

The Past and Present Distribution and Status of the Black Rhinoceros (*Diceros bicornis* Linn. 1758) in South West Africa.

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I. INTRODUCTION

To determine the past distribution and status of the black rhinoceros in South West Africa the following sources were used to a large extent to obtain information. All available records and old reports on expeditions through South West Africa were consulted. In comparison with the rest of Southern Africa, South West Africa is covered remarkably well by journals and official reports of early expeditions. Rhino engravings and/or paintings, and also excavation sites where rhino remains were found were also used. Regarding the more recent distribution and status a direct census was carried out and numerous interviews were held with old inhabitants and settlers in certain areas. With all this evidence in hand a more or less complete picture of the past and present distribution of the black rhinoceros was obtained.

For the direct census the following method was used: The census was carried out during October, November and December 1966. This is the driest and hottest time of the year and during this time the rhino tend to drink every night. Every known waterhole in the Kaokoveld and western Etosha National Park was visited in turn. If any indication could be found of it being frequented by rhino camp was pitched about a mile or more distant. Two or three nights were spent at every waterhole, all depending on circumstances. During daytime reconnaissance was carried out in the vicinity looking for tracks, frequency and size of dung heaps and the amount of vegetation that showed browsing by rhino.

By using this method one had to make two assumptions.

1. That all the waterholes are known. Everyone acquainted with the arid parts of South West Africa knows how important a role water plays in the existence of man and animal. One can thus safely presume that all the permanent waterholes are known especially those in the populated part north of the Hoanib River. A very good military map; showing all the waterholes, was also used extensively.

2. That a rhino uses only one waterhole. During the drier part of the year the distances between perennial waterholes are considerable. In areas where waterholes were located nearer to each other, precautions were taken, eg. more time was spent in the area.

Information was gathered from the police stations at Kamanjab, Outjo, Otjiwarongo and Welwitchia to determine on which farms rhinos occurred. These farms were visited during March 1967 to complete the census.

II. PAST DISTRIBUTION

2.1. Distribution before 1900

During July 1761 Ryk Tulbagh sent a party of volunteers on a scientific expedition to explore the country north of the Orange River. They reached

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Warmbad on the 5th October and moved on to the Lion River. The banks were well-wooded, they reported, apart from rhino, also giraffe, buffalo, zebra, quagga, kudu, eland, hartebeeste and wildebeest were seen (Vedder 1938). This is the earliest record in literature of the occurrence of rhinoceroses in South West Africa.

In 1791 Willem van Recnen set out on a hunting and exploration expedition and travelled into South West Africa. He reached Swartmodder (Kectmanshoop) in November 1791. After crossing the Fish River his party had difficulty in crossing a waterless stretch of country. At the Leber River they shot rhino, giraffe and buffalo as food for the party.

They travelled for a period of nine months and during this time shot 65 rhino, 6 giraffe and large numbers of other game.

The Dutch Government despatched the MEERMIN from Cape Town to the South West African coast in 1795 to forestall occupation by foreign powers. A landing party went on shore on the 23rd January, 1795. They saw great numbers of animals in the Swakop River. Animals recorded by them were elephant, rhino, gemsbok and springbok (Vedder 1938).

In his "An expedition of discovery into the interior of Africa" J. E. Alexander (1858) described his journey from Cape Town, across the Orange River, along the Fish River and down the Kuiseb River to Walvis Bay, returning past present-day Windhoek. His party left Cape Town on the 8th September, 1836. He came across his first rhino at Kopunnaas, or "Bulls Mouth Pass". He reached this mountainous terrain after crossing the "Kei Kaap or Great Flat". According to his map the "Bull's Mouth Pass" is situated north of the 24th Latitude — possibly in the region of the present-day Naukluft mountains and with little doubt the present-day "Büllsport".

During his travels Alexander came across a few Bushmen (near the abovementioned Bull's Mouth Pass) and he records the following:

"I asked him what was that of all other things he wished for in the world — was it plenty of wives, of children, of cattle, of sheep, of clothes, or a good hut? and he (the Bushman) answered, the rhinoceros, and to get it easily!"

By now more and more travellers and missionaries travelled and settled in South West Africa. When Hugo Hahn travelled from Otjikango down the Swakop River to Walvis Bay in 1847 a rhino crossed his path. During 1850 Rath explored the north bank of the Swakop River as far north as the Erongo Mountains where he was repeatedly molested by rhinoceroses (Vedder 1938). During this time a missionary at Rooibank used the skin of a black rhinoceros, shot in the nearby Kuiseb River, as a door.

Francis Galton and Andersson travelled extensively in South West Africa during 1850 and 1851. (See map 1) The results were published during

1889. They set out from Walvis Bay during September 1850, travelling along the Swakop River. Galton records that there was not a sign of game apart from tracks several days old and mostly of buffaloes.

After visiting Ovamboland, travelling past the Etosha Pan, they reached Elephant Fountain in August 1851. At Elephant Fountain (the present day Gobabis) he records that the inhabitants:

"... talk familiarly of the rhinoceros as an everyday kind of game... I had not yet seen a single rhinoceros" (almost a year after they set out from Walvis Bay!!!) "One was shot by Andersson when they went down to the bay (Walvis Bay), but I was then not present."

From Elephant Fountain they travelled over Twass to 'Tounobis'. Two days journeying brought them to a picturesque gorge in the ridge (along which they were travelling) which led down to the plain, and in which was a succession of small springs:

"Rhino skulls were lying in every direction, but strangely enough not a single spoor could be seen. The whole of that night did Saul and I watch without seeing anything but a jackal. Saul had told us that the rhinoceros would begin trooping in at nightfall, and that we should continue firing at them till daybreak, and I had believed him. Forty were killed here about a month since. I could not doubt it, for I counted in a small place upwards of twenty heads; but I suppose that a vast number were also wounded, and that the whole game fairly scared from the place."

