



**The alleged population reduction of the Southern  
White Rhinoceros (*Ceratotherium simum simum*)  
and the successful recovery<sup>1</sup>**

by

**Kees Rookmaaker**

<sup>1</sup> This paper is written on the occasion of the sixtieth birthday in 2000 of Gustav Kirk, the current editor of the *Säugetierkundliche Mitteilungen*.

Accepted 30 October 2000

Date of Publication 27 December 2000

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<sup>1</sup> This paper is written on the occasion of the sixtieth birthday in 2000 of Gustav Kirk, the current editor of the *Säugetierkundliche Mitteilungen*. When I was a university student, I spent much of my spare time in the “Artis Library” in Amsterdam, which has a wonderful collection of old and new books. Started as part of the activities of the zoological garden called “Artis” in Amsterdam, it is now maintained by the University of Amsterdam. Drs Florence Pieters has been the librarian during the years that I was able to browse and study in this library. I recall this here because one of the books which I found on the shelves there was a book on mammal conservation, published in German as *Säugetierschutz* in 1968 by Gustav Kirk. It is a small book, but with small print and packed with all kinds of information on mammals in need of protection. It helped me to understand more about nature conservation. In more recent years, I had some correspondence with Gustav Kirk when I was in charge of a small Rhino Museum newly established in South Africa. He was one of the very few persons who took the pains to look through my Bibliography of the Rhinoceros (1983) in search of missing items. As no bibliography is ever complete, such help must always be greatly appreciated. Despite the distance between South Africa and Europe, my collection of rhinoceros literature was enhanced through the labours of Mr Kirk. I am very sure that such indefatigable labour in aid of research by others has not been restricted to me, many others must have benefited from his efforts. Kirk’s devotion to the study of mammals and nature conservation in general also shows in the continued appearance of the *Säugetierkundliche Mitteilungen*, which I understand owes its current existence to his personal interest. I must be one of many who will wish Gustav Kirk many more active years in publishing and mammal studies.

### Summary

The historical evidence concerning the number of white rhinoceros in South Africa at the end of the 19th and the start of the 20th centuries is analysed. The figures are put into context with data on animal slaughter during the anti-tsetse campaign in Zululand and the fight of the new nature conservation movement to counter this. The low number of twenty remaining white rhinos around 1900 was politically motivated and not based on direct counts or surveys. The species experienced a period of low numbers, but it is suggested that this would not have been below 200 in Zululand and other parts of Southern Africa. The species was saved by far-sighted action by a small group of conservationists and a continued process of careful management and stringent protection.

### Introduction

It is a well-known story. The southern subspecies of the white rhinoceros, *Ceratotherium simum simum* (Burchell, 1817) once ranged over much of Southern African, but around 1900 it had been exterminated almost everywhere. Only a small pocket of some twenty animals remained in a reserve in Zululand. Due to stringent protection and careful management since that time, the species has recovered and now numbers over nine thousand individuals. This account is repeated throughout the literature on the rhinoceros, both popular and scientific, and it would be superfluous to provide a long list of references to support it.

When one carefully analyses the various publications, however, there are several variations upon this theme. Some authors state that the white rhinoceros reached its low point in 1900, others state that this event happened in 1895, or in 1910, or in 1920. The number of remaining rhinoceroses is also inconsistent, ranging from a few, to 20 or 50 or even a hundred. Personally, when studying the various sources on the distribution and status of the rhinoceros in Southern Africa in the early days, I have wondered why no mention is made of possible specimens surviving around 1900 in present-day Zimbabwe, Botswana or Mozambique. Also, a few authors analysing the data have suggested that the actual number remaining cannot have been as low as twenty, at least a few hundred must have lived throughout this period when the white rhinoceros faced extermination, e.g. Foster (1960), Player & Feely (1960), Skinner & Smithers (1990).

