

THE SQUARE-LIPPED RHINOCEROS.

By W. E. FOSTER.

The Square-lipped Rhinoceros, or the "White Rhino" as it has been referred to ever since white man first set foot in Southern Africa three hundred years ago, occupies a unique position in the Umfolozi Game Reserve as the animals occurring there are the only representatives of the southern sub-species in the world to-day. They will, however, become one of the vanishing species of mammals unless all possible measures are rigorously maintained for their protection and, more importantly, for the retention of their present habitat, which latter question is referred to later. In the writer's opinion their present habitat is inadequate and should be extended by the incorporation of certain sections of adjoining Crown lands.

Numbers.

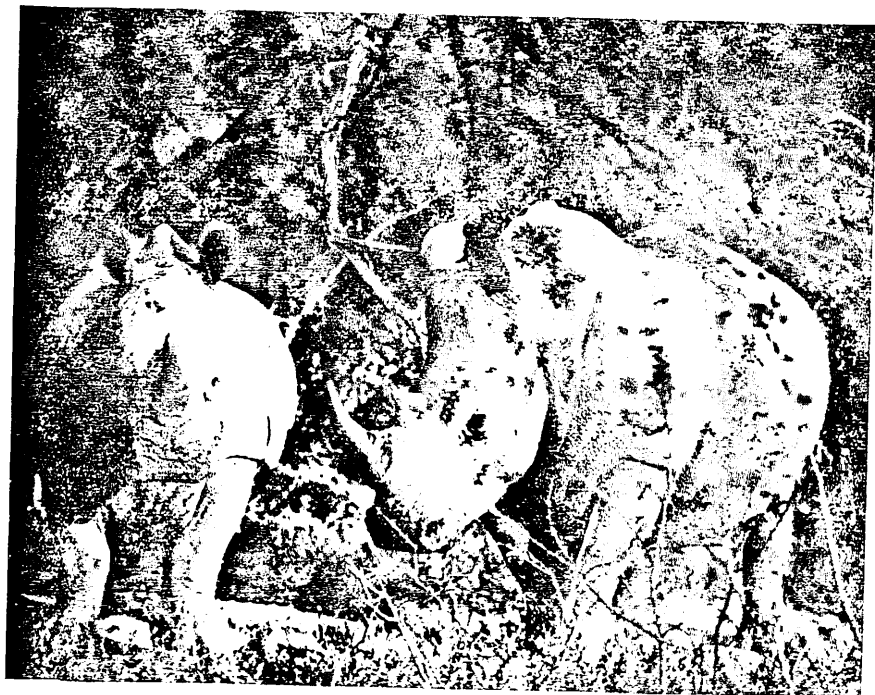
The number of these mammals has been a matter of controversy for many years.^(a) During the year 1922, Major Vaughan-Kirby, then Game Conservator for Zululand, estimated the number at 20. No attempt was made to verify this until ten years later, when Dr. Herbert Lang was commissioned to make a count, in which he was to be assisted by a local farmer, an official of the Tsetse Fly Control Operations and by a large gang of natives. Dr. Lang reported that 180 had been counted within the Umfolozi Game Reserve but this did not include those known to be roaming in the adjoining Crown Lands, estimated at the time to be about 30. These figures

^(a)Maqubu Ntombela who is still a Game Guard was first employed in the Umfolozi Game Reserve in 1918 by Vaughan-Kirby. Maqubu maintains that Vaughan-Kirby used to make frequent trips into the Umfolozi Reserve of at least a week's duration. He was very keen on taking notes and was always questioning Guards as to how many Square-lipped Rhinos they had seen. When told recently that Vaughan-Kirby had written that there were only 20 rhinos in 1920, Maqubu laughed and said that he was hiding them. It is not thought that Maqubu is wrong because everything read of Vaughan-Kirby's proves that he was a most active and reliable observer. He had every reason to put the number of rhinos at 20 during that period when he did so because the farmers at the Ntambanana Settlement were clamouring for the deproclamation of the reserve, or for the game to be reduced. By maintaining that there were only twenty rhinos left, Vaughan-Kirby no doubt hoped to save the game and the reserve. This is borne out by a letter to the press (Natal Mercury) in 1923 by a Mr. Ernest T. Salberg who says, while writing of Vaughan-Kirby, "After all his years as Game Conservator in Zululand he refused to admit that the Reserves were overstocked, and was badly informed about the number of the White Rhino. Now whatever may be thought of Mr. Harris's estimate of 120 it was not greatly reduced by Dr. Herbert Lang, the eminent Naturalist who was sent down to recount the animals. Dr. Lang had previously said openly that the count was absurd and refused to include 30 outside the Reserve which were offered to be shown to him". There seems to have been a conspiracy to keep the true number of rhinos from the blood-thirsty public.