These animals were apparently shot by Witthoi's Hottentots who roamed through these regions.

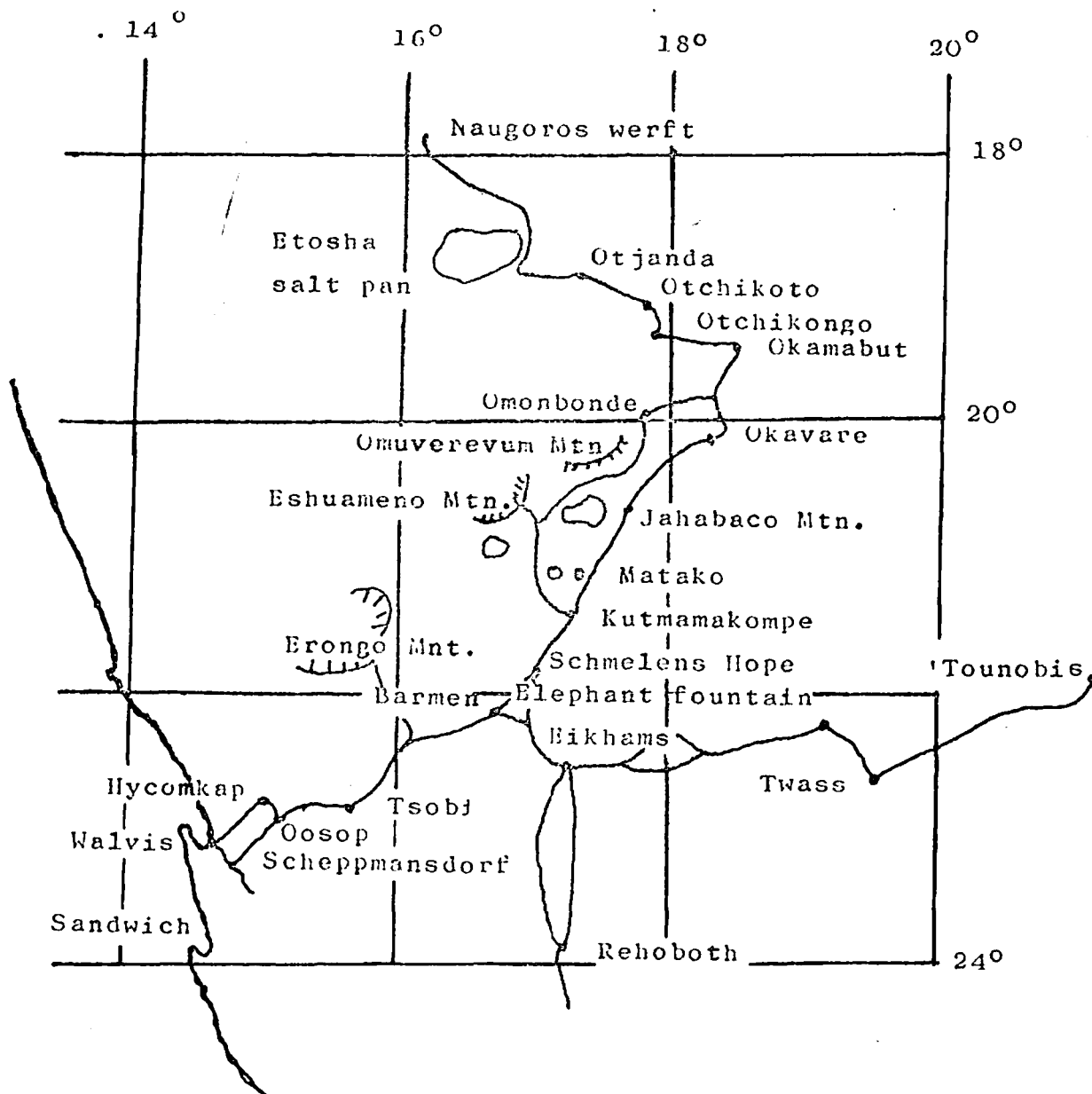
On the 28th September, they reached a waterhole and saw a dozen fresh tracks of elephant and a few of rhino at the waterhole. That night Galton "bagged" his first rhino, and also a lion, a hyena and a wildebeest. On reaching 'Tounobis they erected hides and shot a number of rhino as they came to water. Galton did not record how many but added:

"The Hottentots shot away a great many bullets at rhinoceroses and did, I dare say, a great deal of mischief. They bagged but very few, compared to the number they fired at; the others most likely lingered on for a few days, and then lay down and died elsewhere."

Dr. Scherz (pers. com.) made a thorough survey of the rock engravings and paintings in South West Africa. Most of the engravings portray animal figures, and in a few cases rhinos are also delineated.

Although the possibility exists that the artists may have moved long distance after observing an animal and before engraving it, it is usually considered that the artists tended to engrave animals seen in the immediate vicinity.

Dr. Scherz found rhino engravings south of Bethanie on the farm Rooipunt, 157. There are en-



Map 1. The travels of F. Galton and Anderson (1850-1851) in South West Africa.

gravings to the south-east of Luderitz on Aar 16, Geelperdhock 76 and Swartpunt 74. On Aar there are three rhinos engraved on rock. The rhino engraved on Geelperdhock is more than three feet high. The engravings on Geelperdhock and Swartpunt are the most southern engravings of rhino known in South West Africa. Some other rhino engravings occur on several farms (E.g. Die Valle 226 and Nauzerus 229) in the Naukluft area to the west of Mariental. The rhino engravings at Spitzkoppe, near Usakos were reported for the first time early in the nineteenth century. On the western side of the Brandberg some rhinos are also delineated on rock. On Harmonie 97, along the Ugab River, numerous rhino engravings occur. Further north the only known rhino engravings are situated at Twyfelfontein and some others a few miles south of Sesfontein at Sossos in the Kaokoveld. The latter are the most northern rhino engravings known in South West Africa.

