

OPERATION RHODESIAN RHINO

The Translocation of Square-lipped Rhinoceroses from the Umfolozi Game Reserve in the Republic of South Africa to the Parks and Nature Reserves of Rhodesia.

by

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1. INTRODUCTION

Operation Rhino, first started in the year 1961 and under the field direction of Mr. Ian Player and Dr. Tony Harthoorn, had as its objectives three main foci :

- (a) to re-establish breeding nuclei of square-lipped rhinos in Southern Africa ;
- (b) to export selected specimens to zoos overseas ; and
- (c) to establish numbers varying from a pair to six pairs in proclaimed nature reserves, private nature reserves and zoos within the Republic.

Operation Rhodesian Rhino was the second phase of a series of preplanned operations to re-establish the Southern Square-lipped Rhinoceros in the habitats from which it had been obliterated in Southern Africa during the nineteenth century. The last square-lipped rhino disappeared from Rhodesia in the year 1896. In 1963 six boma-trained rhinos were introduced as a first step towards their re-establishment.

The main objective of the latest operation was to establish a nucleus breeding number of rhinos in the Wankie National Park, and to place lesser numbers in the Kyle Dam, Victoria Falls and McIlwaine Parks.

The first major translocation of field-caught rhinos was the successful Operation Kruger Park in which ninety-seven rhinos were captured, crated and driven 400 miles to a release point in that park. This operation was carried out by officials of the Natal Parks Board and the National Parks Board of Trustees in 1963 and 1964.

The main source of supply for these operations were the displaced rhinos living in what had formerly been unallocated state owned land adjoining the Umfolozi Game Reserve. With the 1962 proclamation of this area as part Game Reserve and part Bantu Reserve it became necessary to place a 26 mile cable fence straight through an old rhino habitat. The rhinos fenced out of the reserve were placed in a precarious position by the intention of the Bantu Affairs Department to develop the area. There was considerable pressure to have them destroyed. Within

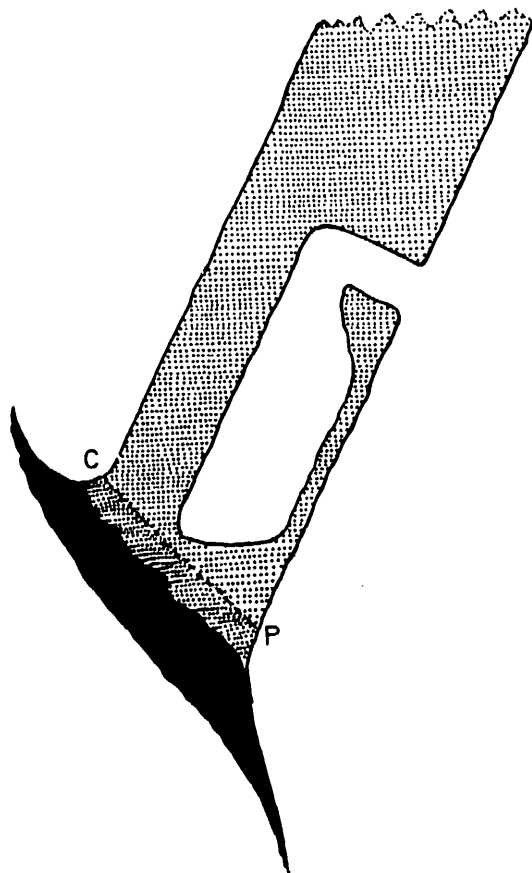


FIGURE 1

Scaled diagrammatic section of nest chamber (x — 1/16).

The line of dots CP below the chamber is representative of the circumferential pecking line made by the barbets.

A honeyguide, *Indicator indicator*, showed repeated interest in the breeding activities of the barbets but did not succeed in parasitising the brood.

The whole family of eight birds (five young and three adults) continued to use the nest chamber for roosting after the young birds had fledged.

10. REFERENCE

Clancey, P. A., 1964. The Birds of Natal and Zululand. Edinburgh.

the Game Reserve was already an adequate population plus considerable competition from other species of game.

While the desire to move the rhinos was foremost in the hearts of conservationists, the money to do it with was almost totally lacking. The Natal Parks Board turned to the people of the Republic of South Africa and Rhodesia and made an appeal for help. The response was immediate and overwhelming. People from all walks of life, businessmen, farmers and school children all rallied with donations from R1 to a thousand rand, and in doing so made the operation financially possible. A Port Elizabeth motor firm and a local petrol company came forth with donations of vehicles and fuel.