Maqubu maintains that there were far more Square-lipped Rhinos in Umfolozi than there are at present. As he was born and bred in the corridor (his kraal is where the Reserve's Ongeni camp is now) and is one of the finest observers one could meet, it must be believed. The big decline in numbers came in the drought of 1932, and this is dealt with in the other paper.

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completely ruled out the estimated figure of 20 in 1922 as being ridiculously low. Subsequent to Dr. Lang's investigations no further count was attempted until 1948, when the Officer-in-Charge of the Anti-Nagana Campaign organised a count which was carried out by his officers and native game guards. According to this count the stupendous number of over 550 was reported to have been seen and counted. This figure has been very dubiously accepted and many people are very sceptical about it.

The probability is that a count which is extended over a period of more than one day can be far from accurate. There are so many contributing factors to be contended with, the major one being the undoubted movement of these mammals after sunset. They only drink during the night when they cover great distances grazing and travelling for water.^(b)

An accurate census of rhinoceroses, or of any other game animals roaming over an area of 200 square miles or so of densely bushed country is not humanly possible. An arrangement was made to take a census from the air, but unfortunately, due to many difficulties, this was never completed.

During the extermination of game campaign in the Umfolozi Game Reserve and surrounding areas, it was made a rule that each European Game Ranger was to make a daily record of rhinos seen by himself and by each native gunman. These figures were included in the Ranger's weekly report. A summary derived from these figures, although nowhere near the count of 1948, must also be regarded as far from accurate on account of the many factors to be contended with.

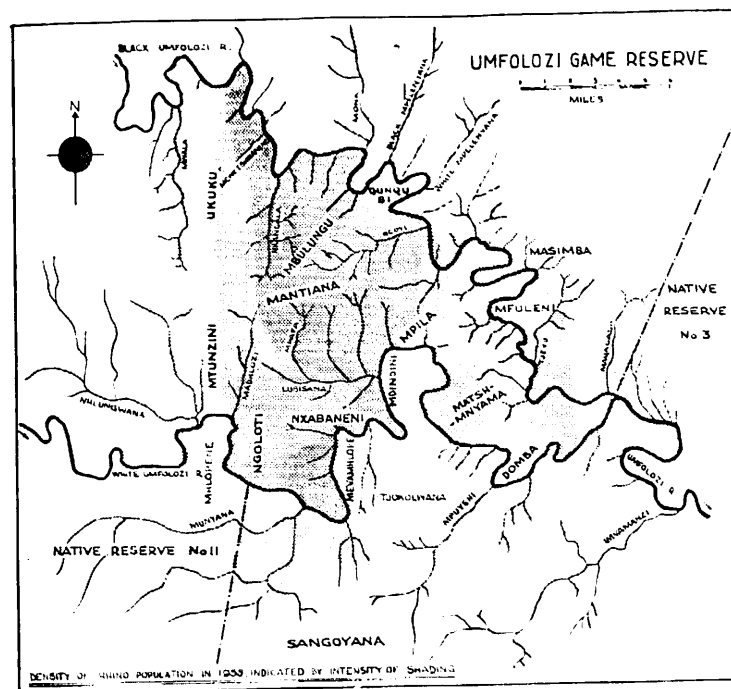
Habitat.