Towards the east rhino engravings were found on the farm Ivanhoe 92, south of Gobabis. Dr. Scherz mentioned that no rhino engravings occur to the east of an imaginary line that may be drawn from Tsumeb and Otavi to Okahandja.

Old remains of rhino skulls and/or parts of skeletons were also found (Mr. de la Bat, *pers. com.*) in the Fish River, Kuiseb River, Swakop River and near Omaruru, Windhoek and Gobabis.

A little way south-east of Lüderitz in the Namib a set of rhino footprints is encasted in a limestone layer. At Grullental a rhino skeleton, completely fossilized, was found. Carbon, dating method showed the fossil to be $\pm 10,000$ years old.

To determine the distribution pattern of black rhinoceros in South West Africa before 1900 the following, fully independent, factors may be used as a basis. They are:

- a) Distribution pattern of rhino rock engravings and/or paintings.
- b) Localities where early hunters/explorers came across rhino.
- c) Localities where the remains of rhino skeletons were found during excavations.

It may be argued that the engravings/paintings only show the distribution of the artists and suitable rocks and this may be true to a certain extent. The localities, however, where early hunters/explorers came across rhino, and also the localities where remains of rhinos were found during excavations show a clear correlation with the localities of rhino engravings/paintings (See map 2). The abovementioned factors taken by themselves seem slender and will always leave room for a degree of inaccuracy or doubt. The three taken together however, lessens inaccuracy or doubt to a point of insignificance.

No permanent rhino populations occur today on the drier side of the 100 mm. isohyet, and this may be considered an ecological barrier. It may therefore be assumed that in the era before 1900, the black rhinoceros was distributed from the Kunene River in the north, down to the Orange River in the south, and extended westwards to the eastern boundary of the Namib desert. They may have entered the Namib desert down river courses during the rainy season as is the case at present in the Kaokoveld and western Etosha National Park.

The distribution pattern on the inland plateau, to the east is much more vague. They occurred to the south-east as far as natural vegetation (for food and cover) and available surface water allowed. As rhinos are partial to acacia thorn country, it is doubtful if they ever occurred in the sandveld areas in the eastern portions of South West Africa except in limited numbers. They did occur, however, south of the Angola border in the Kungveld.

The main factor hampering their distribution in sandveld areas was, as mentioned earlier, the lack of surface water. They may have occurred down the east flowing omurambas, viz. Omuramba Omatako, Otjosondjou, Eiseb, Epukiro, Rietfontein and probably the Black and White Nossob, during good rainfall years.

Their distribution pattern in South West Africa during the 19th century must have looked more or less as follows: one arm reaching north-west from Outjo to the Kaokoveld and Kunene River, and the other arm stretching to the east past the present day Gobabis. Isolated localities existed in the Kungveld and Okavango. The rest of the distribution reached south past Windhoek along the 16th Longitude to the Orange river. If they ever did occur north of the Etosha pan on the Ovamboland plains, it must have been the first area in the South West Africa where they were wiped out by man.

According to the old Heikum Bushman, now resident at Okaukuejo, no rhino were ever known to

them or their fathers to have occurred in their old hunting grounds to the near west and south of the Etosha pan. Galton, Andersson and also Hugo Hahn travelled in this region without reporting the presence of rhino. The rhino that frequent the waterholes at Grünwald and Gobaub in the Etosha National Park are apparently more recent arrivals from the south and south-west, probably from the Ugab drainage system.

The pressure of man was then felt in the south as the armed bands of Hottentots and Griquas swept across the Orange River during the second half of the 19th century. By the end of the 19th century the black rhinoceros must have neared total extermination in the southern parts of South West Africa.

2.2. Distribution after 1900

As can be deduced from the above, the distribution pattern of black rhinoceros started changing long before the turn of the century. After 1900 the changing distribution pattern to the north of Windhoek gathered momentum as new areas were opened for settlement and during a period of thirty years it shrank to include only the Kaokoveld and a few localities in the mountains north of the 22nd Latitude.

References available on the distribution of rhino after 1900 are the following:

Fischer recorded in 1904 the presence of rhino at Warmquelle and Sesfontein in the Kaokoveld. The presence of rhino near Usakos is also discussed.

Steinhardt (1924) wrote that during 1915 to 1919 rhino still occurred in the lower Ugab River and sometimes moved as far as Outjo. They were also reported from the Huab River and the Hoanib River. Various other localities in the Kaokoveld are also mentioned. In 1916 Mattenklodt shot a rhino on the northern bank of the Okavango River in southern Angola. Wilhelm (1931) reported that they did not occur on the southern bank of the Okavango River but that there still were some left near the Kwando River.