The aim of the present investigation is to analyse the historical data to discover if any white rhinoceroses remained in areas outside Zululand at the start of the twentieth century, what the actual number of rhinos might have been in Zululand and when the low point was actually reached. Whatever the outcome of this study, the white rhinoceros represents one of the greatest stories of success of the conservation movement. Without the timely and far-sighted protection accorded to the white rhinoceros in that small area in Zululand, the species would long ago have entered the list of mammals exterminated by the hands of men.

### Historical Background

William John Burchell was the first to recognize the animal now known as the white or square-lipped rhinoceros, after observing it on 19 October 1812 near Chué Springs, about 50 km north of present-day Kuruman in South Africa. When Andrew Smith reached the same district on 13 March 1835, he expressed his disappointment, because the rhinoceros had entirely left the area (Smith 1939: 311). During the first half of the nineteenth century, rhinoceroses, both black (*Diceros bicornis* (L., 1758)) and white, were found in the regions of the Magaliesberg and Pilanesberg, as witnessed by Andrew Smith, Cornwallis Harris, Johan Wahlberg, and Adulphe Delegorgue. The rhinoceros was abundant. Harris, for instance, travelling in 1836, saw black rhinoceros in fives and sixes; during a single day upwards of sixty were counted (Harris 1841: 82). The white rhinoceros was equally numerous, and on one occasion travelling from the banks of the Limpopo to a hill half a mile distant, 22 were seen (Harris 1841: 99). In the years that followed, hunters shifted their search for large animals to the regions of eastern Botswana near the Limpopo River, where many rhinoceroses were found by Gordon Cumming in the 1840's and by James Chapman in the 1860's. The animals were disappearing from their original haunts under the pressure of increased use of firearms by visitors and locals alike.

When Frederick C. Selous first entered South Africa in 1871, he did not linger in the southern areas now within the boundaries of South Africa. He directed his attention to more northern places, around the Chobe River and in the present Zimbabwe. He and his contemporaries were not particularly interested in hunting rhinoceroses, instead they searched for areas where the far more valuable elephants were plentiful. There is nothing to indicate that the rhinoceros was completely wiped out in the areas where they had been common in the 1840's, but the impression certainly is that they were becoming scarce and nearing extinction.

### The influence of writings by Selous

Selous is an important figure, not just for his adventures during his African hunting expeditions, but mainly for the popularity of his writings. Two books stand out: *A Hunter's Wanderings in Africa* (1881) and *Travel and Adventure in South-East Africa* (1893). His opinion was authoritative and far more influential in European circles than we imagine. One example may illustrate this. Anybody reading the tales of African travellers published during the nineteenth century is confronted with a plethora of rhinoceros species. Names like Borele, Keitloa, Kubaoba, Mohoohoo don't mean much to us nowadays, but they were often used in the hunting circles of those days. They even found their way into a number of scientific publications, like the authoritative classification of rhinoceroses by the curator of the British Museum, John Edward Gray (1868). Drummond (1876) surely took this obsession with different species to its pinnacle listing and naming no less than five rhinoceroses in Southern Africa, all more or less differentiated by shape and length of horns: three types of "black" rhinoceros and two types of "white" rhinoceros. Selous thought different: "For my part, I am fully persuaded that there are only two

species in South Africa" (1881a: 725). People were tired of all the speculation and Selous was the authority to be quoted when there was any opposition. Three of Drummond's varieties for a long time disappeared from the scene, which left just the black and white species, now still accepted as *Diceros bicornis* and *Ceratotherium simum*.

### Selous' pessimism

While Selous enjoyed hunting himself, he often lamented the reduction of wildlife. When writing about the rhinoceros in 1881, he made himself quite clear. Twenty years earlier, he said, the white rhinoceros had obviously been numerous, judging from the writing of Andersson (1856) and Chapman (1868), but now "it must be almost extinct in that portion of the country" (Selous 1881b). He also quoted his own experience: the animal had been quite a common sight on the River Chobe in 1874; only tracks were seen in 1877 and not even those in 1879. In his book of 1893, he was even more pessimistic. Although he found reasonable numbers of black rhinos on the Zambezi River, the white rhino "is upon the verge of extinction" (1893: 58). In 1882, Selous shot a white rhinoceros in the Midlands of Zimbabwe, about halfway between Harare and Bulawayo, but upon revisiting the region a few years later, he only saw tracks: "Some few white rhinoceroses no doubt still survive, but it is not too much to say that long before the close of the century the white rhinoceros will have vanished from the face of the earth" (1893: 158).