The Square-lipped Rhinos dwell in a very limited and selected area in Zululand, viz. that portion of the Umfolozi Game Reserve bounded by the Black Umfolozi river in the North, the White Umfolozi river in the South, the Mpila range of hills in the East, and extending into the Crown Lands in the West as far as the Mtunzini range of hills and the Ukuku ridge as defined in the accompanying map, which is shaded according to the rhino density. (See opposite page).

This was their favourite resort at the time when the writer first became acquainted with the game areas in 1915, before any dispersion had taken place, and from that date up to the present time it has remained so with the majority of the rhino population.

With the gradual increase in their numbers, there has been a limited dispersion into the surrounding areas. With the exception of about six which found their way into the Hluhluwe Game Reserve

^(b)It is quite untrue to say that rhinos only drink at night. They drink at all times of the day, and commonly during daylight hours in the summer months. In the winter, when it is cool for most of the day and sweet grazing is hard to come by, they naturally prefer to spend more time looking for food. It is more than likely, however, that during the anti-Nagana campaign the rhinos learned to keep away from pans, because the shooting of game was done around the waterholes.



where they remained and increased, the dispersion Northwards has been limited to the Mtubatuba-Hlabisa main road in what is known as the "Corridor". Southwards there has been some dispersion into the Crown Lands in the Lower Umfolozi district, also into Native Reserve No. 11 in the Melmoth district. Westwards the only dispersion beyond the Mtunzini range which has taken place, is a family group of about ten which has made its permanent habitat in the vicinity of the junction of the Mvalo stream and the Black Umfolozi river. Eastwards, that is in the portion of the Umfolozi Game Reserve East of the Mpila range of hills, there were no rhinos dwelling permanently prior to the date of the Proclamation of the Game Reserve in 1897. With the evacuation of this portion of the Reserve by natives, and the increase in the number of rhinos, there has been a greater dispersion into this area than into any other of the adjoining areas. In view of the fact that there has never been any check on their wanderings, the density is surprisingly low as compared with that in the Western section.

Statements from old natives show that in past history there has never been any variation of the habitat favoured by the square-lipped rhinoceros. It is only within the past decade that there has been any attempt to check dispersion and to confine them in a defined sanctuary, but notwithstanding this, they have remained in the one main habitat for over a century. W. C. Baldwin in his book written in 1852 (100 years ago), only mentions having en-

countered rhinos between the two Umfolozi rivers. As far as it is possible to trace his route on his trip through Zululand, he crossed the White Umfolozi river at Hlatikulu, which is at the Southern point of the Ngqoloti range, and the Black Umfolozi river somewhere in the vicinity of Gcoyeni, therefore he must have passed through the present high density area.

There must be a reason, in view of the fact that their dispersion was unchecked, why there has not been a greater dispersion of rhinos over this long period. The reason for this is somewhat difficult to conjecture but there must certainly be an answer. Endeavours to find an explanation have been made for very many years and the problem has often been discussed with pioneers, officials and old natives. The answer may lie in the nutriment, watering facilities, type of mud wallows or in the profile of this particular part of the country, but it is believed that food is the real reason.

Observations have been that the Square-lipped Rhinoceros is wholly a grazer under normal conditions, but in times of drought, when there is a scarcity of grass, they also feed on small shrubs and a dwarf euphorbia *Stapelia sp.*—(Zulu: Isihlehle), as well as on the succulent stems of a leafless creeper *Sarcostemma viminalis*—(Zulu: Ingotsha). On account of the sparsity of such plants within the high density area they cannot be regarded as a regular diet of the rhinos. In order to explore the possibility that it may be a particular type of grass which may occur within the favoured rhino habitat, it was suggested many years ago that a survey of the vegetation should be carried out. This unfortunately did not meet with approval but the opinion is still held that such a survey would prove of the utmost value. The rhinos prefer to feed on short grass, although they do feed on the longer grass as well.

Habits.

The progeny of the rhinos are very loyal to their maternal parents and remain with their mothers for many generations. Groups are often seen consisting of the mother with three and four of her progeny. Once when travelling in a motor truck a cow and a calf were encountered, with the latter in the lead. When the calf crossed the road and the truck was stopped between them, it was expected that the mother would become agitated but instead she turned and made off in the direction from whence she had come, notwithstanding the fact that the calf was squealing and running around in search of her. When the truck was moved, the calf picked up its mother's scent and made off after her.

