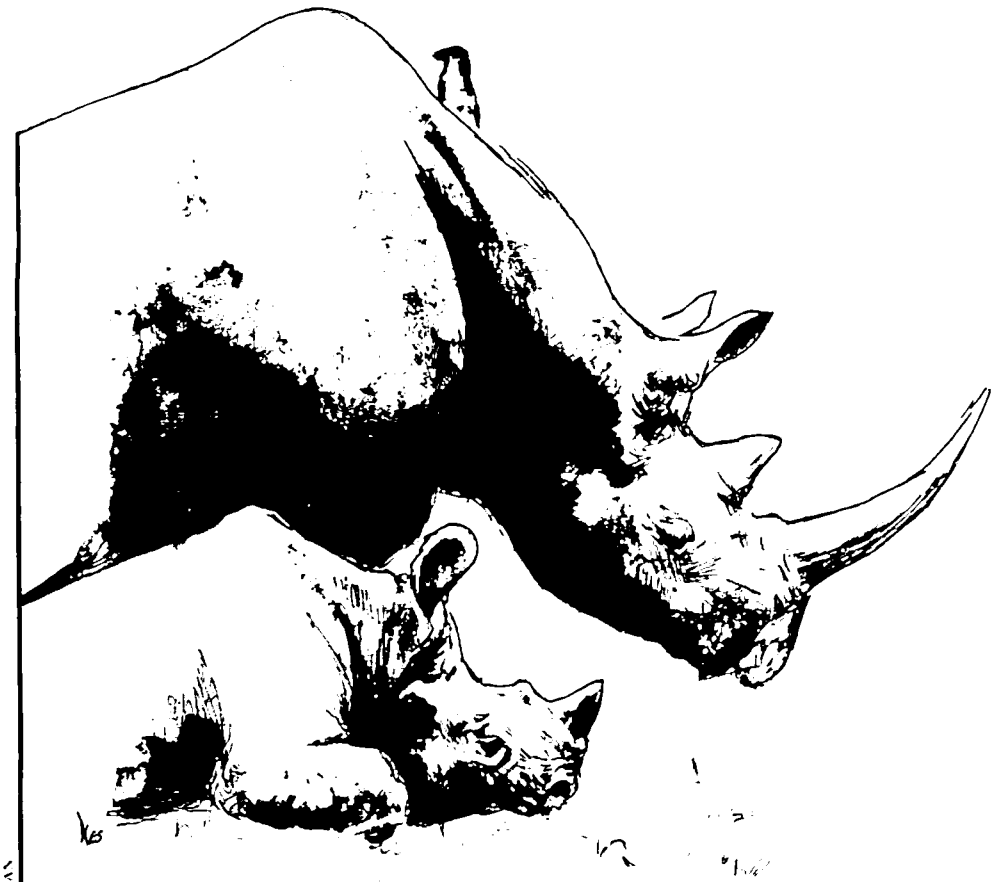

Gala Nairobi
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Black Rhino Behaviour

By Dr. Kes Hillman-Smith

The devilish iron engine wrought
In deepest hell, and framed by furie's skill,
With windy nitre and quick sulphur fraught,
And rammed with bullets round, ordained to kill

W. Cornwalis Harris, a hunter and explorer of the last century, uses this quotation from Spenser's *Faery Queen* to epitomize the black rhino and goes on to describe it as: 'a swinish, cross-grained, ill-favoured, wallowing brute, with a hide like a rasp, an impudent cock of the chin, a roguish leer from out of the corner of his eye, a mud-begrimed exterior, and a necklace of ticks and horse-flies!'