Two white rhinoceroses were shot by R. T. Coryndon in northern Zimbabwe in 1892, but after that, Selous's prediction seems to have quickly become a reality. Kirby (1896: 9), writing about the south-east of Africa, confirmed that the square-mouthed rhinoceros was altogether extinct, although, incongruously, he reported seeing a cow and calf on the Sabi River in 1895. Whatever the actual situation in the remoter regions of Southern Africa, the European public was convinced that the white rhinoceros was no more, or would be extinct very soon.

### Discovery of Northern white rhinoceros

Two events at the turn of the century adjusted this gloomy picture of harsh realism painted by Selous. First, it was realized that the animal was still present in Zululand, the northern part of the province of KwaZulu-Natal (Natal) of south-eastern South Africa. The second event was the discovery of a large population of the white rhinoceros in central parts of Africa. That is a story which will need to be told elsewhere in more detail. For several years, rumours had been trickling in from Central Africa about the existence of a rhinoceros resembling the white species, but in 1900 Major A.S.T. Gibbons returned to England with a skull of an animal killed in the Lado Enclave of Sudan. In 1911, Colonel Theodore Roosevelt mounted a major expedition to Rhino Camp in Uganda to secure specimens for the National Museum in Washington. The members of the expedition found the white rhinoceros locally abundant, often able to observe at least ten animals in the course of a day (Heller 1913). Fears of the imminent extinction of the white

rhinoceros subsided, even though the situation in Southern Africa was accepted to be quite bad.

#### **A Hunting expedition in 1894**

Rhinoceroses, both black and white, had first been seen near the Umfolozi Rivers in Zululand by Adulphe Delegorgue in 1847, who secured a specimen of the white rhinoceros for the natural history museum in Paris. As related by Player (1972: 33), in 1894 a shooting party organized by C.R. Varndell killed six white rhinos at the junction of the Black and White Umfolozi Rivers. This caused great concern among the budding fraternity of game conservationists in Natal. In February 1895, C. D. Guise wrote a letter to the Resident Commissioner of Zululand, M. Clark, suggesting that no further permits should be issued for hunting white rhinoceros and that a game reserve should be proclaimed for their protection. When the letter reached Sir Walter Hely-Hutchinson, the Governor of Zululand residing in Pietermaritzburg, he started procedures to proclaim nature reserves in the areas of Hluhluwe, Umfolozi, Umdhlotche and St. Lucia. There was very little human settlement in the region due to the prevalence of tsetse flies.

The Umfolozi Junction Reserve was in fact proclaimed by a notice in the Natal Government Gazette of 30 April 1895. In 1911, Frederick Vaughan Kirby was appointed as the first Game Conservator of Zululand (from which post he retired in 1928). However, during the years that followed, a growing number of farmers wanting to settle in Zululand. As Pringle (1970) showed in his well-written history of game conservation in South Africa, Zululand became the focus of an intensive anti-tsetse (nagana) campaign in order to provide safe grazing grounds for domestic stock. In 1916, the government decided to exterminate all game outside reserves and in August 1917 the Operation Game Extermination lifted all restrictions, allowing all animals to be shot without permit, except rhinoceros, hippopotamus and nyala. The resulting slaughter was enormous. Still tsetse was not wiped out. The farmers who were looking for livelihood were opposed by a small group of nature conservationists. The white rhinoceros, unique and exterminated elsewhere in Southern Africa, was a major weapon in the hands of the conservation movement. Surely nobody could allow this species to be hunted to extinction, however noble the cause might be, and the animals needed safe areas to continue living. From 1912, the white rhinoceros was included in Schedule C, or Royal Game, which meant that they could only be captured or killed under permit from the Administrator, which could only be issued for breeding, scientific experiments, or museum specimens. In August 1920 there was a conference in Pietermaritzburg, where the demands of local farmers were met, leading to the deproclamation of the Umfolozi Reserve. The white rhinoceros, however, remained protected as Royal Game. The reserve was re-established in 1930.

