

4.2 Rhinoceros Conservation in Namibia: a framework for private sector participation 1998



RHINO CONSERVATION IN NAMIBIA

A FRAMEWORK FOR PRIVATE SECTOR PARTICIPATION

1998

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PREFACE

The escalating threat to rhino and the real possibility of a sudden catastrophic decline in the Namibian rhino population, underline the need for improving national co-ordination and maximising the impact of conservation programmes. The State might not always be in a position to meet the ever-escalating costs of rhino protection and the Namibian people should not have to bear the burden of such a cost. Traditional conservation policies, such as protection in national parks and reliance on law enforcement, have failed to prevent the decline in rhino populations in Africa. To cope with the current threat of illegal hunting, the implementation of such policies has to be intensified to a level requiring vast sums of money for recurrent costs, and other resources that few institutions have been able to sustain for long. A new approach is needed to maximise the cost-effectiveness of conservation management and to prevent dependency on external support. Until such innovations can be implemented in Namibia, concerted effort and diversified strategies will be required to limit losses due to illegal hunting.

Even the most extreme efforts to protect rhino might prove fruitless and may ultimately unravel as funds dry up or public opinion swings against seemingly futile efforts. There is no recipe that will guarantee rhino survival. This leaves us with the need to diversify rhino conservation efforts in Namibia. Sadly, little help can be expected from elsewhere. The international conservation community has failed to commit sufficient resources to prevent black rhino numbers declining from about 70,000 to 3,000 in 20 years. Funds are still scarce even though the risk of extinction is higher than before. However, South Africa managed to use its own resources to lead the last Southern white rhino population from the brink of extinction to an extraordinary recovery. It is not too late to use the same combined resolve and both public and private sector resources to save the Namibian black rhino.

The gradual loss of rhino habitat in Namibia forms as serious a threat as illegal hunting. Rhino on communal farming land are of primary concern, as they may well be displaced by people in future. Local extinction may result, even if rhino are only denied access to drinking water for a relatively short period when springs are occupied by people and stock during droughts. This threat must be approached by focusing on the perceptions of local people and the economics in these rural areas. Rhino will have no future in marginal agricultural lands if they lose all value and meaning to people. Rural communities will become impatient waiting

to exploit their wildlife resources, and it is up to the State to create a suitable milieu that will ensure sustainable exploitation and the equitable distribution of benefits.

The Ministry of Environment and Tourism (MET) is engaged in continuously developing and refining conservation policies to cope with current conservation opportunities, threats and problems. Such policies recognise the beneficial role of private land owners in rhino conservation. Seven black rhino breeding groups have been established on private land with a further two farms identified as suitable for receiving rhino at present. This requires commitment from private land owners, as maintaining rhino on their land involves a significant risk. It has never been the intention of MET to pass conservation problems from the State to the game farmer. MET can provide maximum assistance to private land owners to help them to achieve optimal security and increase rhino numbers. More importantly, MET will strive to maintain and enhance the functional conservation partnership established between the private sector and the State.

The management of rhino in private ownership and custody has to be linked closely to MET's other main conservation options. Namely, the enlargement and redistribution of the rhino population in the national protected area network, the establishment of breeding nuclei on communal lands, and the support of breeding nuclei outside Namibia. Sadly, also rhino on private land have been a target for illegal hunters in Namibia since 1994. This new challenge must be faced so as to safeguard the rhino population in private ownership and custody. Moreover, such tragic developments highlight the need for ongoing evaluation and refinement of adaptable conservation strategies.

ACKNOWLEDGEMENTS: The original version of this document was prepared from presentations, given by MET personnel and K. P. Claussen of Okosongoro farm, at a workshop held at the Waterberg Plateau Park in late 1993. Additional material was provided by K. Venzke and M. Lindeque. Secretarial assistance was provided by V. E. Fox, and P. M. Lindeque and C. Brain provided technical assistance and editorial comments. The annex includes excerpts from the Zimbabwean "Immediate Action Plan" for low veld rhino conservancies. The 1995 update reflected changes which occurred in the international treaty status of rhino following the 9th Conference of the Parties to CITES. The current edition (1998) was produced using valuable additional information taken from presentations given by MET personnel, M. Hearn of Save the Rhino Trust, M. Mostert of the Protected Resources Unit, and A. and J. Oelofse of Mount Etjo Safari Lodge at a workshop entitled "Rhino on Private Land in Namibia", which was held at Mount Etjo Lodge on 16 October 1996. Invaluable editorial advice and secretarial assistance has been provided by Dr. L. J. I. Horspool.

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1) THE INTERNATIONAL RHINO CONSERVATION PROBLEM

- a clash of cultures

International response to the ongoing trade in rhino horns and the continuing decline of the world's rhino populations

International perceptions of the plight of the world's five rhino species have long been based on moral indignation over the alleged use of rhino horn as an aphrodisiac in the Far East. However, it is now widely accepted that the major markets for rhino horn have always been the dagger handle carvers of the Arabian peninsula, and the traditional pharmacies and pharmaceutical factories of China, Hong Kong, Taiwan, South Korea and Japan. Within the traditional holistic healing philosophy found in many parts of Asia, rhino horn is used as an antipyretic agent, and as an ingredient of numerous complex medicines used primarily to prevent ill health. Nevertheless, there are new markets emerging for traditional medicines containing rhino horn in the large and affluent Chinese communities in the USA and Canada, and it is predicted that they will crop up in Europe too.