The reputation of an aggressive, bad-tempered, ugly animal has long dogged the black rhino. It probably originated from early hunters, some of whom took casual shots at most rhinos they met, and a rhino disturbed or wounded in this way could hardly be blamed for charging off at high speed, sometimes in the direction of the assailant. But it is an unjust generalization, because a rhino can also be an extremely gentle and peaceful animal, delightfully endearing, taming and responding more rapidly to kindness and affection in captivity than almost any other animal. Blayney Percival, an ex-Kenya Game Warden records with pleasure seeing them in the moonlight at a waterhole, 'gambolling like pigs'. A rhino infant is a charming little creature like a bouncy rubber toy, and the contact call between mother and juvenile is a high pitched mewing, more like a kitten than so huge an animal.

In the wild, their response is moulded by their own perception of the environment. Their social environment is generally solitary as adults, the most stable association being that of a mother and calf, and they tend to be sedentary, within a familiar home range. Any solitary animal has to overcome or avoid certain barriers when meeting another, or a disturbance, but a calf if separated prematurely from its mother seeks company.

The rhino has notoriously poor eyesight, which to us who rely so much on sight might seem a dreadful disadvantage. However, it has a well-developed sense of smell and sensitive hearing. It also obtains some other warning of danger from a symbiotic relationship (one of mutual advantage) with oxpeckers and other birds who benefit from removing its ticks and often warn it of things they see which the rhino does not. I have also found rhinos in temporary association with buffaloes, reacting as the buffaloes react, even though they cannot see the same potential danger. In their natural environments this should be sufficient.

Limited, therefore, in what they can identify if it approaches from downwind, some of their reaction to disturbance seems to be curiosity. I have found, when radio tracking black rhinos on foot in thick bush (to assess their adaptation to a new area, after different methods of translocation), that if a rhino was thoroughly disturbed, especially if it smelt you, the most common reaction was to run the other way, with its tail curled up on its back and often expelling air in a series of farts at each step. But if, when you were very close downwind, it became aware of some sound or movement that it could not identify, it would often advance to try to ascertain what was disturbing its peace. A tonne or so of rhino, armed with a strong sharp horn, is an animal to be treated with respect and some caution (with an eye on a handy tree to climb if necessary), but though there are instances of a rhino pursuing and attacking a man, their advances very rarely seem to be of deliberately evil intent. One of the females translocated in this exercise had a two-year-old calf. They were both enclosed in a boma for a while to stabilize them before release, and the calf became very friendly to humans. Two weeks after they were released, the female was mated by a resident male and chased off the calf. He took up temporary residence near our home and seemed to seek even human company, approaching us if we stalked close to him and even standing to have his nose rubbed as he had in the boma.

There are two species of rhinos in Africa, but in Kenya, the only indigenous rhinos are the black rhinos *(Diceros bicornis)*. They are widely, but now very sparsely distributed through the savannahs of Africa south of the Sahara, from Cameroun east to Somalia and south from there to South Africa. Their numbers have been severely depleted in recent times due mainly to poaching for their horns—as is documented elsewhere.

The other species, the white rhino *(Ceratotherium simum)* occurs as two widely separated sub-species, more limited in distribution. The southern sub-species *(C.s. simum)*, found south of the Zambezi, after near extinction at the beginning of the century now numbers over 3,500 individuals and is currently relatively safe from poaching, but the northern sub-species *(C. s. cottoni)*, occurring west of the Nile, and no further south than northern Zaire and Uganda, is

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now down to probably less than 50 in the wild, and can only be saved by strong protective measures. There are also three species in Asia, of which the Indian greater one-horned rhinoceros is the most numerous, and the Sumatran and Javan are now down to extremely low numbers.

The two African species differ in feeding and habitat preferences as well as morphology. The larger white rhinos (adults may be 1,000-2,000 kg) are grazers with wide, flat, lawn-mower-like mouths, a preference for rather more open grassland than the black rhinos and a slightly more social and passive disposition. The smaller black rhinos (adults may be 800-1,500 kg) browse on a variety of bushes, trees and herbs, with their pointed semi-prehensile lips. They prefer thicker cover, particularly during the day. Sixty-three per cent of my relocations of them during the translocation study were in lateral cover of 50% or more. More relocations at night were in lower cover values. But black rhinos are fairly ubiquitous in the habitats they can occupy, from the thick forests of the Aberdares, through the dense savannah woodlands of the Central African Republic and southern Africa, and the more open savannahs of Tsavo and the Mara to the dry spectacular deserts of Namibia.