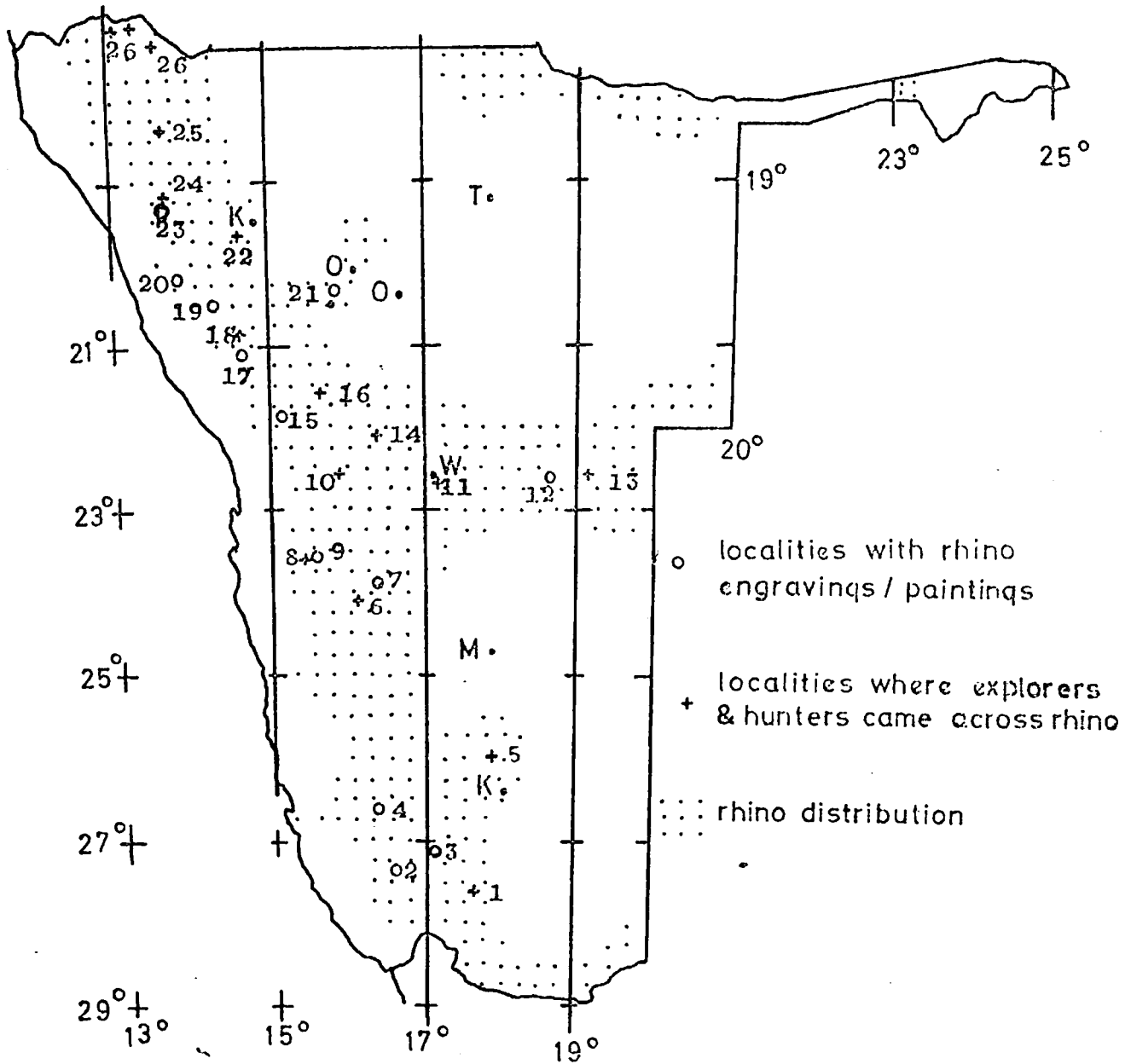
Shortridge (1934) reported that they occurred from about the latitude of Kaoko-Otavi (northern Kaokoveld) northwards and that during the rainy season, while surface water was available, a few wandered as far south as the northern and north-western parts of the Outjo district. He recorded rhino tracks near Kamanjab.

Bearing the present distribution pattern in mind, one feels that the black rhinoceros was much more widely distributed in the north-western area of South West Africa during this period than implied by the abovementioned authors. This lack of information can be attributed to the lack of roads and the resulting large inaccessible areas and also to the lack of communications at the time.

Mr. Fritz Gaerdes of Okahandja (*Pers. comm.* 1967) supplied invaluable information regarding the past distribution of the black rhinoceros in

northern South West Africa. Information was also gathered from farmers who originally settled on farms in the Welwitschia and Kamanjab areas in 1948. Information from these sources indicates that rhino were distributed as far south as the 22nd Latitude. They occurred in the Erongo Mountains between Omaruru and Usakos, and to the west on the edges of the Okombahc and Otjijhorongo Re-

serves. They also occurred in the upper reaches of the Ugab River as far east as Outjo. From the middle reaches of the Ugab River in a north-westerly direction past Welwitschia, Fransfontein and Kamanjab they were more or less evenly distributed as far north as the Kunene River. A few also occurred south of the Etosha pan at Grünwald and Gobaub.



Map 2. Distribution of black rhinoceros in South West Africa circa 1850.

1. Ryk Tulbagh's voluntary Scientific expedition, (1761) Lion River.
2. Engravings on the farm Geelperdhoek, 76.
3. Engravings on the farm Rooipunt, 157.
4. Engravings on the farm Aar, 16.
5. Willem van Reenen and his party (1791), Leber River.
6. J. E. Alexander and his party (1858), Bull's Mouth Pass.
7. Engravings on the farm Die valle, 226.
8. J. E. Alexander and his party (1858), Kuiseb River.
9. Engravings on the farm Nauzerus, 229.
10. Anderson and his party (1850).
11. J. E. Alexander and his party (1858), Windhoek.
12. Engravings on the farm Ivanhoc, 92.
13. Francis Galton and Anderson (1851), Gobabis.
14. Hugo Hahn (1847), Swakop River.
15. Engravings at Spitzkoppe.
16. Rath and his party (1850), Erongo Mountains.
17. Engravings at Brandberg Mountains.
18. Steinhardt, Lower Ugab River (1915).
19. Engravings on the farms along the Ugab River.
20. Engravings at Twyfelfontein.
21. Engravings on the farm Harmonie, 97.
22. Shortridge (1954), near Kamanjab.
23. Engravings at Sossos, south of Sesfontein.
24. Fischer (1904), at Sesfontein and Warmquelle.
25. Shortridge (1954), near Kaoko-Oravi.
26. Hunting expeditions of Jan Kobbertse (1898 to 1908).

