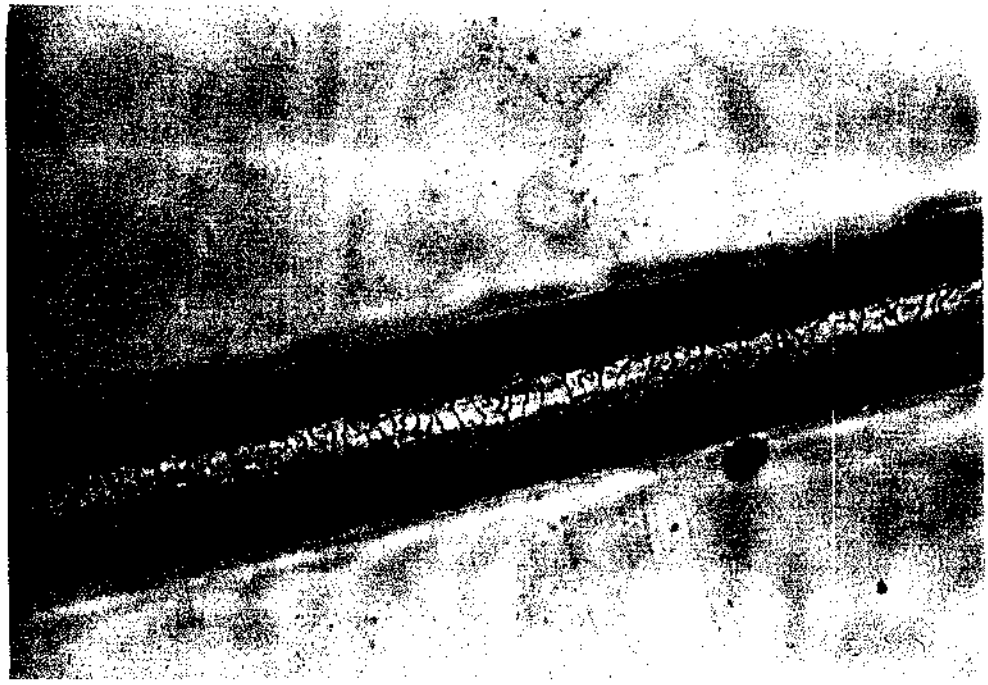

Fig. 7 Microphotograph of cheetah *Acinonyx jubatus* hair. Its cuticular scale pattern is classified as mosaic.

section, and in what represented the key part of the analysis, the cuticular scale pattern along the hair shaft. With all animal hair being possessed of this skaly outer layer or cuticle, the skins used were of high quality, the cuticular scale pattern on a hair being notoriously variable with wear. More than fifteen clear samples were produced, including hair samples from live specimens of ginger and black leopard.

It is toward the base of an individual hair where it receives most of its protein, and where the cuticular scale pattern is at its most distinctive, that irregularities will show. In the microstructure of the hair samples examined, the pattern of the cuticular scaling on the guard hair of the common cheetah ***A. jubatus*** *was clearly demonstrated to be the so-called* ***mosaic*** *pattern (Figure 7), with the lines of scales running haphazardly in every direction across the hairshaft. On the* ***King Cheetah*** *guard hair, the scaling, notably towards the base of each guard hair, was found not to be mosaic as might be expected, but* ***petal;*** *with the lines of scales lying left/right across the hairshaft in a more regular, orderly pattern of leaves or "petals" (Figure 8). The difference demonstrated in the analysis between the hair of the* ***King Cheetah*** *and the common cheetah* ***A. jubatus,*** *is that the cuticular scales on the base of the guard hairs in the* ***King Cheetah*** *are petal-patterned and not mosaic. This petal pattern is a distinctive feature of leopard guard hair. Significantly, in the analysis of hair samples from both melanistic and ginger leopards, the cuticular scale pattern was found not to differ in the aberrant forms of P.* ***pardus*** *from the petal pattern of the species itself. These observations were made by Hilary Keogh,* ***Institute of Medical Research,*** *South Africa (Keogh,1979).*

What the hair analysis results ask is how a distinctly unusual felid, dismissed for near on half a century as a mere cheetah variant, could pass down an attribute of the leopard, a cat of a completely different ***species*** *and* ***genus.*** *The leopard/cheetah hybrid theory originally won favour on a combination of the* ***nsuifisi*** *legend, and the size of* ***King Cheetah*** *skins which indicated a bigger cat, with thicker set legs comparable to the leopard. An example of professional confusion on this point is borne out in mounted specimens of* ***King Cheetah*** *(Figs. 5 & 6). The specimen in Figure 5 is modelled to resemble a leopard; the one in Figure 6 a cheetah. An article in* ***Arnoldia*** *(Ansell, 1967) describes and figures an aberrant leopard from the Inyanga district, the rump of which is reminiscent of the* ***King Cheetah*** *blotches (Fig. 3), but with no other similarities. A leopard individual from Somalia said to be representative of a race described as* ***nanopardus*** *(Pocock, 1935), bears a particularly striking resemblance to the* ***rex*** *pattern without the dorsal stripes. Appreciating that leopard will kill cheetah given the opportunity, the* ***King Cheetah*** *retains features too distinctive of the common cheetah, viz. partially non-retractile claws, characteristic facial tear-marks extending from the anterior corner of the eye to the upper lip, a similar skull and teeth structure indicated by the Messina X-rays, and a general cheetah-like appearance overall. If* ***A. rex*** ***has*** *arisen as the result of a cross between, for arguments sake, a cheetah and a leopard rather than via a single mutation, the following hypothesis might be put forward in support. A young male leopard encounters a full-grown female cheetah in* ***oestrous*** *and they mate. If roles were reversed, a female leopard would tear the cheetah's throat out. Of any offspring, those more cheetah in characteristic will be better able to keep up with a cheetah mother, more able to live and hunt as a cheetah and thus better equiped to survive. It has been argued, somewhat ambiguously, that way back in past*