Prior to the call for help, the Natal Parks Board had undertaken three experimental translocations of field-caught drugged rhinos from the Umfolozi Game Reserve to Rhodesia. The first operation had been successful and confirmed by a cryptic telegraphic message to Umfolozi by the three-man team, Ranger Ken Rochat (co-author), Ranger John Tinley and Veterinary Surgeon Dr. Wallach. The message read simply "Success stop 26 hours minus horn"! The two remaining experimental journeys to ensure that the rhinos would survive transit of distances up to 1000 miles in prolonged periods up to 40 hours were successful. It was then possible to start the main operation and the vehicles, fuel and finance were available.

2. THE CAPTURE AREA

The rhino-proof cable fence along the Umfolozi Game Reserve's southern boundary formed the northern limit of the capture area, fences of European farms formed the southern boundary, and a heavily populated Bantu area to east and west sandwiched the rhinos into a long narrow block, varying in width from one mile in the east to five miles in the west. The main concentration of rhinos occurred in the western section. Vegetation along the whole (area) varied from open grassland to dense bush. Numerous pans and wallows were scattered throughout the whole area. Rhinos favoured the open grassland in the early mornings and late afternoons. During the midday heat they retreated to shady areas usually on ridges to catch the breezes. In cold weather they tended to retreat to the protection of the denser bush.

Towards the end of the capture operation these habits had changed, due to the continual harassment, and the rhinos tended to stay in or close to thick bush, coming out only at night to graze the open spaces.

3. METHOD OF CAPTURE

(a) Drugs

The principal immobilising drug used was M99, a highly potent morphine derivative. Scopolamine (Hyoscine) Hydrobromide and Acetylpromazine (Acepromazine) were used in conjunction with the M99.

The dosage rate per rhino over 3,000 lbs. weight was 2 mgs. M99, 100 mgs. Scopolamine and 4 mgs. Acetylpromazine. For rhino between 1,000 lbs. and 3,000 lbs. the dosage rate was halved.

The time lapse between dart syringe impact to immobilisation varied from 8 to 10 minutes.

Nalorphine (Lethidrone) was used as the antidote for rousing and crating the rhino. The Lethidrone was injected intravenously into an ear at the rate of 500 mgs. per adult and 250 mgs. per juvenile respectively. This dosage rate naturally varied depending on the drugged state of the animal.

Antibiotics were administered intramuscularly at the rate of 5 grms. Streptomycin in solution before transit. During the latter stages of the operation this was altered to 10 c.c. Pen/Strep mixture for juveniles and 20 c.c. for adults (equivalent to 5 grms. Streptomycin and 5 million units Penicillin.) Superficial and dart wounds were treated with Pen/Strep ointment. This ointment was also applied to eye corneas as a protection against dehydration and dust.

(b) Capture Equipment

GUNS:

The Palmer CO₂ gas gun and a powder charge gun were used for projecting the dart.

2 c.c. aluminium dart syringes capped with 1½" barbed needles and nylon flights proved most satisfactory and reliable.

Although the power-charge gun was very accurate up to distances of 60 yards it still proved a lengthy process stalking and selecting the animal to be captured. Winds tended to cause deflection and further harass the gunman. Because of the need for as protracted a capture period as possible and because disturbance was not an important consideration a Land Rover was used to dart from. With this vehicle in the hands of a competent bush driver the gunman was able to use the gas gun on the mobile rhino at a range of 10 to 20 yards, thus ensuring success. In this manner two and sometimes three rhinos could be darted in a few minutes.

CAPTURE TECHNIQUE:

Scouting was usually carried out by the mounted men at first light but if they failed to locate the rhino they would radio back at a pre-determined time. The Land Rover would then scout further afield and the horsemen would follow on.

Once the rhino had been darted the Land Rover halted and two African game guards, equipped with walkie talkies and suitably clad in protective clothing and crash helmets followed after on their horses.

In the latter stages of the operation when the rhino retreated to heavy bush after darting they often had to be followed on foot, the game guard carrying with him a 50 foot length of nylon rope for securing the drugged animal to a tree.

Once the rhino was securely tied by one hindleg the guards would call for the heavy transport.

A 5 ton truck, specially designed for the rugged work and fitted with a winch and hydraulic hoist was then brought up. The crate was unloaded directly in front of the prostrate rhino and after antidote administration the animal was pulled and guided into the crate, a stout rope having initially been tied around its head and passed through a hole in the front door of the crate. As the rhino responded, five or six men pulled on the other end. Getting the crate to the rhino was frequently a gruelling job, for in the latter stages the rhinos ran for thick cover when they heard the capture Land Rover approaching and it required reckless driving to get them darted before they reached the sanctuary of the dense bush. More often than not it was necessary to hack a path through dense undergrowth to accommodate the heavy transport, whilst bridging dongas and streams was a regular task. When it was impossible to bring the crate to the rhino the rhino would be walked out. A rope was attached to the head and manned by five or six men, while a control rope was tied to a hindleg for braking purposes. Antidote in cautious quantities was then administered and the rhino invariably staggered to a point where loading was possible. In the darting of cows with calves the calf usually stayed close to its immobilised mother and could also be captured.