III. PRESENT DISTRIBUTION

The present distribution pattern of the black rhinoceros in South West Africa was fairly accurately established from a survey which was carried out during October, November and December, 1966 and during March, 1967. The results obtained during this survey indicate that the black rhinoceros has at present a limited distribution. It occurs only in the most inaccessible, mountainous areas of the escarpment transition belt; the exception being the Etosha National Park. (See map 3).

The present distribution in South West Africa can be divided into the following distribution areas:

3.1. The area north of the Hoanib River —

3.1.1. Northern concentration.

3.1.2. Western concentration.

3.1.3. Southern concentration.

3.2. The area within the Etosha National Park.

3.2.1. Western portion.

3.2.2. Eastern portion.

3.3. Farms along the Huab- and Ugab Rivers.

3.3.1. Farms within the Odendaal area.

3.3.2. Farms outside the Odendaal area.

3.4. Elsewhere in South West Africa.

3.1. The area north of the Hoanib River

The distribution of the rhino in the Kaokoveld correlates for the greater part with the distribution of the OvaHimba and OvaTjimba population groups. The rhino and the OvaHimba and OvaTjimba occur on the escarpment area within the 2 000 and 4 000 foot contours. The reasons why the rhino population follows this distribution pattern may be the following:

1. The extremely broken country within the escarpment zone offers a certain degree of protection against man.
2. The OvaHimba and OvaTjimba, with whom they share this area are nomadic and seldom live around permanent waterholes — thus ensuring the rhino free access to the water. The Herero on the plateau usually live at the waterholes.
3. The vegetative cover of this area includes most of the qualifying aspects preferred by rhino, viz. — cover and preferred food plants.

The rhino is not evenly distributed through this area but occurs in three more or less isolated patches.

3.1.1. Northern concentration

This concentration area lies mostly within the upper reaches of the Hoarusib River, with isolated occurrences along the Kunene River in the Baynes and Zebra Mountains. As far as is known, no rhinos utilize the water of the Kunene River between the Ruacana Falls and the Epupa Falls. Individuals within the Baynes Mountains may do so, however. The individuals that utilize the waterhole at Ombombo-Ovambo sometimes wander into western Ovamboland. Permanent waterholes utilized by rhino are the following:

Enduva, Otjipembac, Otjitanga, Epembe, Otjirekeha, Okauzuma, Otjiwero, Ekoto, Ongongo, Otjiu, Kaoko-Otavi, Omeano, Otjijenjesa and Ombombo-Ovambo. Some of these waterholes may dry up in years drier than the average.

3.1.2. Western concentration

The western concentration lies in an area around Orupembe. This area lies for the greater part in the sub-desert region. The rhino here are isolated and this area used to be regarded as the safest for them in the Kaokoveld. During the last few years OvaHimba pastoralists moved in and settled in the area. This area lacks the dense vegetative cover and broken country of the other two concentration areas in the Kaokoveld — placing this rhino population in danger of being wiped out. Permanent waterholes used here are Orupembe, Sanittas, to the east across the mountains, Otjitambi (which may dry up in years drier than the average) and Okonjombo. To the west of Orupembe lies Ombarundu which may also dry up in dry years.

3.1.3. Southern concentration

This concentration lies in the middle stretch of the Hoarusib River between the waterholes Purros and Otjikondawironko. Other waterholes utilized within this area are Omanje, Kotjidenta, Maruru and Otjakakawa. All the latter waterholes are likely to dry up in years drier than the average.

3.2. The area within the Etosha National Park

3.2.1. Western portion

This distribution area extends from the Atlantic coast, between the Ugab and Hoanib Rivers, east to the 15th Longitude. The greater part of the remnant rhino population in South West Africa is found here, with the largest concentration in the vicinity of Otjovasandu. To the east it only occurs as far as the Okawao waterhole. Westward its distribution pattern closely follows the distribution of permanent waterholes and the broken escarpment area.

Permanent or semipermanent waterholes frequented by rhino in the Hoanib drainage system are the following:

Otjihuruotwatwa, Kowares, Omborongbonga, Renosterfontein, Otjovasandu, Kaross, Omborongbonga, Gaimaïss, Numas, Kamakams, Urukamses, Kamikukous, Chungab and Mudorib.

In the Unjab drainage system the following are frequented:

Agab, Zebraquelle, Nadas, Urunendes, Kaus, Dabeb, Gembokquelle. In the Koichab River Springbokwasser, and another small waterhole about ten miles higher up in the river are used.

3.2.2. Eastern portion

This portion includes the rest of Etosha National Park east of the 15th Longitude. In this area only a few rhino occur in isolated localities; they are the following: Grünwald, Gobaub and sometimes Okakuejo and Ombika.

3.3. Farms along the Huab and Ugab Rivers

3.3.1. Farms within the Odendaal area

Farms situated to the west of Grootberg along the Etosha National Park boundary are not fenced in and movements by rhino in and out of the E.N.P. on to these farms occur. In some localities rhino home ranges extend onto the farms. The farms referred to above are Palmwag 715, Juriesdraai 709, Rooiplaat 710, Wêreldsend 715, and Driefontein 716. Other farms in the Odendaal area where rhino occur are the following:

Naauwpoort 511, Rushof 509, Versteende Woud 485. The same group of rhino frequents these three farms. Rhino also occur on Twyfelfontein 534, and along the lower Ugab and sometimes wander into the Bantu reserves on the southern bank. During 1967 a rhino was reported from Uis Mine. Farms higher up along the Ugab River where rhino occur are the following:

Leeuwhoek 411, and Zebraskop 410. In the upper reaches of the Huab River rhino occur at Kakatswa — Onguati 236. The most southern locality where rhino occur in South West Africa is near the Erongo Mountains on the farms Erongorus 166, Omandumba-West, and on Libertas 69, near Omaruru. A rhino used to frequent Otjimbingwe, on the Swakop River but no record could be found of its whereabouts during the last two years.