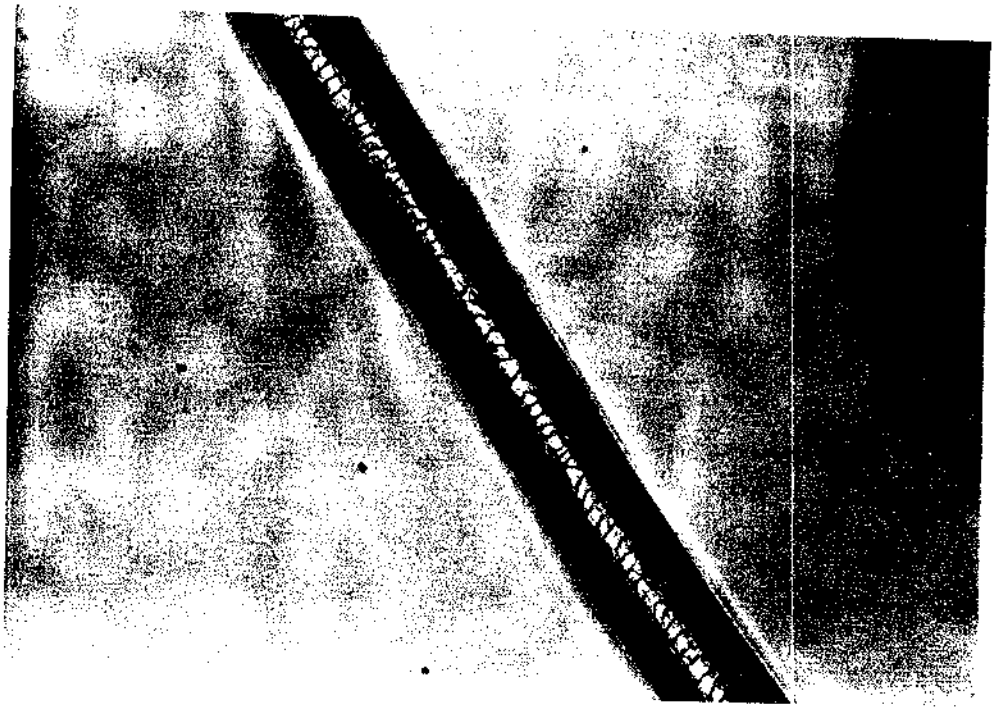

Fig. 8 Microphotograph of King Cheetah *Acinonyx rex* hair. Its cuticular scale pattern is petal, similar to that found in the leopard *Panthera pardus*.

millennia the two ***genera****, cheetah and leopard, had a common ancestor. While cheetah are considered to have evolved earlier (Eaton, 1974; Guggisberg, 1975) and quite independently from the big cats of the* ***Panthera*** *group (distinguished from the cheetah by the fact that the presence of a hyoid bone in the throat permits them to roar), biochemical evidence suggests that the bigger cats are all very closely related, with individual origins - when some sort of adaptive differentiation took place between them - probably dating no further back than the early to mid Pliocene era between four and eight million years ago.*

In August/September 1979 using a hot-air balloon in conjunction with two four-wheel-drive vehicles, we conducted the first aerial and land search of its kind ever undertaken in Kruger Park. A preliminary ground reconnaissance in the preceding months of June/July had already established that the South-central district of the park would mark the main centre of operations (Fig. 9). Our estimate was based on a range of ***A. rex*** *sightings never officially disclosed, yet traced by us as having occurred in the area since the first report of* ***King Cheetah*** *photographed by Mr. Gary Schoof within range of the Lebombos on the Mozambique border in 1974 (Norman, 1979). When Schoof and his father rushed back to camp with news of their remarkable discovery, the officials they reported to were scornful. Five years later in 1979 they disclosed to us that they also had cine film of the sighting in a couple of hundred feet of quality footage which the wildlife establishment to date had ignored. The film shows a* ***King Cheetah*** *in prime condition, an adolescent male between ten and fifteen months old. The vivid black and creamy-white colouring of the animal moving live through the bush is immediately striking, as past eye-witness reports of* ***King Cheetah*** *have attested.*