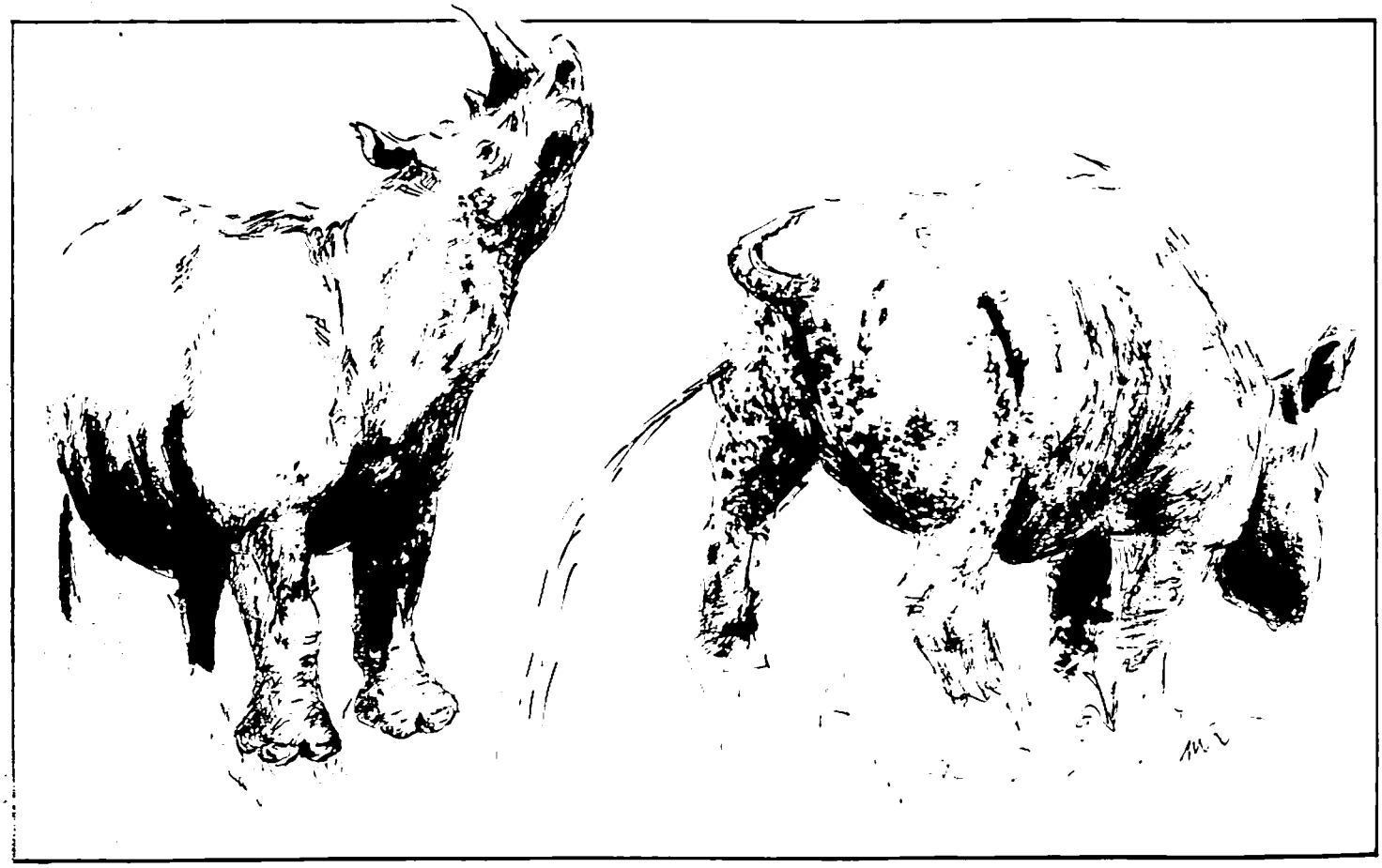
Adult rhinos are basically rather sedentary, each staying within its own 'home range' except for circumstances like the need to travel further for water in the dry season or social displacements. Within each home range there may often be a 'core area', which the rhinos frequent more than elsewhere, particularly at certain times of the day. I have found by radio-tracking that they tend to move more at night and often to frequent areas where that individual is rarely seen during the day. The size of ranges varies in relation to factors like type and density of vegetation and density of the rhino population. Peter Hitchins, working in Hluhluwe Game Reserve, found an inverse relationship between size of range and density of habitat. In the situation that now exists in many areas, where black rhinos have been reduced to very low numbers, there are indications that each individual may cover a greater range than previously.