### Estimating White Rhino numbers in Zululand

The estimates of numbers of the white rhinoceros as found in the literature are listed in Table 1. Until the first decades of the twentieth century, the white rhinoceros mainly occurred between the Black and White Umfolozi Rivers, an area which is now within the boundaries of the Umfolozi Game Reserve, as well as in the immediate vicinity. Its occurrence in Hluhluwe Game Reserve seems to stem from a later date. It is quite interesting to study the figures given in Table 1 in some detail, which leads to two observations. In the first place, it is evident that most estimates were provided by people, like Selous, who certainly never had an opportunity to visit the area in Zululand where the rhinoceros was supposed to live. Secondly, the numbers given have remained relatively consistent during the entire period from 1899 to 1929, ranging from a few to about 50.

Visits to the Umfolozi Reserve were rare, even by the authorities in charge, indeed for many years it was closed to the public entirely. C.R. Saunders, the Chief Magistrate and Civil Commissioner of Zululand, visited in 1902 and saw many tracks, but failed to encounter the animals themselves. He estimated their number at about ten. Kirby went to Umfolozi with some regularity in his capacity of Game Conservator of Zululand. In a paper published in 1917, he recognized that it was very difficult to compute the number of rhinoceros present inside and outside the reserve. He guessed that there would be 30-40 adults, plus calves, plus an uncertain number outside the reserve's boundary. This should mean that there were certainly over 50 white rhinoceroses alive in that part of Zululand. It appears that in 1922 Kirby gave the revised number of twenty white rhinoceros, and it is this latter figure that has been regularly quoted in later literature on the subject (Vincent & Page 1983: 79). There is an unexpected response to this figure of 20, given by Maqubu Mtombela, who was employed as a game guard in Umfolozi from 1918. According to Foster (1960), who interviewed Maqubu in the late 1950's, Maqubu laughed about that number of rhinos and said that Kirby was hiding them. "Maqubu maintained that there were far more white rhino in Umfolozi than there are at present. The big decline in numbers came in the drought of 1932" (Foster 1960: 24).

Wildlife authorities in the USA, approached by members of the nature conservation bodies in Natal, showed great concern for the continued existence of the rhinoceros in Zululand, as is clear from the paper published by Hornaday in New York in 1924. In 1927, Dr Herbert Lang, Associate Curator of Mammals of the American Museum of Natural History in New York, came to South Africa and spoke on many occasions on behalf of the conservation movement there (Pringle 1970: 127). We should interpret this in the light of the continuing nagana campaign. In 1929, the official war against wildlife continued unabated. Between May 1929 and November 1930, 26,162 wild animals were killed in the buffer zone around Umfolozi and 377 inside the reserve - but that number does not include animals shot by private hunters under permit (Pringle 1970: 132). Although possibly the rhinoceros was by and large spared, one may wonder if not a few were accidentally included in the slaughter.

Although the chronology is not quite clear, we may follow Pringle's (1970: 135) account about the various estimates of white rhinoceros in Umfolozi at the end of the 1920's, based on internal reports and newspaper cuttings unavailable to me. Herbert Lang attempted a first count of the white rhinoceros and walked from end to end of the reserve, from dawn until night, and concluded that the only positive way of counting is to see each animal. In 1928, Kirby mentioned 28 animals, ranger Wehrner counted 150. Requested by the Game Advisory Committee, Lang spent another three weeks in the reserve, presumably in November 1929, and reported 100 animals inside and 38 outside the reserve. R.H.T.P. Harris, who was in charge of tsetse fly research, in 1929 estimated the number as 120 (Foster 1960). Despite the confusion, it is clear that around 1930, there were said to be between 28 and 150 animals within the boundaries of the Umfolozi Reserve and an unknown number outside.