The Schoof sighting was just the first of several to occur in Kruger Park in the following years. Ironically the official lack of attention paid to the occurrence of ***King Cheetah*** *in the reserve since then had been based on the general but misguided consensus among park management that no* ***King Cheetah*** *had been seen again. Our research revealed that on separate occasions at later intervals in 1976, and again in 1978 in the same area flanking the Lebombos,* ***King Cheetah*** *had been twice photographed. In July of the preliminary search the authors reported sighting a* ***King Cheetah*** *in the same area in the South-central distict without successfully photographing it. With expressly heavy, confluent markings and the distinct neat head and long legs of a cheetah, we sighted the animal on the opposite bank of a rivercourse in late afternoon in one of the many vast portions of the reserve not open to the public, its vegetation dipping between hollows and kopjes of riverine landscape and scrub. Together with the three known records of* ***King Cheetah*** *filmed and photographed in the area, it formed a triangle of country, Nwanedzi/Lindanda/Satara (Figure 9), roughly 700 square kilometres in area which could be said to demonstrate in microcosm a basic range and distribution for a* ***King Cheetah*** *over a five-year period. This was confirmed by the photographs taken in 1976 by Mr. Lawrie Davidson (Fig. 10) and later again in 1978 by Mr. Douglas Fraser which show the same* ***King Cheetah*** *in the Schoofs' film and photographs from 1974 as a full-grown adult several years on, identifiable in the film and photographs by its own distinctive tail markings and individual blotches. An individual patterned animal's markings is its "fingerprint". A zebra foal will even recognise its mother by her stripes.*

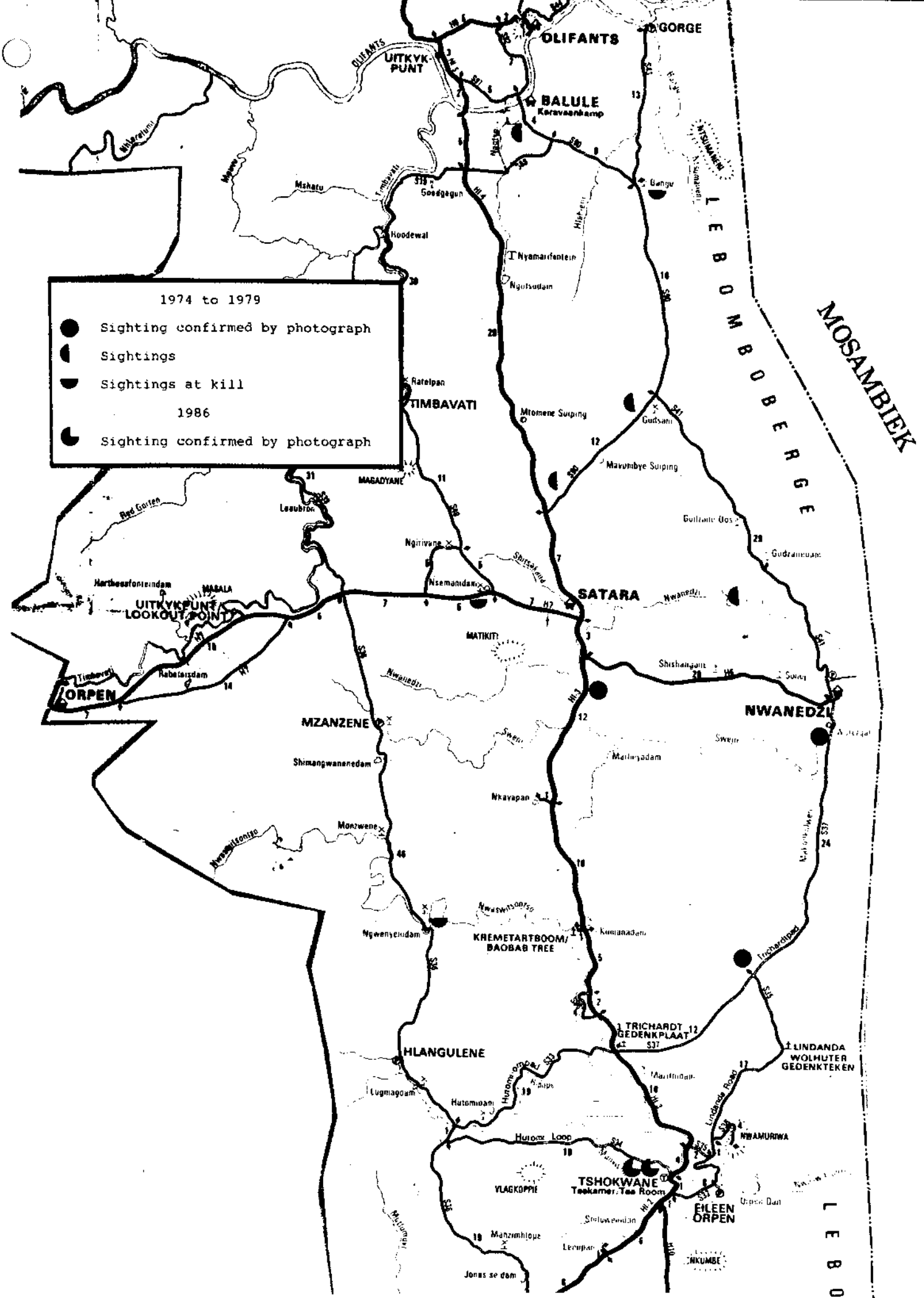

Fig. 9 Section of the Kruger National Park showing sightings.