3.3.2. Farms outside the Odendaal area

The Ugab and Huab Rivers cut through several mountain ranges on their way down towards the Atlantic ocean. Farms situated in these mountainous localities harbour a few rhino usually in the most inaccessible corners. Although movement does occur up and down the drainage lines, it is usually restricted due to wire fences.

In the upper reaches of the Ugab River, near Outjo, the following farms are visited by rhino:

Petersburg 151, Ombakaha 150, Follie 147, Iris 145, and Okaura 140. Lower down this river farms harbouring rhino are Minorca 71, Hankow 78, Landeck 77, and Saturn 103. In the upper reaches of the Huab River rhino frequent the following farms: Garubib 188, and Ehobib 209.

3.4. Elsewhere in South West Africa

There are no other localities in South West Africa where there are resident populations of rhino. Four black rhino were found in the Western Caprivi (Tinley *pers. com.* 1966). They are not residents and apparently wander along the Kwando River crossing the Angola and Botswana borders. Rhino sometimes cross the Angola border to enter the north-eastern sector of Ovamboland. Since the border has been fenced in they are very seldom recorded from this area.

IV. STATUS

4.1. Past status

Not one reference could be found in all the available literature giving an estimate of the total black rhinoceros population in South West Africa before 1900. After 1900 a few tentative estimates can be found in the literature. All these estimates, however, refer only to the northern regions. As previously mentioned no real census was ever carried out prior to 1966.

Even before the interference of man the larger part of the rhino population must have occurred in the northern areas of South West Africa; the most obvious reason for this being the higher rainfall in this area resulting in more food, cover and availability of water throughout the year. Although black rhinos once occurred as far south as the Orange River they never attained large numbers in these regions owing to the relatively lower carrying capacity for this species. The reasons why they were wiped out in the south are shortly the following:

- a) Low population numbers.
- b) Lack of sufficient vegetation cover over large areas.
- c) This area was the first in South West Africa to be invaded by men armed with firearms.

That there were still a few left in the southern regions during the first few years after 1900 can only be considered a miracle. J. A. Meyer (*pers. com.* 1968) relates that he heard from an old Witbooi Hottentot that after a skirmish with German troops during 1904 at Swartmodder (the present-day Keetmanshoop) they fled into the mountain ranges next to the Fish River. After a few days of nearly continuous moving they camped one night in a ravine. During the night a rhino charged through the camp causing them to think that they were being attacked by the German troops.

From various other sources (eg. Dr. Schertz and Mr. P. G. L. van Blerk. *pers. com.*) it was learned that during the twenties and thirties rhino horns were much valued in these southern areas for honing knives. Rhino horn was at that time already unobtainable and farmers who did possess pieces usually had obtained them years before. One may assume with some safety that the black rhinoceros in these southern regions was exterminated around the turn of the century

With regard to the regions to the north of the 23rd Latitude the following records were found in literature:

Hugo Hahn (1843) saw several rhino tracks crossing the road between Windhoek and Okahandja. Andersson shot one rhino in the Swakop River near Walvis Bay in 1850. During 1850 Rath came across a fair number in the Erongo Mountains. Galton and Andersson found a concentration of rhino east of Gobabis in 1851. Hartmann travelled through the Kaokoveld in 1900 and came across elephant herds with more than a 100 animals in a herd, large numbers of rhino, hippo (in the Kunene River), giraffe and antelope. In the northern Kaokoveld. "Dorslandtrekkers" from Humpata in Angola frequently crossed the Kunene River to poach elephant. J. van Molke (1943) compiled a comprehensive work on the hunting adventures of these "Dorslandtrekkers". Most of his information he gathered from the living members of this group of pioneers who moved back to South West Africa during 1928. The most concentrated hunting apparently took place during the years from 1898 to about 1908, under the leadership of Jan Harm Robertse. The hunting season lasted from about June until November every year, and although they concentrated on elephant, rhino were also shot as they received about R15 for each. During these ten years they shot between 150-200 rhino viz. about 15 to 20 per year. It seems therefore that even at this stage the largest concentration of black rhinoceros was in the Kaokoveld.

Steinhardt (1924) visited this area during 1915 to 1919 and recorded that rhinos were sporadically distributed in the southern Kaokoveld but were more numerous towards the Kunene River. Along the Kunene River there appeared to be one to every kilometer of river. (This is the area where rhino were hunted by Robertse and his men). In 1923 Manning estimated that there were 50 black rhinos in the Kaokoveld. In 1934 Shortridge estimated 40 to 80 animals between the lower Ugab and Kunene Rivers. Haerlen (1939) reports only that rhinos occur between the lower Ugab and Kunene but are everywhere rather scarce.

After the completion of the black rhinoceros census during 1966 information was obtained that rhinos were much more numerous up to 1948, especially between the lower Ugab and Hoanib Rivers, than implied by Manning and Shortridge. As already mentioned this could be attributed to the lack of roads, to there being no white inhabitants

apart from those of the police station at Kamanjab and also to the poor communications at the time, in this area.