John Goddard found ranges in Ngorongoro from 2.6 to 15.4 km^2. In Mara, Mukinya found ranges that varied from 5.6 to 22.7 km^2, and in the Serengeti ranges of between 70 and 133 km^2 were reported. In a medium to dense habitat, but a low density of rhinos (a local density of 0.2 rhinos km^2 but an overall density of 0.02 km^2) I found ranges of 2 to 17 km^2.

The ranges of different individuals overlap. Goddard and Schenkel working in East Africa did not find clear evidence of territoriality, though adult males have many of the behaviour patterns, such as dung scraping, siting of middens on the periphery of the home range, horn threshing in bushes, spray urination and aggression to intruding adult males, that Norman Owen-Smith found were some of the overt displays of territoriality in southern white rhinos. However, Peter Hitchins found, and my studies support this, that black rhinos at least in some areas have the same type of territoriality as white rhinos. Only the dominant adult (or 'alpha') males maintain mutually exclusive territories. These they defend against other 'alpha' males, but often allow subordinate ('beta') males, sub-adults and females to share the ranges. The confusion therefore probably arises from the need to distinguish between dominant and subordinate males in recognizing a territory.

Rhinos usually defecate on 'middens', or heaps of dung, in particular places within the ranges, and adults, particularly males, often scatter the dung with their hind feet afterwards. It undoubtedly has a communication significance and possibly a territorial one. Many different rhinos may use the same midden and there seems to be some stimulus to defecate in the presence of a midden. In areas where there were both black and white rhinos, the latter more numerous, I found that the majority of white rhino middens had a few piles of black rhino dung in or near them, and sometimes even the dung of other species.

Communication between rhinos to maintain a fairly stable spacing and social order includes a complex of scent, and at close range, vocalizations and ritualized postures and actions. The sedentariness and the behaviour patterns adapted to maintaining spacing of rhinos are very important considerations when translocating rhinos. We found that the rhinos that were held in bomas at the release site and accustomed to the environment and indigenous food plants were extremely calm on release and moved only up to 1.5 km. on the first day and about 4 km. from the bomas during the first week. In contrast, those released direct from transport, even into a reserve containing no other black rhinos, moved a minimum of 5 km. (in one case probably considerably more) the first day and over 15 km. in the first week. Once some rhinos had become established, rhinos released later moved twice as far, even though they were released in an area of the reserve not directly settled by rhinos. The indication was that these greater movements were due to the rhinos moving into and then again out of areas established as ranges for existing rhinos. As releases continued, the greater the existing density,