Rhino horn consumer nations have been subjected to continuous political opposition from most parts of the world for almost two decades. The Western press and conservation NGOs have descended on these countries aiming to expose corruption and embarrass governments, and in the process have presented their western supporters with a prejudiced view of Asian culture. Recently, the USA has implemented a law mandating trade sanctions against countries implicated in illegal wildlife trade. The first victim was Taiwan over its alleged involvement in the rhino horn trade, despite the fact that rhino are not indigenous to the USA and that the rhino horn trade in Taiwan had already been declared illegal. Threats of similar sanctions have led to a doubling in price of rhino horn in South Korea, and this could end up doubling the stakes in Africa.

The primary aim of international efforts is to strive for complete world-wide cessation of the use of rhino horn, to a lesser extent to find acceptable medicinal substitutes for rhino horn, and, until recently, to force States to destroy all horn stockpiles. The Convention on International Trade in Endangered Species (CITES) is at the forefront of attempts to remove rhino products from world trade forever.

No serious international consideration has yet been given to alternative options closer to the conservation philosophy of Southern African countries. Namely, legalising trade to undermine

illegal trade and slash the value of stockpiles; meeting annual consumption by sustainable production of horn; promoting trade relationships with and sustainable use practises in consumer states; maximising sustainable economic benefits from rhino to support conservation costs and promote rural development; and increasing the number and diversity of stake-holders in rhino survival.

Implications for Namibia

Attempts to isolate consumer nations through cultural judgement and political pressure do not appear to have had any obvious beneficial effects in rhino range states. The volume of international horn consumption may be gradually reduced by international coercion. However, due to the buffering role of illegal stockpiles in Africa and Asia the demand for horn might not decline. Speculators and middlemen will probably continue to accumulate stockpiles at relatively low cost and speculate that horn prices will rise inevitably as rhino approach extinction. Thus, the killing of rhino in Africa is not affected directly by pressure on consumer states because of the vast differences in the commodity price and motives of trade participants on the two continents. Rhino are already being killed by people at enormous personal risk for tiny rewards, but many destitute people and entrepreneurs regard these risks as acceptable. If the reward for illegal hunting increases even more people may become tempted.

The current policy objective of CITES and prominent western countries is to achieve a much reduced international rhino horn trade volume, but this could still result in rhino extinction. In China alone several hundred million people are believed to use traditional medicines. It is wishful thinking to hope that 5000 year old cultural practises will change before all the rhino have gone, and it would be irresponsible for any nation to base the prospects of survival of any species on such speculation. Furthermore, it is striking that the demand for horn, and other wildlife-based medicinal substances, is increasing in North America, where the affluent and Western-educated ethnic Chinese communities have been exposed to media and educational campaigns that are supposed to stop the demand for horn in China.

A different outcome may be reached if preconceived ways of looking at the rhino horn dilemma are abandoned in favour of more innovative approaches. For example, it should be recognised that:

- Rhino horn is the most valuable natural renewable product in Africa (Asian rhino horn is worth even more than African rhino horn), and thus a highly valuable resource for a developing country in need of economic diversification and rural development.
- Demand for horn is likely to continue and will not disappear as long as some people see a value in the product.
- Law enforcement has not been sufficient to completely prevent the killing of rhino or the smuggling of high value - low volume products anywhere in the world.
- Currently illegal harvesting of horns in Namibia results in minor gains for a few individuals at the cost of the rest of society, yet the rhino resource of e.g. Kunene region could be the most valuable renewable natural asset for the people in that region. A high commercial value of rhino is likely to prevent their being displaced by less valuable livestock.
- Current illegal harvesting practises are wasteful but can be replaced by sustainable techniques, e.g. periodic dehorning does not require the slaughter of the individual.

The full potential economic value of rhino can only be achieved by diversifying their revenue-generating use, and thus the greatest likelihood of their future survival will be ensured.

There seems to be little sense in letting Namibia become just one more African country which is losing its rhino to organised illegal hunting. However, if our arsenal is limited to traditional conservation practices this outcome is very likely. Many common sense principles need to be incorporated in our conservation thinking. These include spreading risks (e.g. placing rhino on private land), altering economic factors and incentives (e.g. by preventative dehorning), and finding real incentives to protect rhino (e.g. ways of generating revenue from rhino). In Namibia, such radical policy changes have not yet been made but, given the tradition of conservation innovation in this country and the guiding principles on this subject in the Namibian Constitution, they will receive further attention.