According to farmers who originally settled to the north of the lower Ugab River in 1948, there were many rhinos in this area but they were not abundant. A farmer, looking back, said that in those years one of their first actions had been to hunt rhino systematically on their farms; the reason for this being that the Bantu who had to look after their herds and flocks refused to do so if they knew that there were rhinos on the farm. On two farms (Minorca 71, and Persianer 105) the remains of six skulls and/or skeletons were found.

On several more farms, especially in the Grootberg area, one or two remnants of skulls and/or skeletons were found. On several other farms skulls were known to be lying around but could not be found. Most of this information was obtained from neighbours or from tenants who recently leased the farms from the Administration of South West Africa after the original owners had moved away and information was only seldom volunteered by the owners themselves.

Taking into account -

- a) the 1966 figure of 90 (See par. 3.3.2 on Present status)
- b) the fact that rhinos are known to be slow breeders
- c) the undoubtedly large numbers shot on these newly settled farms from 1948 onwards, one can only reach the conclusion that the black rhinoceros must have been much more numerous at the time than the maximum of 80 estimated in 1934. A figure of about 200-250 for the whole of South West Africa would have been more accurate. Even so one wonders whether the black rhinoceros population ever reached very high numbers in South West Africa.

4.2. Present status

The figures mentioned below are those obtained during the black rhinoceros census carried out during 1966. No adjustments were made for any changes in number that must have occurred during the time lapse since the census was carried out.

Seven known births of black rhino calves in South West Africa were recorded afterwards. During 1967 and the first half of 1968 six rhinos were killed in the Kaokoveld and two were shot in the upper reaches of the Unjab River by unknown white poachers. Three other animals died during trials to translocate them to the Etosha National Park.

Black rhinos counted during this census numbered 90. These animals are distributed as follows:

- 25 North of the Hoanib River.

- 48 In the Etosha National Park (including those animals on farms adjoining the Park along the west in the Unjab drainage system, and 8 in the eastern portion of Etosha National Park — Starke and van der Westhuizen — pers. com.).
- 7 On other farms in the Odendaal area.
- 10 On the farms outside the Odendaal area.

Looking at these figures one might be lulled into a false sense of security. These figures should, however, be analysed against the background of the proposals made by the Odendaal Commission. The rhino population then shows the following distribution:

- 72% of the rhino population occurs in Bantu areas or proposed Bantu areas.
- 11% on privately owned farms.
- 17% within the proposed boundaries of the Etosha National Park.

V. ABSTRACT

Available information indicates that the black rhinoceros was formerly distributed from the Kunene River south to the Orange River, along the escarpment and eastwards past Gobabis. At present its distribution is limited to the northwestern corner of South West Africa. Apparently the black rhinoceros population never reached very high numbers in South West Africa. During 1966 there were only 90 animals left in the territory.

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VII. REFERENCES

- ALEXANDER, J. E.
 x 1838 *Expedition into Southern Africa*. Vol. I & II. Henry Colburn, London, 1838.
- ANDERSSON, C. J.
 x 1892 *Lake Ngami or Explorations and Discoveries during four year's wanderings in the wilds of South West Africa*. London. Hurst and Blackett.
- ANSELL, W. F. H.
 x 1959 The possibility of the former occurrence of white and black rhinoceros in the Barotse Protectorate. *Afr. Wild Life* 13: 336. 258
- BARNARD, A. M.
 x 1952 "The Kaokoveld Expedition. Some interesting observations". *Afr. Wild Life* 6: 76-79.
- ATTWELL, R. I. G.
 x 1948 Last strongholds of rhinoceros. *Afr. Wild Life* 2: No. 3: 35-52.
- BRAND, D. J.
 x 1964 Die verspreiding en getalsterkte van die witrenoster (*Ceratotherium simum* Burch.) en swartrenoster (*Diceros Bicornis* Linn) in Suidelike Afrika. *Zoön*. 2.
- DAUBERCIES, A.
 1960 Black Rhinoceros survey 1959 to 1960. *Proc. Int. Un. cons. Nat. Res.* 1960.
- DRUMMOND, W. H.
 x 1867 On the African Rhinoceroses. *Proc. Zool. Soc.* London. pp. 109-114. 476
- DRUMMOND, W. H.
 x 1875 *The Large Game and Natural History of South and South East Africa*. Edinburgh. Edmonston and Douglas.
- ELLERMAN, J. R. MORRISON-SCOTT, T. C. S. &
 x HAYMAN, R. W.
 1953 *Southern African Mammals 1758-1951: A reclassification*. London. Trustees of the British Museum.
- FISCHER, A.
 x 1914 "*Menschen und Tiere in Deutsch-Südwestafrika*". Stuttgart.
- FITZSIMMONS, F. W.
 x 1920 *The Natural History of South Africa*. London. Longmans Green and Co.
- FLOWER, W. H.
 x 1867 "On some Cranial and Dental Characters of the existing Species of Rhinoceros". *Proc. Zool. Soc.* London. Page 443-457. 1373
- FLOWER, W. H. & LYDEKKER, R.
 x 1891 "*An Introduction to the study of Mammals living and extinct*". London. Adam and Charles Black. 1053
- GALTON, F.
 x 1889 *Narrative of an Explorer in tropical South Africa*. Ward Lock and Co. London.
- GODDARD, J.
 x 1967 The Validity of censusing black rhinoceros populations from the air. *E. Afr. Wildlife J.* Vol. 5: 133-150.
- GRZIMEK, B.
 x 1958 Die gegenwärtige Zahl der Nashörner auf der Erde. *Säugetierk. Mitt.*, Bdvi, Heft. 3: 117.
- GRZIMEK, B.
 x 1961 Die gegenwärtige Zahl der Nashörner auf der Erde. *Säugetierk. Mitt.* 8: 21-25.
- GUGGISBERG, C.A.W.
 1963 *The Sanctuaries of the South*. *Africana* 5: 8-11.
- GUGGISBERG, C.A.W.
 x 1966 An appreciation of African Rhinoceroses. *Animal Kingdom*. 67(4): 115-121.
- GUGGISBERG, C.A.W.
 x 1966 *S.O.S. Rhino*. London. Andre Deutch Ltd. 29
- HAAGNER, A.
 x 1920 *South African Mammals*. A short manual for the use of Field Naturalists, sportsmen and Travellers. London. Witherby.