Having brought rhino and crate together, the crate—now weighing some 6,000 lbs.—was winched up onto the truck deck on specially designed steel rollers. The truck then sped off to the transfer point where the crate was transferred to the transit truck. An average of 3 hours elapsed from the time two rhinos were darted to the time the transit trucks left for Rhodesia.

4. TRANSPORT METHODS

(a) Route

Details of the route taken are given in Table 1.

Road conditions were good with the exception of the gravelled sections between Piet Retief and Ermelo, Mtubatuba and Pongola, and from Empangeni to the capture area on the southern boundary of the Umfolozi Game Reserve.

During wet weather, covering these stretches was a hazardous undertaking and it was only due to the skill of the drivers that the lorries did not come to a standstill. Soil conditions in the capture zone were clay and even a light shower brought operations to a skidding halt on several occasions.

(b) Vehicles :

The transit trucks consisted of two petrol Bedford seven tonners and a ten ton diesel truck. All three were fitted with two speed differentials and long range fuel tanks. The only refuelling depot used enroute was the Pietersburg Total Depot. Refuelling was the only reason for stopping and, except for short halts to

TABLE 1
Details of Route

<i>Route</i>	<i>Driving time hours (average)</i>	<i>Mileage</i>	<i>No. of lorry trips</i>
Umfolozi	—	—	—
Mkuzi	4	135	—
Pongola	5	176	—
Ermelo	9	308	—
Marble Hall	13	438	—
Pietersburg	15½	535	—
Refuel Pietersburg	1½	535	—
Beit Bridge	21	667	—
Kyle Dam Reserve	26	871	15
Bulawayo	26	867	—
Matopos National Park	27	902	7
Wankie National Park	32	1077	28
Victoria Falls	35	1162	3
McIlwaine National Park	34	1128	2

check and inject tranquillizers, the convoy sped north at maximum speed. While the vehicles went in convoy each was fully equipped to operate independently and carried a comprehensive selection of spares and tools.

On the initial journey to Rhodesia the two petrol trucks were equipped with trailers, in an effort to carry four rhinos but these proved a great hindrance and hazard so it was decided to abandon them and ensure a faster journey with one rhino per truck.

(c) Drivers :

Each truck had a driver and co-driver who changed position every four hours. These drivers were drawn from the Natal and Rhodesian Parks staff while the diesel truck was manned by a contractor driver with a Parks official as co-driver.

(d) Crates :

Three sizes of wooden crates were used for transporting the rhinos. The first was a 13 foot long Oregon Pine crate weighing 3,995 lbs., the second was an 11 foot crate of the same material secured with metal belts weighing 2,995 lbs. and the third was a shovel-nosed crate of about 4,000 lbs. kindly loaned by the Kruger National Park authorities. The latter had the advantage of a steel lined sloping front which minimised horn loss due to sudden braking. This type of accident was overcome by reversing the rhino crate on the truck, so that in the event of impact or sudden braking the collision was taken on the rhino's rear and not the vulnerable head.

The diesel ten tonner carried one large and one small crate in tandem while the petrol trucks carried one large crate each. Later in the operation it was decided to alter the latter arrangement so that one petrol truck carried two crates, each with a smaller rhino, whilst the other continued to be loaded with one larger animal. In this way two vehicles were moving three rhinos per journey.

All crates were secured with heavy chains and bottle screws at each corner. Additional insulation against the constantly changing temperature from lowveld Zululand through highveld was provided by large bucksails stretched over the crate, leaving an opening over the animals hindquarters for ventilation and access for injections on route.

5. WEATHER CONDITIONS

Conditions of weather varied from bitter cold on the Transvaal highveld to very hot in the Zululand and Rhodesian bushveld areas. During hot weather relief was provided for the rhinos by spraying them periodically, using a stirrup pump and water.