### White Rhino shot in 1920

It was common practise in early years to shoot supposedly single remaining individuals of a certain species or populations to preserve the remains for prosperity. While personally I would not want to go down in history as the person shooting the last one of any species, it would be scientifically acceptable, as long as the circumstances are well researched and a renowned institution is sought to preserve the remains. We may remember that Vernay shot the last Sumatran rhinoceros (*Dicerorhinus sumatrensis*) in Burma in 1930, Hazewinkel the last Javan rhinoceros (*Rhinoceros sondaicus*) in Java outside Ujung Kulon in 1934. Today, we would rather capture the animals for breeding in captivity. White rhinoceroses were rare in natural history collections at the end of the nineteenth century (Renshaw 1904). Hence, it was probably in an attempt to preserve at least a few specimens that the authorities in Natal still gave out licences to kill them. The law still allowed shooting of Royal Game for museum specimens, despite the low estimates of white rhinoceros numbers.

In 1920, Kirby himself, while fighting for the preservation of the white rhinoceros on many fronts, was authorized to secure a male rhinoceros for museum purposes (Kirby 1920b: 8). He in fact shot two specimens, probably on different occasions. They were preserved in the Natal Museum in Pietermaritzburg (Kirby 1920b, figure on p. 4).

In 1919, the "Oakland Museum Expedition" under the leadership of Henry A. "Del" Snow came to South Africa and for the next two years collected numerous specimens in both South and East Africa (Waiczis 1983). Besides, the members of the expedition exposed some 125,000 feet of motion picture film and over 400 still-photographs. In 1922, Snow produced from this material a motion picture entitled "Hunting Big Game in Africa with Gun and Camera" (Anonymous 1923). In September or October 1920 Snow entered Zululand and camped in a place between the White and Black Umfolozi. He had successfully applied for a license in 1920 to shoot three white rhinos. Assisted by game ranger E.D. Lightening (Kirby 1920b: 12), he managed this without too much problem, despite being charged by a wounded rhino and losing a valuable



camera. According to Waiczis' list of "H.A. Snow's African Bag", the expedition returned with three specimens of white rhinoceros to form a family group, and four examples of the black rhino, which were shot in 1921 in Kenya. Although Snow represented an official museum collection, other American curators like W.T. Hornaday in New York expressed disgust of the slaughter of game by the "game-butcher" Snow (Hornaday 1924: 12).

While the rhinoceroses probably were exhibited for several years in the "Snow Museum of Natural History", they are no longer present in the Oakland Museum of California. It is assumed that they were auctioned off along with the majority of the African and Arctic collections when the Snow Museum closed in 1967 (C. Rissanen, Registrar, pers. comm. July 1998). The Oakland Museum still has a mounted baby white rhinoceros, referred to as an "embryo", mounted by Melvin Johansen (figure 1).

### **Existence of white rhinoceros outside Zululand**

The numbers of white rhinoceros in the early twentieth century presented so far all refer to Umfolozi, or to Zululand in general. Nothing is said about the occurrence of the species in other regions of Southern Africa, like Zimbabwe, Botswana, Namibia, Angola or Mozambique. The few estimates are presented in Table 2. The former presence of the white rhinoceros in Namibia and South Angola is still a matter of debate, not relevant to our present investigation. Suffice it to say that it is unlikely that they still existed after 1900. The stated occurrence in Zambia, north of the Zambezi River, must be a mistake, as the species is unknown there (Ansell 1957). The sources about Botswana, Mozambique and Zimbabwe for the early years of the twentieth century are few and far between, but we may notice that even Selous, who often wrote about the imminent danger of extinction of the rhinoceros in those countries, accepted the possibility that a few still lived there in 1914. Rumours continued at least until 1920. For instance, Cooke (1964) related how "the late Mr. Macdougall, founder of the Triangle Sugar Estates, told me that when he entered Southern Rhodesia, circa 1920, he saw three White Rhinoceros near the junction of the Sabi and Lundi Rivers. He also told me that two of these had been shot soon afterwards, but he had lost track of the third one." Although the evidence is insufficient, it seems quite unlikely that the white rhinoceros was totally extinct in Botswana, Zimbabwe and Mozambique in 1920, let alone in 1900. On the other hand, it is sadly clear that the white rhinoceros did in fact become extinct in these countries sometimes during the twentieth century, which means that their genes have not contributed to the current populations. The white rhinoceroses now existing outside Zululand all originate from the population in that area.