Balloon searchs combining radio contact with two teams of ground-crew were operated twice daily. Hot-air balloons are non-steerable. Thus the principle on which the flights were based was simple. Ordinance survey maps of Kruger Park reveal a scattering of firebreaks, tracks and roads that have the effect of dividing it up into vast hexagonal, triangular or rectangular tracts of land remote from public view. Able as the expedition was to operate in these areas of the reserve free of the basic restrictions applied to tourists, such a system allowed for easier access along the ground with each take-off, flight route and landing having to be planned, as near practicably possible, in relation to wind direction. Flights were kept to an ideal viewing height of between 150 and 200 feet, the objective to cover from the air the South central district ranging north/south between Olifants and Tshokwane, and east/west from the Lebombos to the Timbavati River (Fig.11).

Park visitors were mobilised into helping the overall search for ***King Cheetah****. Through a promotion scheme involving CB radios, and thousands of hand-outs printed with a colour photograph of the* ***King Cheetah*** *and a map of the reserve by a newspaper sponsor, and distributed at all the entrance gates and rest-camps, tourists were urged to report any sightings by indicating where on the map, filling in their name and rest-camp and handing the completed leaflet to the nearest game ranger or expedition member. With nearly every second car entering Kruger having a CB radio, a sundry system of reportage utilized between searches involved a CB link-up with base-camp which, in conjunction with the leaflet scheme and evening presentations at rest-camps of a lecture and the film of the* ***King Cheetah****, effectively spread the search campaign across the entire 21,000 sq.kms of the park.*

Despite the advantages inherent in the use of the balloon in the search for ***King Cheetah*** *over thick bush, no sightings of* ***King Cheetah*** *from the air were reported, though game-viewing ability was high. The only sightings that could be accepted with integrity occurred on the ground (Fig. 9). With people being actively urged to keep a look-out for* ***King Cheetah****, it was as well not to lose sight of the "news-of-the-moment" syndrome conjuring up in the mind's eye, of even the most sincere person,* ***King Cheetahs*** *where there were none. In such a situation, one's own instinct is a reliable buttress in gauging the validity of a report. In one reported sighting of* ***King Cheetah*** *that occurred on the northern fringe of our flight area in thick bush country near Bangu windmill and game pool five miles from the Mozambique border, a Capetown doctor reported to us what looked to him, as a city man, like a leopard walking with a cheetah. It was a description that in layman's language could no more aptly sum up the sight of a King* ***Cheetah*** *with an ordinary cheetah. It was directly cross-referenced by a report from two businesswomen who about a week before the doctor's sighting watched from their car at Bangu a pair of big cats feeding on a dead impala. What impressed them enough to actually report the incident was that one was larger than the other, an ordinary cheetah, with stripes running along its spine. But five miles west of Bangu weeks previously, the student son of one of the park's maintenance officers, on holiday from college, was returning from an afternoon's fishing in the Olifants River at Balule pump station back along the cut-line that follows the powerline to Satara when, as he reported to his father later, what looked to him exactly like a cheetah with stripes crossed over in front of him. As he drew closer, it loped off into the bush. A sighting a month before the*

Fig. 10 Adult male King Cheetah; photograph taken by Mr. Lawrie Davidson in Kruger National Park.

preliminary search, was reported back to her family by the greatniece of Sir Percy FitzPatrick, author of ***Jock Of The Bushveld****. She leased a cottage in the park, and while out game-viewing with her teenage son, stopped at a waterhole behind Satara rest-camp. Their eyes focused on a kill at which two big cats were feeding. They were cheetah, except that one was noticeably darker than the other and appeared to have thick, horizontal bars along its back. She attempted to manoeuvre her car closer but in the process disturbed the darker, striped one. On sensing the human presence, it immediately retreated into thick cover in a manner that struck both of them as particularly leopard-like. In a series of bird-like "chirrups" typical of the cheetah, it proceeded to call its mate which remained behind at the kill. Eventually the female became nervous, and left the kill to rejoin the male. In all we received three separate reports where a striped cheetah was feeding on dead impala with* ***A. jubatus****. No photographs were taken in any of the sightings.*

Failing the capture of a live ***King Cheetah****, it was thought that the only hope in securing one lay with one of the two cheetah breeding programmes at Whipsnade Zoo and Pretoria Zoo's De Wildt project. Our research had pin-pointed the areas favoured by the* ***King Cheetah****; if ordinary cheetahs from these areas were interbred it was held that* ***King Cheetah*** *offspring might result. Such selective breeding, by chance rather than design, proved successful. On the 12th and 14th of May 1981, two* ***King Cheetahs****, one male and one female, were born in South Africa in separate litters of* ***A. jubatus*** *at the De Wildt Cheetah Breeding Station, Transvaal(Figs. 12 and 13), and Seaview Game Park, Natal, each conceived at De Wildt and sired by the same male. The two mothers were sisters, bred at De Wildt of the same litter from parents from the Northern Transvaal and Namibia. The sire was one of a litter of six wild-caught cubs from the Messina district, Northern Transvaal: the area our research has pin-pointed as range habitat of the* ***King Cheetah****. The mother of the female* ***rex*** *born at Seaview had been sold to the Natal game park by De Wildt in the full knowledge that she was pregnant. The climbing abilities that had earned her the name "Jumper" and already ear-marked her as a nuisance and a threat to the smooth-running of the breeding procedures at De Wildt, far out-weighed any considerations for its administrators about her pregnancy.*