6. DRUGS ADMINISTERED ON ROUTE

Chlorpromazine (Largactil), Diethylthiambutene (Themalon) and Acetylpromazine (Acepromazine) were used for tranquillisation during the first nine journeys. Various doses were administered by intramuscular injection at varying intervals depending on size and depth of drugged state of rhino. Finally a satisfactory dosage rate was attained (see Table 2). It was necessary to make the procedure as simple as possible as most of the drivers had no

TABLE 2
Drugs used en route

	4 hours after darting	12-14 hours after darting	20-24 hours after darting	8-12 hours after 3rd injection	6-8 hours after 4th injection
Acetylpromazine per 1,000 lbs.	1 c.c.	2 c.c.	—	—	—
Themalon per 1,000 lbs.	—	—	.5 gram	.25 gram	.25 gram
Largactil per 1,000 lbs.	—	—	1 c.c. (50 mgs)	1 c.c. (50 mgs)	1 c.c. (50 mgs)
Streptomycin	—	—	J 2.5gms. A 5gms.	—	—
Vecortenol	—	—	J 5 c.c. A 10 c.c.	—	J 5 c.c. A 10 c.c.

J = Juvenile 1 - 3,000 lbs. A = Adult over 3,000 lbs.

experience with either rhino translocation or drugs. As a precaution there was always one member in the convoy who was competent to handle the drugs if an unexpected condition arose in a rhino.

Lessons were learnt in the course of the operation. It was found that one or two c.c.'s of the Acetylpromazine oozed out of the injection site after removing the needle. To counteract this, tranquillisers were mixed with an equivalent quantity of distilled water.

Vecortenol (a body stimulant) and Streptomycin (an antibiotic) were also administered in injections to counteract stress and secondary infection.

Themalon was dissolved in Largactil and water before injecting.

Lethidrone was readily available to counteract a possible overdose of Themalon. As a precaution against over sedation no tranquillisers were administered if it was found that a rhino remained lying down, in spite of being shouted at or having someone jumping on its back!

The fourth injection of Themalon and Largactil was not administered unless the individual rhino's reaction to the drugs and crate demanded it. The injection site was alongside the spine. The operation of getting the needle into the rhino necessitated the dispenser hanging precariously head down into the crate, one hand holding on for dear life and the other holding the needle. Inserting the syringe into the needle on an agitated rhino took nerve and accuracy and was not without its hazards.

7. REACTIONS TO DRUGS

Apart from superficial abrasions and the loss of an occasional horn no serious injuries occurred in the crates.

A few aggressive individuals with long horns damaged the sides and tops of the crates and tore holes in the canvas bucksails. It was found that old bulls and small calves accepted their confinement more readily than the adult cows and sub-adult calves. The only death enroute was an adult cow and a post mortem revealed that she had been suffering from pneumonia for some time. She also had superficial gore wounds in the abdomen and chronic peritonitis. The only other death was another adult cow which died from unknown causes 24 hours after arrival in Rhodesia.

Immediately the transit convoy arrived at its destination a telegram was sent to Umfolozi heralding the safe arrival of the rhinos. Such telegrams were usually in parables and a typical one read "Big sister minus horn otherwise both fine". Telegrams marked the progress of the big scale movement. Another telegram warned "Mechanical breakdown. Smallest sister handed to relations at Loskop. Three others fine despite 40 hours". With kind permission of the Director of Nature Conservation, Transvaal, the Loskop Nature Reserve was used as a drop-off zone in case of emergencies. It came in very useful and gave the drivers a retreat in the event of emergency.

8. DISTRIBUTION AND RELEASE

(see Table 3)

(a) Kyle Game Reserve :

Twenty-two Square-lipped Rhinos, consisting of 10 bulls and 12 cows were released in this reserve. The first five were kept in pens for a few days before release into the reserve. The reserve is completely fenced and none has escaped. By June 1967 two calves were born to transhipped cows. The only tragedy occurred when a young bull drowned in the dam a week after release.

TABLE 3
Distribution in Rhodesia

	Adult		Juvenile		Total
	Male	Female	Male	Female	
Kyle Dam Game Reserve	4	8	7	4	23
Matopos National Park	2	4	2	1	9
Wankie National Park	9	14	6	6	35
Victoria Falls National Park	—	1	2	1	4
McIlwaine National Park	—	1	1	1	3

(b) Matopos National Park :

Nine rhinos consisting of 4 bulls and 5 cows were released here. A calf was born in March 1967 but unfortunately succumbed shortly afterwards.

(c) Wankie National Park :

Thirty-five rhinos, 14 bulls and 21 cows were delivered and released into pens and large paddocks over a four months period. Within three weeks of their arrival all of these animals were either released or escaped into the Park. Wherever possible their movements were observed by rangers with trackers or from aeroplanes. A few stayed near the pens but the majority scattered in all directions covering considerable distances. By June, 1967, 32 of the 35 rhino could be accounted for. Of these, 22 were scattered within the Park, a group of seven was just outside the eastern boundary in Forest Reserve, and three animals were outside the southern boundary in Botswana. Several have apparently settled down where large elephant concentrations occur.