In another instance, the skeleton of a full-grown rhino was found on a path between two rocks. Obviously the rhino had become wedged between the rocks and had died there. Nearby was the skeleton of a young rhino, the two no doubt being mother and calf. The calf must have remained with its dead mother until it died of starvation.

There is also the example of the young male rhino "Folozi" now in the National Zoological Gardens at Pretoria, which when

first seen by a native game guard, was standing by the carcass of its dead mother along with a full-grown male and a half grown one. When the native approached, the two older animals made off and were not seen again, but the calf "Folozi" remained. When the site was visited the following day, the calf was not to be seen, but the guards who had been posted to keep watch, reported that it had returned later and was standing alone, guarding its dead mother and chasing off the vultures. Even when the party arrived to capture it, it stood its ground, steadfastly charging at anyone who dared to come too close for its liking.

A more recent instance was that of the eight months old female calf which was found guarding the carcass of its mother who had been dead for over a week. The carcass was practically torn to pieces by vultures and hyenas, but the calf remained loyal to its mother and would no doubt have stayed until it died, had it not been located and captured.

Some years ago too the skeletons of an adult and calf were found lying side by side, which was no doubt a parallel case. The young calf, loyal up to the bitter end, had remained alongside the carcass of its dead mother until death had overtaken it as well.

The habit of alternate rearward scraping with the hind feet appears from observations to be actuated by foreign scent. Once whilst being watched from a distance, a group of rhinos came to a water-pan and one young male, happening to pass over a spot where the observer had been standing half-an-hour or so previously, sniffed at the spot and then commenced the rearward scraping^(c). This habit is frequently seen to take place across motor tracks, when the scraping seems actuated by the scent of a motor vehicle which has recently passed along the route. The scraping is regularly observed to take place at the common dumps where excreta is dropped, but this is definitely not for the purpose of scattering the droppings as is the case with the Black Rhino. It is believed that it is actuated by the scent of other rhinos which may have recently visited the dump. The scattering of the droppings which does take place at the common dumps, is done by insectivorous animals and birds, especially by guinea fowls in search of caterpillars and other grubs. On the many occasions when this scraping has been witnessed it has been done by the young males. No old rhino has been seen scraping, but it is not suggested that they do not do so. There is certainly the possibility that they may scrape when something has annoyed them, or perhaps during the rutting season.

The writer once came across a place where a rhino which had been travelling along a wet footpath had skidded and fallen. Obviously he had become annoyed with himself and the spoor indicated that there had been much scraping, with the bush knocked about and trampled.

(c)It has been found that any human scent near a pan which is less than at one hour old is enough to send a rhino crashing off into the bush. Square-lipped Rhinos do of course scratch their dung; not to the same extent as a Black Rhino but it is done nevertheless. Bulls appear to do it more than cows.

Rhinoceros bulls urinate rearwards, the urine being passed out by intermittent spurts.

The Square-lipped Rhino makes a sound similar to the rumble or bellow of a bovine bull, and this is continued for several seconds at a time. The rumbling is particularly noticeable during the rutting season, generally at the beginning of the Spring. Another sound frequently heard when they are on the run is not unlike the sound made by a barrel of water when shaken and this can be heard at quite a distance. The young calves, when in distress, squeal very much like pigs.

It is considered by many who have had the opportunity of studying the habits of the Black Rhino, that the suppurating wound behind the shoulder has a sexual significance. Assuming this to be correct, the sexual habits of the two species differ entirely, as the Square-lipped Rhino does not manifest these suppurating wounds at any time. From observations, the sexes in the Square-lipped species are brought together by scent as is the case with other animals such as bovines. The number of males killed in fights when breeding forms a high percentage of the deaths.