The cubs have now reached full sexual maturity. While breeding between the two should mark the means in captivity of establishing the ***King Cheetah*** *strain, a breeding programme of* ***King Cheetah's*** *could also be important in establishing heterozygosity in today's common cheetah populations. Despite the precedent that their committment to the breeding of the common cheetah might take, the Director of Pretoria Zoo and De Wildt's cheetah programme, David Brand, has given us the assurance that they will take the necessary steps to try to breed a line of* ***King Cheetah*** *(Brand, 1982). Subsequently eight more* ***King Cheetahs*** *have been born at De Wildt from offspring of the same cheetah line, increasing the number born in captivity to ten in four years (Goosen, 1986). Demonstrating the high mortality rate of cheetah in captivity as much as the strength of the genes producing* ***rex****, five survive, all exhibiting the same remarkable, standard uniformity of pattern that distinguishs* ***King Cheetah*** *from any other felid variation known. On the 25th. February 1986 the specimens recorded to date increased dramatically to thirty-five. Two adolescent* ***King Cheetah*** *cubs (+- 1 yr. old) were sighted and photographed together in the South Central District of Kruger National Park by a member of the park's staff, in company*

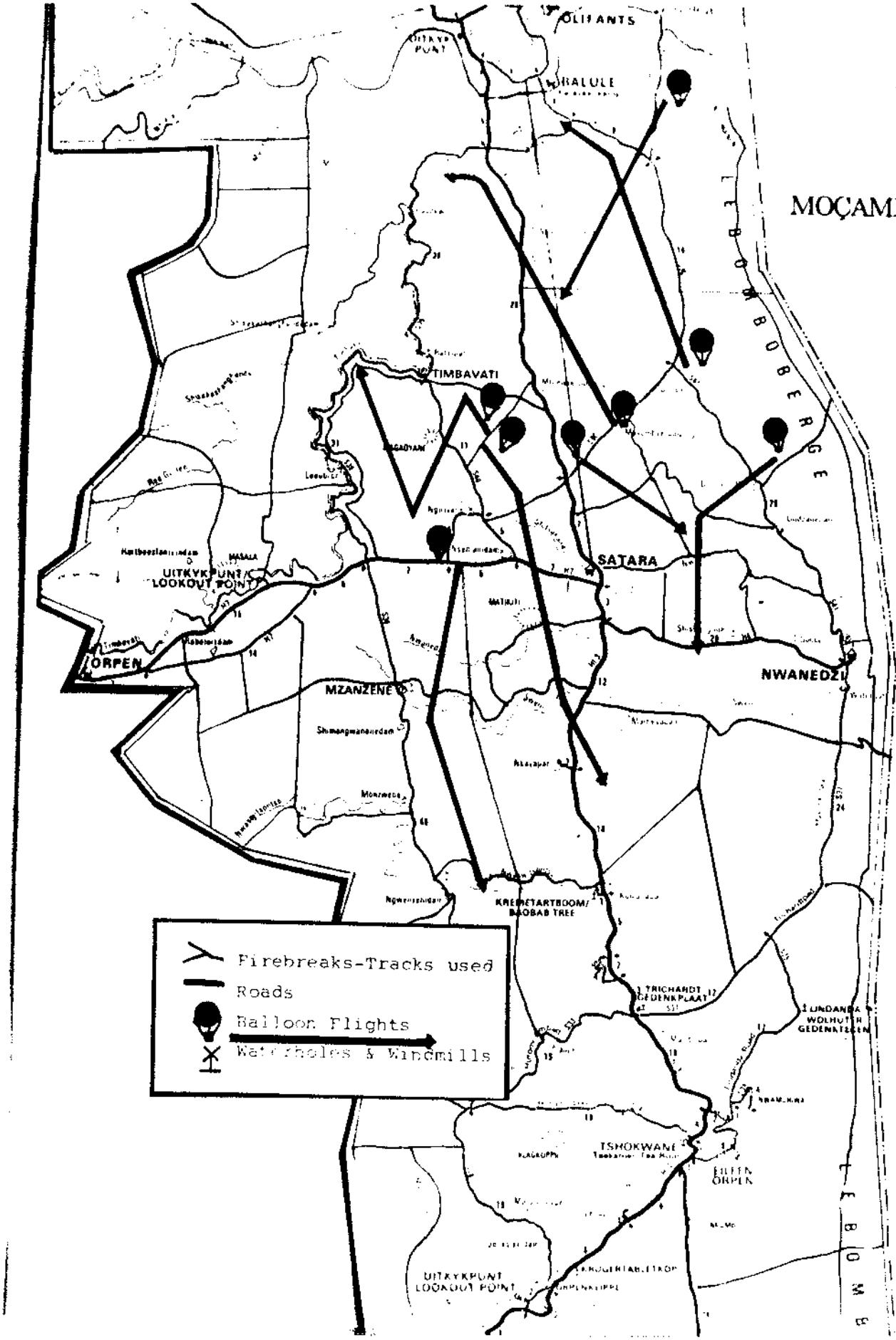

Fig. 11 Hot-air Balloon search Kruger Park: Flight reconnaissance pattern.

with a third cub and adult female both displaying the common spotted coat pattern (du Toit, 1986). Born in a natural state in the wild and not, what seems by comparison, the artificial circumstances or "laboratory conditions" of a captive breeding population, the sighting occurred in known ***King Cheetah*** *habitat near Tshokwane, central base for operations during our preliminary search of Kruger Park (Fig. 9).*