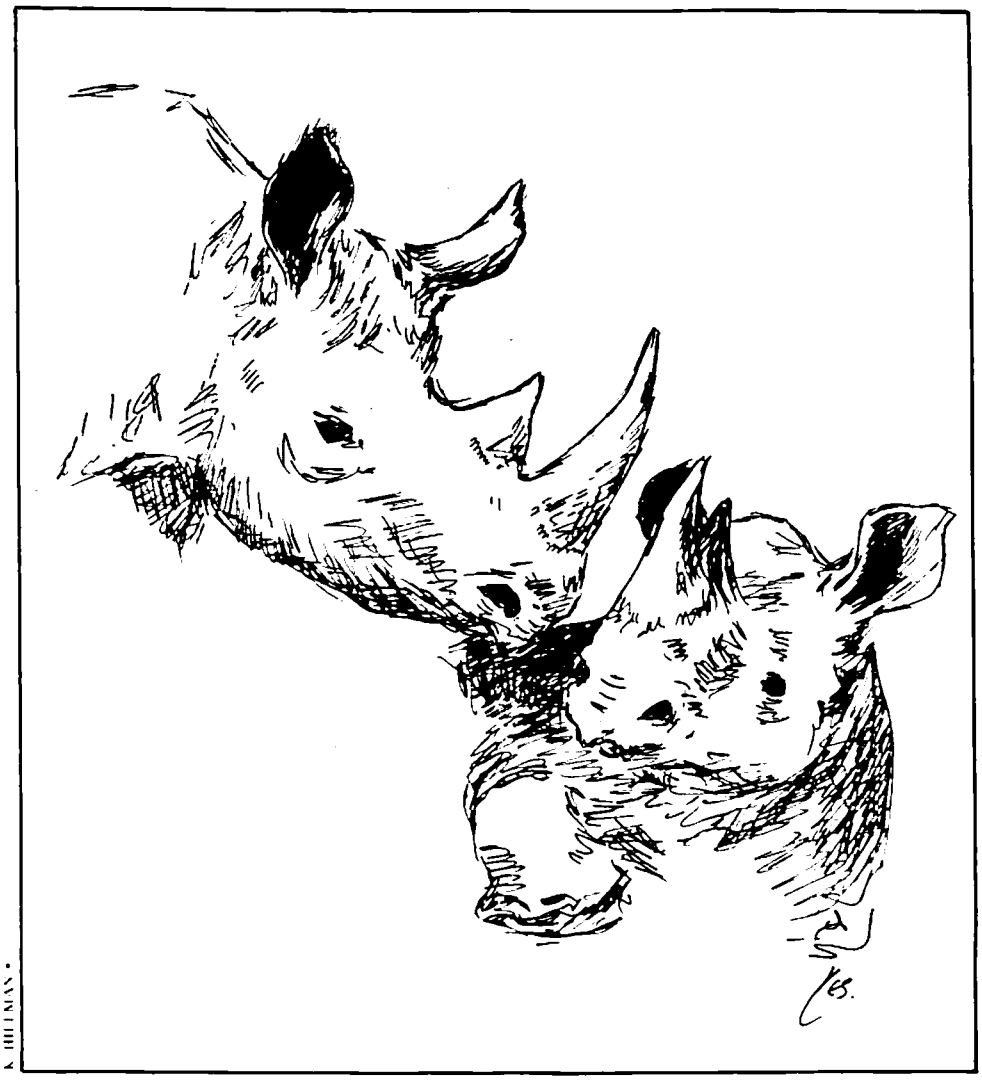


the more aggressive interactions were recorded. When rhinos were first introduced into Addo National Park, they found that when the density increased beyond a certain level, the rhinos fought and killed each other. It seems, therefore, that although the normal social mechanisms of the sedentary, routine-bound black rhinos can allow densities to build up gradually (Goddard recorded local densities in suitable habitat as high as 1.3/km²), the disruption to those mechanisms caused by translocation leads to abnormal movements and increased aggression, with inherent dangers. Therefore, every care should be taken to minimize disturbance and to aclimatize the rhinos, to avoid existing territories and ranges for new releases and to aim only for low densities as a result of translocations, allowing higher densities to build up naturally by reproduction.