### **A story of success**

We can now put the various pieces of evidence in perspective. The first question we wanted to answer was to which number the white rhinoceros reduced. From the figures in Tables 1 and 2, it is obvious that the estimates of 20 or 30 animals were unrealistic. Even if this would

apply to Umfolozi, this figure does not take into account the remnant populations in other regions. It is also evident that none of the so-called estimates were based on actual counts or even on first-hand information. It must be noted that Kirby (1917) noted 30-40 adult animals. He never told us about the number of calves (possibly ten?) nor those living outside the reserve, which is a totally unknown quantity. Other sources are equally vague. The numbers were said to be low more for political reasons than in attempt to reveal the true status. This was neatly summarized by Skinner & Smithers (1990: 567): "By the end of the 19th century the southern white rhinoceros was reduced to only one population of about 50 to 100 in the southern part of the area which now forms the Hluhluwe-Umfolozi Game Reserve in Natal. It appears the population estimate of 20 for this time was a deliberate under-estimate to convince the politicians of the urgency of the situation."

The year in which the population reached its minimum size is also quite uncertain. From 1899 to 1927, the numbers found in publications hardly changed. Then suddenly in 1929 there would have been a minimum of 150 white rhinoceroses. This in itself is quite impossible, there must have been at least a bit of change, positive or negative, during the period. In the absence of data, we may never know the exact truth.

It is my suggestion, based on the evidence, that there must have been at least 200 white rhinoceroses in the Umfolozi area in 1900, and perhaps another 50 elsewhere in South Africa, Zimbabwe, Mozambique and Botswana. The species was exterminated in all areas outside Zululand. In Zululand the number of white rhinoceros must have remained reasonably stable with a minimum of 200 throughout this period.

Although the white rhinoceros may never have experienced the total population reduction at the start of the twentieth century, as suggested in much of the literature, the species continues to show how effective conservation can be. There are now over 9000 white rhinos of the southern subspecies in the world: in South Africa, both in national parks and on private land, in other African countries, and in zoos and circuses in most corners of the globe (Emslie & Brooks 1999). This is due to stringent protection, law enforcement, personal devotion and far-sighted management on the part of the relevant authorities in South Africa.

### **Acknowledgments**

The history of the white rhinoceroses collected by Henry Snow in Zululand was pieced together with the help of Carolyn Rissanen, Registrar, Oakland Museum of California, whose help is gratefully acknowledged.

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**Table 1. Estimates of numbers of white rhinoceros in South Africa, 1895-1948**