CONCLUSION

With the birth of the first two ***King Cheetah*** *cubs came the proof for many that the* ***King Cheetah*** *is merely a colour variation which occasionally occurs among cheetah. As a recessive form, it could be a throwback to a forest-dwelling ancestor; a result of atavism in a resemblance to remote ancestors, or a reversion to the earlier type in which stripes can reappear. The coloration of young giraffes, for example, is considered in all races to be reminiscent of the heavier pattern of the reticulated giraffe, and as the colouring of the young in these cases is considered more primitive, it is argued that the reticulate coloring is the giraffe's original (Heran, 1976). Many felines derive their spotted markings from a primitive striped coat, the stripes breaking up into a lighter pattern of spots as animals moved out of jungle and heavily forested environments with the spread of the more open grassland areas. If a throwback, then cheetahs like the* ***King Cheetah*** *should surely have appeared at some stage or other in the thousands of years man and cheetah have associated. But there is no evidence to suggest that* ***A. rex*** *has appeared anywhere else other than in an area in southern Africa at any stage throughout the once heavily cheetah populated regions of Africa and Asia. If on the other hand the* ***King Cheetah*** *has only recently arisen as the product of a local mutation that has adapted well to an environment where its heavy patterning and build has proved an advantage, what could well account for the frequency and consistency in the continued appearance of the* ***King Cheetah*** *pattern in the specimens we know of down this century, is a very gradual emergence of a new race of cheetah for reasons nature has recognised the need to exercise since time immemorial. Mutations, after all, provide the genetic variation upon which evolutionary selection can act. De Wildt's study of the reproductive traits of male cheetah in established populations, in which the authors partook in some of the semen collection, concluded that the ejaculate quality of the cheetah was poor; the cause, it was held, of either genetic consequence, a unique species norm, or possibly both (Wildt et al, 1983). Together with the strikingly reduced amount of biochemical genetic variation in the southern African cheetah demonstrated by the Maryland study (O'Brien et. al, 1983), it poses some intriquing questions. What significance does the* ***King Cheetah's*** *continued occurrence have in one of the most monomorphic species yet discovered? How is it that with such marked physical differences to the ordinary cheetah, it can so regularly appear with such uniformity of pattern in a species in which variants are already virtually unknown? And why only in a portion of southern Africa, south of the Zambezi River where the common spotted cheetah has virtually been exterminated? Why also, with its habitat so contrary to the norm, in a felid species considered the least geographically adaptable of the big cats? Why, indeed, are there no intermediate coat patterns with the ordinary cheetah? If a recessive form, how can such marked phenotypic variation come from a single recessive gene? In a species in which mutations are markedly few as it is, what significance is to be drawn from the birth of two surviving* ***King Cheetah*** *cubs in the same wild cheetah litter? What relevance does it have to evolutionary patterns*

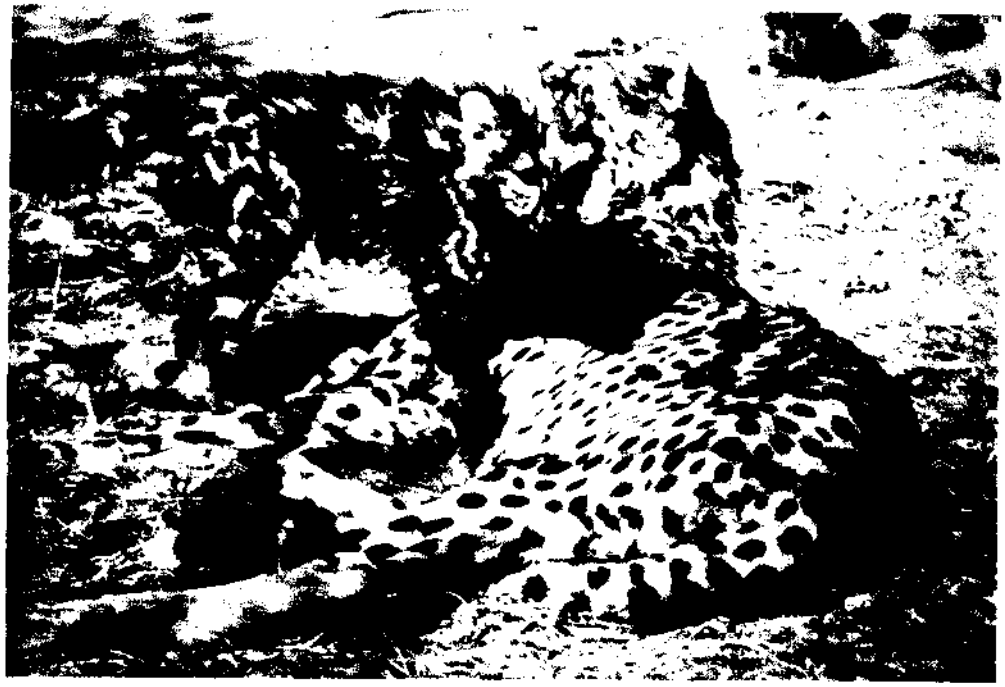

Fig. 12 King Cheetah cub born at the De Wildt Cheetah Breeding and Research Centre, South Africa, to a common cheetah *Acinonyx jubatus*.