Black rhinos can be found feeding at any time of the day, but generally, most feeding and movement is done at night, in the early morning and late afternoon and evening. Especially when it is hot, the middle of the day is usually for resting, often lying, in shade or sun, but usually in some cover. The most common time for going to drink or wallow is the late afternoon and early evening. Depending on water availability, black rhinos may drink daily or every other day, but where they live in deserts, such as in Damaraland, they may only drink once every few days. Goddard even postulated that in Olduvai, in the dry season, rhinos obtained all their water requirements from succulent plants.

Although black rhinos can lift their heads higher than white rhinos and can feed at and over 1.5m high, their preferred feeding height appears to be ground level to 1m high. When they are available, their diet may include a high proportion of herbs and young shoots, but they also often eat small bushes down almost to ground level, biting off twigs with diameters up to 27mm. (though usually in the 3-10mm. range). At that size of twig, they are getting a large proportion of woody material, and sometimes less than 50% of the more nutritive green material. They are thus fairly coarse feeders. In feeding trials, we found that adults were averaging a food intake of 26.3 kg. of mixed indigenous browse per day. This indicates a possible annual intake of nearly 10,000 kg. of food. Goddard found that in Ngorongoro, they ate 191 different species of plants and in Tsavo, he recorded 102 species of food plants. In some areas, they occasionally push down small trees and browse on the upper shoots. Elsewhere, this type of behaviour in other species has been found to be related to the plant producing toxins in the lower branches in response to browsing. This may or may not be the reason here. I also found that their subsequent behaviour differed from the elephants in the region. Whereas the elephants would often break down branches that they then hardly ate, the rhinos, unless disturbed, would munch away at the same tree until it was thoroughly utilized.

The most common social groups are either single adult males or a female with a calf. Sub-adults often join with other sub-adults or females with younger calves, sometimes their own mothers. Sometimes, groups of adult females and young of various ages



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are seen, but most larger groups are temporary, unstable associations. Dominant adult males are usually only with adult females for courtship and mating, and occasionally, a short period afterwards.

In courtship, the male may spend considerable time following and approaching a female that is in oestrus. He may sometimes approach with stiff legged gait, sometimes making short huff-pants and interspersing his approach with rubbing his horn in mud or bushes. When the female is lying down I. have seen the male pushing her with the base of his horn until she gets up. When the female accepts him, the male may then mount her a few times before copulation actually occurs. When it does, it usually lasts some 10 to 30 minutes, and the female occasionally makes low squeals. They may stay together repeating the sequence for the few days the female is in oestrus.

The gestation period is about 15 to 16 months, and when the calf is born, the female may chase off an older calf that still accompanies her, though if it is a female it may later rejoin them. As mentioned earlier, though, I have even seen this behaviour with a female when she was mated. Goddard estimated that a female could produce a calf every 27 months (less if she lost her previous one) but that in the wild, the inter-calf interval was usually longer. He found recruitment rates (the number of young added to the population each year) of 7-10% in East Africa. Females can often first be mated at five to six years old, though this age of first maturity can be delayed and the inter-calf interval lengthened where a population is relatively dense and near carrying capacity, as was found by Hitchins and Anderson in Hluhluwe. Young rhinos stay with their mothers at least two years, usually more, and when forced to leave, the adolescent males in particular may wander before settling in a range, which helps to disperse the population.

The main natural enemies of the black rhino were lions and hyenas, which can be a danger to the young. But the strength, weight, speed and horn of the mother are usually sufficient protection. It is the more recent, unnatural enemy, man hunting for commercial profit, that can outwit the rhino; the poacher only has to take off more than the 7-10% recruitment rate per year for the population to go downhill.

We see the black rhino then, despite his rather prehistoric appearance, as an animal well adapted to living in his natural environment, using the food there, maintaining adequate social spacing and social relations, and leading a peaceful, rather solitary life in harmony with his ecosystem. What he is not adapted to is man's guile in approaching this rather myopic animal, man's modern weapons and man's greed. Despite some irritable aggressiveness if roused, the rhino is no match for this; he is on a downward slide that can only be arrested by man. Extinction or not is in our hands.