- HAERLEN, E. *et al*
1959 *Wild und Jagd in S.W.A. Andalusia*, 45.
- HAHN, H.
1845 *As in Vedder, H. 1937.*
- HARTMANN.
1900 *Meine Expedition 1900 ins nördliche Kaokoveld und 1901 durch das Amboland.* Dresden, Deutschen Kolonialgesellschaft.
- x HEDIGER, H.
1955 Ein seltenes Tiergarten-Ereignis: Geburt und Aufzucht eines Nashorns. *Umschau* 55: 307-308.
- HOPKINS, B.
1966 *Forest and Savanna.* London. Heinemann.
- HUXLEY, J.
1960 *The Conservation of wildlife and natural habitats in Central and East Africa.* Unesco.
- x JACKSON, F. J.
1894 "The Rhinoceros" in: *Badminton Library of Sports and Pastimes*, Big Game shooting, London. 1894.
- KIRBY, F. V.
x 1896 "In Haunts of Wild Game". London William Blackwood and Sons.
- KIRBY, F. V.
x 1899 *Sport in East Central Africa.* London. Rowland Ward. Ltd.
- LYDEKKER, R.
x 1911 On African Rhinoceros, Klipspringer and Gazelle. *Proceedings of the General Meetings for Scientific Business of the Zoological Society for London.* p.p. 953-962. 95^b-96^b.
- LYDEKKER, R.
x 1926 *The Game Animals of Africa.* London. Rowland Ward. Ltd.
- MacCALMAN, H. R. & GROBBELAAR, B. J.
1965 Preliminary report of Two Stone-working Ova-Tjimba Groups in the Northern Kaokoveld of South West Africa. *Cimbebasia* 5.
- x MATTENKLODT, W.
1928 *Verlorene Heimat.* Berlin.
- MATTENKLODT, W.
x 1950 *Afrikanische Jagden und Abenteuer.* München.
- MUELLER, Hauptmann.
1910 *Ein Erkundungsritt in das Kaukauveld.*
- NEUMANN, A. A.
x 1926 "Black Rhinoceros in Kenya" in Lydekker, *The Game Animals of Africa*, London.
- RIPLEY, S. D.
x 1958 Comments on the black and square-lipped rhinoceros spp. in *Africa Ecology* 39(1): 172-174.
- mc6 RITCHIE, A. T. A.
x 1963 The Black Rhinoceros (*Diceros bicornis* L) *E. Afr. Wildlife J.* Vol. 1: 54.
- ROBERTS, A.
x 1951 *The Mammals of South Africa.* Trustees "The Mammals of S. Afr." Book Fund.
- ROEDEL BERBER, F. A. & GRESCHOFF, V. I.
1964 *African Wildlife.* London. Constable.
- ROOSEVELT, T. & HELLER, E.
x 1922 *Life Histories of African game animals.* London. John Murray.
- ROOSEVELT, T.
x 1915 *Life Histories of African Game Animals* Vol. 2 London. John Murray.
- SCHINZ.
x 1845 "Synopsis Mammalium" *Synops. Mamm.*, 2: 335.
- SCLATER, W. L.
x 1900 *The Mammals of South Africa.* Vol. 1 pp. 303-308. 1274
London. Porter.
- SHORTRIDGE, G. C.
x 1954 *The Mammals of South West Africa.* Vol 1 pp. 412-424. London. William Heinemann Ltd.
- SIDNEY, J.
x 1965 The past and present distribution of some African ungulates. *Trans. Zool. Soc. London* 50: 61-87. 130
- SMITH, A.
1856 "Report of the Expedition for Exploring Central Africa from the Cape of Good Hope, June 23, 1854 under the Superintendence of Dr. A. Smith." *Rept. Exped. Expl. Central Afr.* 44(8). Cape Town.
- SMITH, A.
x 1857 "*Rhinoceros ketta* A. Smith (1857)". *Cat. S. Afr. Mus.* 7.
- STEINHARDT.
1922 *Ehombo.* J. Neumann, Neudamm.
- STEINHARDT.
x 1924 *Vom wahrhaften Riesen und seinem Reiche.* Alfter-Verlag. Hamburg.
- THENIUS, E.
x 1955 Zur Kenntnis der unter-pliozänen. *Diceros* Arten. *Ann. naturh. Mus. Wien.* 60: 202-211.
- TINDELL HOPWOOD, A.
1957 "Contributions to the study of some African Mammals. — II. The subspecies of the Black Rhinoceros, *Diceros bicornis* (Linnaeus), defined by the proportions of the skull". *Journ. Linn. Soc. — Zoology*, Vol. XL. pp. 447-457.
- THOMAS, O.
x 1911 *Proc. Zool. Soc. London.* 1014
- ULMER, F. A.
x 1941 The Living Rhinoceroses. *Fauna* 3(1): 3-10.
- VEDDER, H.
1958 *South West Africa in Early times.* Oxford University Press. London.
- VON MOLTKE, J.
1943 *Jagkonings.* Nasionale Pers. Bpk. Kaapstad.
- WILHELM, J. H.
x 1951 *Das Wild des Okavango und Caprivi S.W.A. Wissenschaftliche Gesellschaft,* Windhoek.