The Square-lipped Rhinoceros is not an aggressive animal, although it is very much feared by the natives.^(d) The only reason they can adduce for their fear is the massive bulk of the animal. They have never been able to quote any instances where anyone has been killed or injured by one of this species of rhino. During many years of association with them, only one instance is known, in 1949, where a game guard was severely gored by what he stated to be a Square-lipped Rhino. He was alone at the time and there has always been a doubt as to whether it was not perhaps a Black Rhino, as there are known to be a number of this species in the vicinity of the attack. However, this may have been an exceptional case.

There are, of course, many unauthenticated stories of both Europeans and natives having been chased by Square-lipped Rhinos. Cases have been witnessed where Europeans have fled from rhinos on the run, and then spun stories about being deliberately chased, when what actually happened was that they were running in the line of the rhino's course.

During the initial stages of the fly trapping campaign, many miles were walked daily within the rhino sanctuary and a great many rhinos were encountered. Although the animals were treated with respect, there was never an instance when the writer had to flee or climb trees to escape from charging rhinos. They are very short-sighted animals, and when on the run, they could, without any evil intent, easily collide with a person or any other obstruction.

On one occasion, when travelling in a half-ton vehicle, a rhino on the run came straight for the truck. To all appearances it was making a deliberate charge and it was only when it was within

^(d)This should be qualified by a remark that they are not aggressive unless they are interfered with. All the rhinos living on the edge of Native Reserves are most aggressive.

about six feet of the truck that it seemed to realise its presence. It quickly altered its course, but not in time to avoid brushing against the rear mudguard after which it made off in great fright.

Wallowing Habits.

Over the period of the past twenty years, dating from the time that the trapping campaign against the tsetse fly was first launched, there has been a perceptible change in the wallowing time-table of the Square-lipped Rhinoceroses. During the early stages of this period, it was a regular habit for them to wallow round about mid-day at certain selected water-pans, that is pans situated on high ridges and in open flat country where the bush is sparse. At some of these pans in particular one could always be certain of finding rhinos wallowing in groups of sometimes as many as eight or ten in one pan. At that time it appeared that the greater majority spent the midday hours in the sparsely bushed country in the vicinity of the pans.

A gradual divergence came about until to-day^(e) we find a complete reversal of their time-table. They have reverted to what is considered their natural habit under normal conditions, that is, lying up in the densely shaded glades during the hot period of the day. Very rarely at the present time can any rhinos be encountered in the sparsely bushed areas or wallowing in the pans during the daytime. It is now found that they retire to densely bushed valleys, where they spend the greater part of the day lying up in their respective groups, only emerging in the late afternoon to graze and make their way to the water pans where they generally only drink and wallow after darkness. One explanation, perhaps, is that prior to the eradication of the tsetse fly and the great reduction in the numbers of other blood-sucking diptera, the constant pestering by these myriads of insects made the midday haunts of the rhino untenable. The rhinos were therefore forced to abandon the valleys in the daytime in favour of the high ridges and sparsely bushed areas where the tsetse density was never as high as in the thickly bushed valleys which were their favourite breeding grounds.

The Square-lipped Rhinoceros dwell in units of from one to sometimes as many as twenty. The single units are invariably lone bulls, whilst the majority of the other units consist of a bull, a cow and her progeny, often of three or four generations. As already stated, it is interesting to note the loyalty of the offspring to their maternal parents up to the age of four or five years.

^(e)The reference to "to-day" may mean about 1952 or even earlier, when the effects of the intense shooting campaign were still being felt. Rhinos can be found at pans wallowing at all hours of the day and during recent years many photographs have been obtained of them doing so: it would be quite untrue to say that "they only drink and wallow after darkness". It is thought that Mr. Foster's observation was probably correct but his deductions wrong. The rhinos more than likely retreated into the dense bush after the shooting began, because they were interfered with so frequently when they went to wallow or drink, and it was the shooting campaign which made them more nocturnal.

Horns.