in ordinary cheetah? Given the cheetah's low level of genetic variation and vulnerability, would a breeding programme involving ***King Cheetah*** *increase adaptability in the cheetah populations of today making them better able to cope in time of ecological upheaval? It is argued that* ***King Cheetahs*** *cannot be awarded sub-species status as they do not occupy a separate geographic area (Cubitt, 1986). However, in the naming and describing of species and races, the geographic yardstick used in determining just what defines a separate geographic area is not confined to any precise standard.*

Geographic Isolation

The islands of Sumatra and Borneo have each evolved a species of orang-utan as unique to the geography of each island, as the two species of orang-utan are distinct from one another. The species of rhino particular to the island of Java is as separated, specifically, from the smaller Sumatran species, as the two islands are by the Sunda Strait. Few natural barriers in Africa can so precisely and so completely delineate and isolate one geographic area from the other. No better is this demonstrated than with the geographic areas ascribed to the seven species and sub-species of zebra that have been named and described in a portion of the African continent and which, if not for the fact of the Mountain zebra of the Cape being exterminated throughout most of its former range, would all still widely overlap. By comparison, the cheetah's formerly wide range extended throughout Africa, south-west Asia and India. Only in a restricted region of that range, in southern Africa, have striped cheetah appeared.

The suggested geographic range for the ***King Cheetah*** *interconnects between areas of thorn forest and woodland vegetation, of mostly high elevation, in a triangle of country sweeping south through eastern Zimbabwe, down the Mateke Hills, over the Limpopo to Vendaland, and the Lebombos, and west through the Northern Transvaal back along the Limpopo to Tuli, connected as much by direct geographic link and vegetation type, as by topography, climate and even soil (Fig. 4). Relative to this part of southern Africa, it is isolated country of low population. Commercial exploitation is virtually non-existant. In the Zambezi River is an impassable northern barrier preventing migration of cheetah north or south of it. The Limpopo River in the south provides another natural barrier, its only passable stretch ending prematurely in its course, roughly in the region of the confluence with the Shashe, near Tuli. This would account for the fewer number of* ***King Cheetah*** *to have appeared in South Africa, with the southern watershed of the Limpopo offering perfect cover of riverine and thornbush habitat all the way across the northern strip of the Transvaal, round Vendaland into Kruger Park and the Lebombos. Westward beyond the north/south watershed of the Limpopo, and Tuli, spreads the Kalahari desert where* ***rex's*** *heavy, dark patterning in an environment where paler markings are better suited, would naturally exclude it. Lying adjacent to the isolated strip of forest and thornbush running the length of western Mozambique is the lush chain of hills and mountains in the remote and secluded border region of Zimbabwe/Mozambique which, provenance of a notable number of* ***rex*** *sightings and skins, offers the surest means of a nucleus of* ***King Cheetah*** *developing. Extending south from Inyanga down over the Limpopo to Vendaland and the Lebombos, it may well represent the nerve centre of the* ***King Cheetah's*** *geographic area as much as its eastern boundary,* ***King Cheetahs*** *wandering beyond the broader geographic area roughly encompassed by the Zambezi, the Limpopo and Tuli into, for example, the Northern Transvaal*

Fig. 13 Two cubs at play, one a King Cheetah, the other an *Acinonyx jubatus* of the same litter.

and Kruger Park via the southern watershed of the Limpopo, being basically stragglers. Intensive settlement and development throughout the remainder of the Transvaal, and the consequent slaughter of cheetah as far west as the farming areas of the Orange Free State, has put up its own barrier. The cheetah has been anniliated in the agricultural areas of South Africa, just as it had previously over much of the developed central Rhodesian plateau. All the more significant the ***King Cheetah's*** *appearance only in southern Africa. Of those cheetahs shot by farmers in Zimbabwe in recent decades despite being protected by law as "Royal Game", few would be reported, as we have been assured by farmers, especially if they were* ***King Cheetah.***

Essentially the ***King Cheetah*** *is physically very different to the ordinary spotted cheetah* ***A. jubatus.*** *Not just in the way an aberrant black jaguar is different to the standard jaguar, or the so-called* ***melanotica*** *form from the standard leopard pattern. In the first instance is a basic colour deviation where the jaguar's spots are still visible; in the second a disintegration of the rosettes. Notable as the* ***King Cheetah's*** *black and white colouring is, it is not in colouring alone that it differs from the standard cheetah markings, nor just in a skrinkage or enlargement of the spots. Its fur is distinctly longer, the pelage silkier and softer. It has a bigger mane. The evidence points to it being a bigger cat. More than that is the regular appearance down the past century of the standard* ***King Cheetah*** *pattern in three, broad dorsal stripes, a preponderance of heavy, irregular shaped blotches like inkspots far larger than any ordinary cheetah's spots, and a ringed and striped tail: markings uniform across all specimens of* ***King Cheetah*** *recorded to date; markings that don't differ from specimen to specimen beyond what is the acceptable degree of pattern deviation between members of the same patterned species or race e.g. Siberian tiger, Chapman's zebra among others.*