Nine of the Wankie rhinos were marked by means of plastic and branded numbers on their horns.

(d) Victoria Falls Park :

Two bulls and two cows released into pens for a few days before being allowed into a large paddock. While in the pens a young cow was gored by an adult cow and subsequently died.

(e) McIlwaine Park :

Three rhinos were released into pens here, and then into a paddock. The sex ratio was one male to two females. These rhinos managed to escape from the Park but were eventually driven back with the aid of a helicopter.

(f) Loskop Nature Reserve, Transvaal :

One bull and two cows were left at the Loskop Nature Reserve after a breakdown and an accident. The accident befell the diesel truck but fortunately neither the drivers nor rhinos were seriously injured.

9. CONCLUSION

Operation Rhodesian Rhino lasted seven months. During this period a total of 74 Square-lipped Rhinos were transported by road to Rhodesia and three were left at Loskop Dam Reserve in the Transvaal.

A total of 115,000 miles was covered by the three transit trucks during this period. Almost every day of every week the field team were at work capturing, driving, repairing or servicing the vehicles.

The operation, which was a combined effort on the part of the Rhodesian National Park and Natal Parks Board officials, both European and African, proved what could be done by men united to one cause.

The generous donation of thousands of rand by the public of South Africa towards Operation Rhodesian Rhino was an indication by South Africans of all races of their faith in the people of Southern Rhodesia.

Seventy-seven of South Africa's valuable Southern Square-lipped Rhinoceroses were saved from destruction and re-established in their former habitats.

10. ACKNOWLEDGEMENTS

On behalf of the Natal Parks, Game and Fish Preservation Board the authors express their own thanks as well as the Board's indebtedness to :

Those many private veterinary surgeons of Natal who gave so generously of their time at their own expense to visit the capture areas, there unstintingly to provide specialised help in handling the capture drugs ; Messrs General Motors Southern

Africa., for their generous loan of Bedford trucks ; Messrs. Total South Africa (Pty) Ltd., for their munificent gift of 8,000 gallons of motor fuel ; Mr. Eric Buchanan of the Total depot at Pietersburg for his kindly help at all times ; officers of the Transvaal Nature Conservation Department for their swift and efficient handling of the situation when the diesel truck capsized at Potgietersrus ; Welfit Oddy Ltd., for their kind loan of trailers ; Rhodesian and South African customs officers whose patience and co-operation added greatly to the smoothness of the operation ; and those officers and employecs of the Rhodesian Department of National Parks who worked so harmoniously with their Natal counterparts to ensure the safety and well-being of the rhinos.

SOME NOTES ON THE VEGETATION OF MKUZI GAME RESERVE, NATAL

by

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1. INTRODUCTION

The Mkuzi Game Reserve is situated on the Mozambique plain some 250 miles north of Durban, Natal. The vegetation of the area is broadly described as Lowveld of the Tropical Bush and Savanna (Acocks, 1953) ; no detailed account has been published.

The vegetation of Mkuzi can be divided into six basic types. These are listed below, only the characteristic species being mentioned

1. The Tall Tree Savanna on the Lebombo Mountains with *Combretum apiculatum* the characteristic tree and *Themeda triandra* the important grass.

2. The Short Tree Savanna on the flat plains adjacent to the Lebombo Mountains where the soil becomes waterlogged during the rainy season. Characteristic trees are *Acacia nilotica* and *A. tortillis*. The grassland is mixed, with *Themeda triandra*, *Bothriochloa insculpta* and *Aristida barbicollis* being the most important species. More detailed work on the grassland of this vegetation type is presented below.

3. The Tall Tree Savanna of the red loam soils, where *Acacia nigrescens* and *Ozoroa paniculosa* are characteristic and *Themeda triandra* is the most important grass.

4. The Short Tree Savanna and Thicket on the poorly drained heavy black soils adjacent to the Mkuzi river where *Acacia leuderitzii*, *Euclea divinorum* and numerous other species of trees and shrubs occur. The grassland is generally poorly developed and the understorey, where present, consists mainly of secondary herbaceous dicotyledons.

5. The Tongaland Sand Forest which occurs in strips parallel to the coast on white sandy soils. Common canopy trees are *Newtonia hildebrandtii*, *Cteistanthus schelchteri* and *Pteleopsis myrtifolia*. More detailed work on this unique vegetation type is described below.

6. The Riverine Woodland on the banks of the Mkuzi River, dominated by *Ficus sycomorus*.

These basic vegetation types are seldom distinct, as in many areas two or three overlap.