The so-called "horns" of the rhino are in actual fact not horns but consist of closely matted hair which grows from the roots in the skin and unites in a solid mass. The horn which is so formed is not connected with the skull-bone and is not rigid. The horns of the females attain a length of up to three feet or more, the longest seen by the writer measuring 3 ft. 1½ inches. When such a length has been attained the horns become practically straight. The horns of the males do not attain such a length, but they are much thicker at the base than those of the females. As is the case with the horns of other animals, there are occasional deformities. The most common malformation occurs among the females, when the horn curves forwards. There have been instances where the tip of the horn almost touches the ground when the rhino is on the run and in one case, the horn was canted over to the side. Another unusual case seen was that of a female with a practically straight horn about three feet in length. This horn was kinked towards the tip. Two rhinos have been seen, both males, minus the anterior horn, but in such instances there is of course the likelihood that the loss may have been caused by accident. Another case was that of a full grown female with half of its anterior horn slit into strips. It was thought by the natives that the horn had been struck by lightning!⁽¹⁾

As already stated, the horns do not adhere to the skull-bone, the fibrous roots only being bedded in a series of minute indentations provided on the muzzle-bone, and it appears that it would not take much of a wrench to dislodge a horn from its seating to which it is held only by skin. This is perhaps the reason why they do not make much use of their horns when fighting. One rare opportunity was experienced of witnessing a fight between two full grown bulls. Accompanied by a friend, the writer was in the Hlungwane valley in the Mahlabatini district in 1916, and was first attracted by a commotion and by dust rising. Hastening to the spot the two bulls were found in deadly combat and it proved possible to approach to within about thirty yards and to stand and watch. The fight had evidently been going on for some time, as there was an arena of roughly fifty feet in diameter where the ground was trampled and the shrubs and trees broken. The two rhinos were battering at each other with their shoulders like two enormous battering rams and not once while being watched did they use their horns. Their shoulders were bruised and blood-bespattered and their heaving flanks appeared quite wet. Eventually it was decided to interrupt the fight by firing off a shot, when the animals ran off in different directions. It was noticed that one was limping so badly that its shoulder appeared to be dislocated.

The impression gained on this occasion was that the rhinos do not make use of their horns when fighting, but later observations have indicated that this is not always the case. During recent years

in the many carcasses examined of rhinos killed in fights in which punctures have been found, the latter have been generally in the abdomen and appeared without doubt to have been caused by horns.

Breeding.

During the early stages of the tsetse fly trapping campaign in the Umfolozi Game Reserve, a rhino cow (previously referred to) which had half the length of its horn split into strips, was regularly seen in a certain valley. It appeared to be living a solitary life, until the native employees reported that there was a bull with it and that they had actually seen them mating. The incident was noted and the cow then disappeared from this locality and was lost trace of for a considerable time, until a report was made to the effect that a similar cow with a slit horn had been seen in another locality with a calf. She was kept under observation until there was an opportunity of seeing both the mother and the calf. It was concluded that it was the same rhino, but at the time no idea could be formed of the calf's age. Its horn was about two inches in length. Subsequently a comparison with a photograph of "Zuluana" taken at eight months, led to the assumption that this calf was the same age. The period from the date of mating was 27 months. Assuming that the twice-seen cow with the slit horn was one and the same, and that the age of the calf was eight months, the period of gestation would be 19 months.

Movements.

The Square-lipped Rhinoceros when on the run always carries its head in a lowered position, almost touching the ground; unlike the black species which carries its head level with the upper line of its body.

When on the run, the calf always takes the lead closely followed by the mother, this habit being the reverse to that of the Black species where the calf follows the mother.

The action when moving faster than a walk is a trot, similar to that of a horse, and in this pace the animals' movements are very graceful for their size. When harassed they break into a gallop, at which pace they can cover the ground surprisingly fast, but this speed cannot be maintained over very long distances as they soon become winded. On one occasion a group of eight was seen in open ground at a distance of some five hundred yards, and whilst being watched they were disturbed by native poachers. The natives' dogs gave chase causing the rhinos to stampede and they approached at a gallop. When they passed by they were showing signs of extreme distress and were slowing down their pace, notwithstanding the fact that the dogs were right at their heels. One bull completely gave in and stood, flanks heaving, panting for breath. Incidentally, two of the pack of dogs lost their lives with well aimed bullets. These native dogs are a menace to the rhino population as they cause a great deal of disturbance to their peaceful habits. Every opportunity has always been taken to destroy them and all native game guards have instructions to do so.