Date	Region	Numbers	Reference
Contemporary Estimates			
1899	Zululand	4	Renshaw 1904
1900	Zululand	a few	W.L.Sclater 1900, I: 302
1901	Zululand	a few	Selous 1901: 185
1902 -Dec	Zululand	2 escaped and were killed	C.R. Saunders in Newton 1903; Renshaw 1904
1903	Umfolozi	about 15	Magistrate of Mahlabatini, in Vincent & Page 1983: 78
1903	Zululand	traces abundant in reserve, animal not seen during short visit. about 10	C.R. Saunders, in Newton 1903
1909	Zululand	12, including 2-3 calves	Selous 1914: 15
1911	Zululand	a few	Schouteden 1911
1912	Zululand	some 15	Stevenson Hamilton 1912: 67
1913	Zululand	some 10 individuals	Heller 1913: 36
1916	Zululand	between 30 and 40 adult animals resident in the Reserve, as well as a useful number of calves.	Kirby in Pringle 1970: 124
1917	Umfolozi GR	about 30-40 plus a useful number of calves	Kirby 1917
1917	Zululand	about 12	Millais 1919: 154
1920	Now very scarce, only found in Zululand (where it is even uncommon and where a special reserve exists for its preservation) and parts of Rhodesia.		Haagner 1920: 125
1920	Zululand	about 20 in the game reserves	Fitzsimons 1920: 207
1920	Zululand	about 20	Kirby 1920a
1920	Zululand	4 shot by Henry A. Snow, out of population of 28	Hornaday 1924: 12; Kirby 1920b: 11
1921	Zululand	extinct in the wild, a few semi-wild under Govt protection	Dollman 1921
1923	Umfolozi	a few	Lang 1923: 156, caption to figure 1

1923	Umfoloji	certainly not more than 16, and probably not more than 12 in the reserve. Two were shot by a young man	J. Stevenson Hamilton, letter of 12 Oct 1923, published in Hornaday 1924; cf. Lang 1924: 174
1926	South Africa	20	Hobley 1926
1928	Umfoloji	28	Kirby, Report of Game Conservator, in Pringle 1970: 135
1929 -Nov	Zululand	Official count 120, maybe 150	H. Lang in Shortridge 1934: 426
1930 -Nov	Zululand	about 50	Ernest Warren in Shortridge 1934: 426
1930	Umfoloji	Count: 120 in the reserve plus 30 on adjacent ground	Skinner & Smithers 1990: 567
1932	Umfoloji	220 counted	Kluge 1950
1934	Umfoloji GR	134 in the reserve and 72 outside	Capt. H.B. Potter in Vincent & Page 1983: 79
1936	Umfoloji GR	226 excluding calves	Kluge 1950
1938	Umfoloji GR	estimated at 300	H.B. Potter in Vincent & Page 1983: 79
1948	Umfoloji GR	554-557 counted	Kluge 1950
Recent Estimates			
1895	Zululand	20	Emslie & Adcock 1997
1900	Umfoloji	10-20, only population	Brooks 1999: 37
1900	Zululand	20	Emslie & Brooks 1999: 10
1900	Zululand	less than 100	P.M.Brooks in Mundy 1984:7
1920	Zululand	it can be assumed that there were between 150 and 200	Vincent & Page 1983: 79

**Table 2. Estimates of Numbers of white rhinoceros in Zambia, Zimbabwe, Botswana and Mozambique. 1895 - 1930**

Date	Region	Estimate	Reference
1896	Matamiri Bush, south bank of Sabi River	Has been favourite resort, but they have become almost extinct now even there. In 1895, I came upon a cow and big calf, but they are decidedly rare.	Kirby 1896: 9
1899	Botswana, Lake Ngami	7, of which 3 left in 1904	Dr Gunning (Pretoria) in Renshaw 1904
1901	N. Mashonaland	A few still exist	Selous 1901: 185
1903	Botswana, Lake Ngami	4	Sidney 1965: 59
1909	Mashonaland	A few may still linger in the neighbourhood of the Angwa River in Northern Mashonaland	Selous 1914: 15
1909	Mashonaland	Not more than a dozen wild specimens, in one corner of N.E. Mashonaland and in Umfolozi	Bryden 1909: 60
1920	Zimbabwe	I understand it is now entirely extinct in Rhodesia	Kirby 1920a: 224
1912	Zimbabwe	I heard, quite lately, that one or two had been seen in southern Rhodesia	Stevenson Hamilton 1912: 67
1920	Zimbabwe	one or two in remoter parts	Fitzimons 1920: 207
1923	Zambia, Tara	there are quite a few at present living not far from here, just how many it is impossible to say	Hubbard 1923: 229 [unlikely, says Lang 1924: 175]
1931	Zimbabwe	7 still exist on the Portuguese-Nuenetsi border	J.F. Fleming, 12 Jan 1931, in Shortridge 1934: 426