The hair analysis results add a significant parameter difficult to judge accurately. Is there a correlation with evolutionary traits in cheetah? What of the De Wildt ***King Cheetah*** *cub's mother "Jumper" with the leopard-like climbing abilities that are so remarkable in cheetah? Is there more to the "hyena-leopard" description of the* ***King Cheetah*** *in the* ***nsuifisi*** *legend from Rhodesia? With its dark markings and heavier build, making woodland and forest ideal cover for it, how much effect is the increased ultra-violet in those conditions having on the development of the* ***King Cheetahs*** *darker patterning? What, too, is the added effect on that development of the minerals in the soil, consumed via the vegetation by its prey?*

Never is nature more tenacious then when under threat. With today's ecosystem in retreat, so too has the cheetah retreated. Its old habitat has been severely eroded by urban and agricultural development. Driven off increasingly from the savannas and closer the edge of accessible forests, the cheetah must adapt. That it can, is evident in Kora in central Kenya where a population of spotted cheetah have successfully adapted to a thornbush habitat. In the ***King Cheetah*** *we are witnessing a development more profound; one of those rare opportunities to watch nature in the process of evolving a distinct and absolute pattern change in response to pressing environmental needs with, from mere colour phases, the end development of a new race, or sub-species, of cheetah that one day may reach specificity. Having to adapt their way of hunting to an environment where speed would not have the same advantage as in more open habitat may be detrimental to the*

whole species, but favourable for the striped individuals which would be better camouflaged and safer in a wooded environment than in the open country. Evolution is a controversial process. Is it so impossible to watch a species at different stages of its development; a species in the making? How long does an aberration remain an aberration? For how long and how often should the same uniquely distinctive pattern keep turning up to the point of more than one appearing in a litter, and why in a species that rarely produces variants, before it reaches the time when it is no longer a mere mutation, a variation, a freak? What may well have interfered with the process to an extent we will never be able to judge, is the wholesale slaughter of cheetah and massive reduction of its natural savanna habitat over the past eighty years in the areas of southern Africa where ***King Cheetah*** *has appeared. It is for this very reason that what we may indeed be witnessing in the* ***King Cheetah*** *is the evolution of a new felid species.*

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TABLE 1

SPECIMEN SKINS OF KING CHEETAH TAKEN TO DATE

	Year	Location	Specimen	Collector	Current Owner
1	1926	Macheke Rhodesia	flat skin (holotype)	Mr.D.Fraser	Destroyed Circa 1950/51; National Mus. & Monms. Rhodesia
2	1925	Bikita Rhodesia	mounted skin	Mr H.N.Watters	British Museum (Natl. History)
3	1925	Bikita Rhodesia	mounted skin	Mr.H.N.Watters	Natal Museum South Africa
4	1925	Melsetter Rhodesia	flat skin	Mutambara Mission	Unknown
5	1926	Seki Rhodesia	flat skin	Mr.Lacey	Unknown
6	1927	Mt.Selinda Rhodesia	flat skin	Maj. A.L. Cooper	British Museum (Natl. History)
7	1928	Bikita Rhodesia	mounted skin	Mr.H.N.Watters	South African Mus. Cape Town
8	1935	Birchenough Bridge Rhodesia	flat skin	Mr.D.Townley	Sir Archibald James
9	1940	Messina S. Africa	skin/skull	Mr.S.van der Walt	Mr.J.Joubert
10	1942	Tjolotjo Rhodesia	flat skin	Mr. N.L. Dacomb	Kaffrarian Mus. King Williams Town S. Africa
11	1956	Inyanga Rhodesia	flat skin	Mr.Waddington	Mr. Meriden
12	1960	Tuli Botswana	flat skin	Mr.L.Van Niekerk	Mr.L.Van Niekerk
13	1960s	Rakops Botswana	flat skin	Mr.C.Freeman	Mr.C.Freeman
14	1960s	Rakops Botswana	flat skin	Mr.C.Freeman	stolen: (where-abouts unknown)
15	1960s	Rakops Botswana	flat skin	Mr.C.Freeman	stolen "
16	1960s	Rakops Botswana	flat skin	Mr.C.Freeman	stolen "

Table 1 Cont/-

SPECIMENS SKINS OF KING CHEETAH TAKEN TO DATE

	Year	Location	Specimen	Collector	Current Owner
17	1960	Botswana/ Transvaal?	flat skin	Mr.R.B.Ivy	Ivy's Curio Shop South Africa
18	1965	Botswana/ Transvaal?	flat skin	Mr.R.B.Ivy	Ivy's Curio Shop South Africa
19	1966	Botswana/ Transvaal?	flat skin	Mr.R.B.Ivy	Ivy's Curio Shop South Africa
20	1968	Tuli Botswana	flat skin	Red Shields	Unknown
21	1971	Moijabana Botswana	flat skin	Dr.R.H.N. Smithers	National Museum of Botswana
22	1974	Mozambique	flat skin	Mr.L.Von Tonder	Mr.L.Von Tonder
			.....		
23) 24) 25) 26) 27)	1981 = 1986	S. Africa	captive born cubs	De Wildt Breeding Centre	non-surviving

TABLE 2

CONFIRMED LIVE KING CHEETAH SPECIMENS

	Year	Sex	Location
1	1974-1979	male	Kruger National Park
2	1981	female	Seaview Game Park (now at De Wildt.)
3	1981	male	De Wildt
4	1984	female	De Wildt
5	1985	female	De Wildt
6	1985	male	De Wildt
7	1986	?	Kruger National Park
8	1986	?	Kruger National Park

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