⁽¹⁾Rhinos are quite frequently found with their horns split, and the damage seems invariably to have been sustained when fighting.

The maximum rate at which full grown rhinos can travel when at a gallop is possibly not more than 15 miles per hour, but on account of their bulk this speed cannot be maintained for a great distance, perhaps for no more than 400 to 500 yards. One opportunity of checking up on this point was when travelling along a fairly straight stretch of road. Two full grown male rhinos were encountered standing near the road, and when approached they moved off at a gallop, running parallel with the road. The motor vehicle was kept abreast of them for a distance of about 200 yards and the speedometer was registering 15 m.p.h.

Younger rhinos can exceed this speed but not to any great extent. On the occasion when the young female which had strayed into the cane fields on the Umfolozi flats was being chased, in an attempt to drive it back to the Reserve, the animal was being closely followed along a cane-break, and it was observed that the speedometer reached 20 m.p.h.⁽⁹⁾

Senses.

The three faculties, sight, scent and hearing, should be ranked in the following order, first hearing, secondly scent, and lastly—sight. On the latter the rhino is the least dependent, as it has an extremely limited range of view. It appears that a stationary object such as a motor vehicle cannot be seen at a distance of thirty feet, although when assisted by the movement factor they are able to discern objects at this or perhaps even greater distances. Their poor vision is, however, adequately compensated by the very keen hearing. This, of course, as well as the faculty of scent is greatly dependent upon the direction and force of the wind. Invariably when rhinos are encountered at a distance and they suspect the presence of anything foreign, their behaviour indicates they are endeavouring to pick up either sound or scent. It is on such occasions as these that the rhino does raise its head above the usual position near the ground, and their ears can be seen twitching back and forth in an endeavour to pick up the least sound. Nature appears to have provided for their assistance in this respect, since the ears can be moved independently of each other. They can incline one ear forward and at the same time incline the other rearwards, and are thus helped to pick up sounds both back and front.

Size.

Some sizes of adult males and females, measured in feet and inches, and taken from dead animals are:

Shoulder height	5' 8"	6' 1"	5' 11"	5' 7½"
Overall length	12' 3"	11' 10"	11' 5"	11' 0"
Girth	9' 6"	9' 9½"	9' 4"	9' 6"
Horn length	1' 6"	2' 4½"	2' 2½"	1' 7"
Approx. weight	3½ tons	4 tons	3½ tons	3½ tons

⁽⁹⁾25 m.p.h. is the maximum speed of a Square-lipped Rhino more recently recorded by game rangers in the Umfolozi Reserve.

General.

The Zulus do not eat the flesh of the Square-lipped Rhino. The reason the present generation give is that they have been taught by their forefathers that it is not edible, and that anyone who does eat it would be ill; but they say that it is used for medicinal purposes. This has undoubtedly contributed towards the protection of some of their numbers against the hordes of native poachers who continually trespass within the rhino sanctuary. There are occasions during certain seasons when rhinos do wander out of their sanctuary into the Native Reserve, and these would give the natives opportunities of annexing an animal now and again, if it were not for the fact that the flesh is not eaten.

In the control and study of the welfare of the Square-lipped Rhinoceros it has been noticed that there are instances, fortunately infrequent, of beasts wandering off aimlessly out of their sanctuary until they become hopelessly lost. Such a case recently was the young female which, after wandering about amongst cane fields over thirty miles from the reserve sanctuary, eventually came to an untimely end when she attempted to cross a "Heath-Robinson" type of bridge, over a small stream. The bridge collapsed under her weight, and she was drowned in a pool of water beneath.

It is impossible to estimate the death rate, as there must be many deaths which are not detected. Their favourite haunt when not feeding is the densely bushed valleys, some so dense that humans hesitate to enter and such retreats would be the most likely places in which ailing rhino would retire and remain until overtaken by death. The carcasses would remain in such places, undetected even by vultures. The mortality, therefore, if calculated on recorded deaths, must be far below the actual death rate.