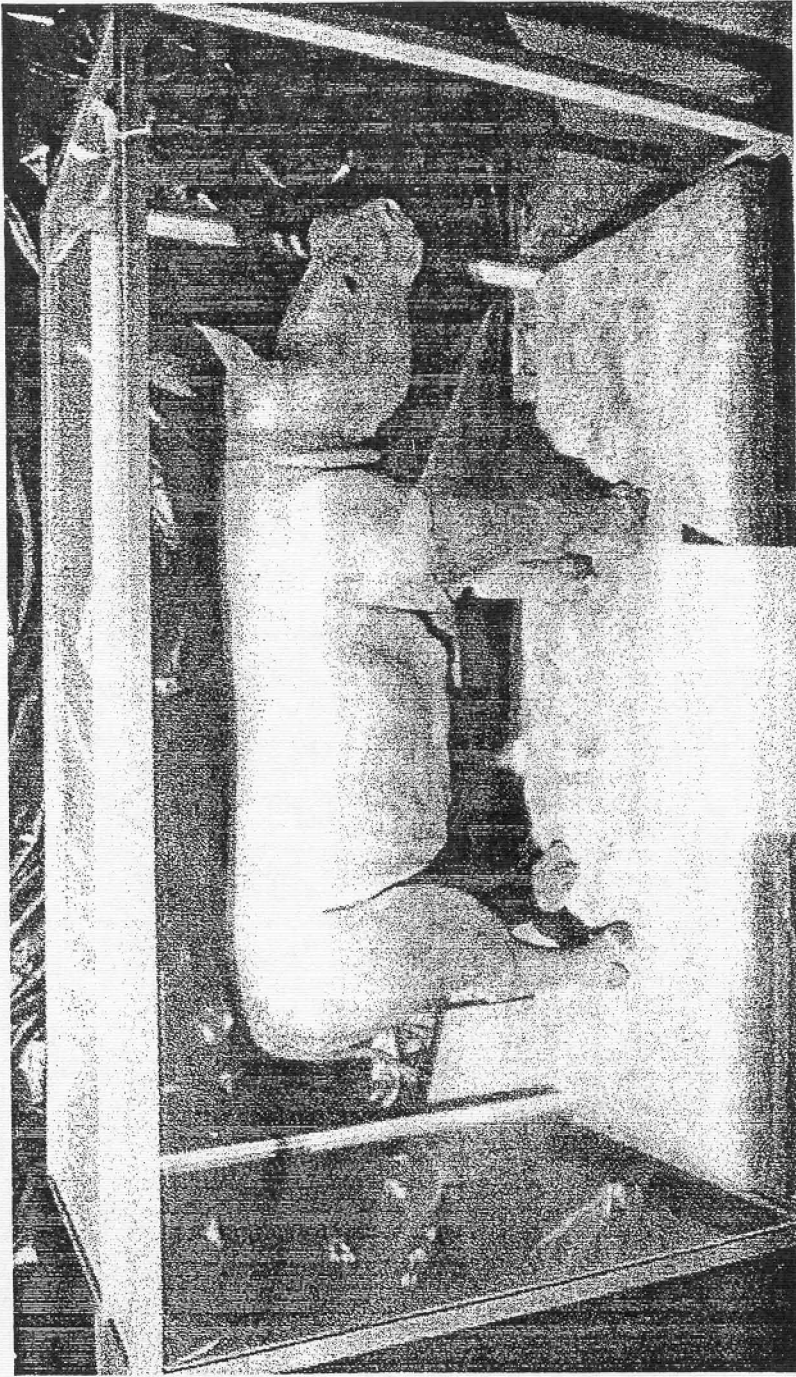


Figure 1. A young white rhinoceros at the Oakland Museum of California. It formerly was part of the family group shot by H.A. Snow in Umfolozi, South Africa in 1920. All the other specimens are no longer recognized. (Photo: Oakland Museum of California.)