2) NATIONAL RHINO CONSERVATION GOALS AND POLICY

- facing the threat

Namibian conservation problems and policies

Namibia is one of only a few countries in the world to make provision in its national Constitution for the protection and use of its natural resources and biodiversity. The Namibian Government subscribes fully to the sustainable use of wildlife resources for the benefit of all Namibians, and MET is actively promoting policies to implement this philosophy. At present, the expanding industries in Namibia are wildlife-based tourism, wildlife utilisation and marine fisheries and these are likely to remain the principal sources of sustainable economic development in future. Wildlife utilisation is potentially a major growth industry. The indigenous wildlife of Namibia has greater resilience against drought than domestic stock, and could yield substantially greater economic returns than livestock. MET thus promotes the redistribution of wildlife within Namibia to return species to their historical range, as much as possible, and the restoration of the functional role of wildlife in local and national economies through various forms of wildlife utilisation.

Currently in Namibia, the bulk of rare and more valuable species occur in protected areas (Game Reserves and National Parks). Proclaimed conservation areas extend over 14.5% (99,616 km²) of the total surface area of Namibia, but individual units are often too small to maintain viable wildlife populations. Frequently conservation resources are stretched to the limit, and the proclaimed conservation areas are no longer sufficiently secure to serve as permanent safe havens for the rare species of this country. The role of protected areas in Namibia is changing gradually. Currently they resemble fenced off islands of conservation but in future protected core areas could be integrated into the rural landscape.

Illegal traffic of smuggled animal products, such as rhino horn and ivory, continues to pass through Namibia en route to South Africa and overseas. It will be even more difficult to control the smuggling of wildlife products as the development of infrastructure brings an increase in commercial traffic through Namibia. No country on earth can prevent all smuggling, and other incentives have to be found to reduce the impact of this illegal trade. It is expected that illegal hunting will increase as a result of economic pressures, the periodic droughts in Namibia, and, especially, the drastic decline in available sources of horn outside Namibia and South Africa.

The impact of people and domestic stock on wildlife in communal areas is comparatively low, due to the low human population density and the relative aridity of most rhino habitats, but is increasing nevertheless. The unresolved issues of land use and tenure are central to the problems facing rhino conservation. Therefore, MET policy focuses on establishing new rhino populations in existing parks and reserves, and on suitable communal land; transferring individuals to private land for safekeeping; selling breeding nuclei to approved buyers to prove the intrinsic economic value of rhino; expanding anti-poaching efforts; and generating sustainable revenue for rhino conservation.

Currently the long-term management goals for rhino conservation in Namibia are to:

1. Establish a long-term viable population of at least 2000 black rhino in suitable habitat and similarly, 500 white rhino. Namibia has virtually the entire world population (97%) of *Diceros bicornis bicornis*. This population needs to be enlarged to some 2000 individuals to ensure its long term genetic viability. Smaller populations have a high risk of extinction. Almost all of Namibia is suitable for black rhino, but in a number of ways the current protected areas are inadequate for hosting a population much larger than at present. Secure land further away from international borders needs to be found for additional populations. In Namibia, limited safe habitat is suitable for white rhino, and therefore a lesser number will be aimed for.
2. Develop a sustainable use programme for black and white rhino to advance and justify the above mentioned goal, preferably within the CITES environment. Live rhino and rhino trophies and products are amongst the most valuable wildlife items on earth, and thus represent a significant resource for a country such as Namibia. Present international bans and growing international pressure against the use of wild species have reduced the current potential benefits of the rhino resource. The cost of rhino management and protection is extraordinarily high, and a means needs to be found to compensate landholders with rhino through the sustainable generation of revenue.
3. Co-ordinate the protection and management of rhino in Namibia. MET in conjunction with other interested parties will develop a National Rhino Conservation Plan; an Annual Action Plan; monitoring and research projects to deal with short-term management actions, e.g. dehorning, vaccination, translocation and sale of live animals; and promote collaboration with Southern African Development Community neighbours and international organisations.

Further detail is available in the "Rhinoceros Conservation Plan for Namibia". This is updated periodically by MET in conjunction with local interest groups and is available on request. The plan recognises the role of private land owners and allows for the provision of breeding nuclei to private land owners with the specific goals of spreading the risk and burden of rhino conservation and increasing population size and distribution range in Namibia.

Short-term rhino conservation and management objectives of MET include:

1. Placing continued emphasis on improving the security of all rhino populations and preventing illegal hunting in Namibia. MET will continue to review the threat levels, in view of sudden catastrophes such as occurred in Zimbabwe, and its ability to prevent such catastrophes.
2. Providing ongoing training and support of MET staff to enhance law enforcement and crime prevention capacities. Government rationalisation will provide new opportunities to develop human resources in MET through the establishment of training opportunities and career advancement for the people in the forefront of conservation.
3. Reviewing conservation and financial legislation to facilitate innovative conservation measures including community-based wildlife management. The continued involvement and support of local communities and the private sector will be sought through sharing the benefits of rhino conservation and use, but also the responsibilities and costs. Sustainable ways of generating revenue for rhino conservation need to be found, to justify the high recurrent expenditure and reduce dependency on external funds.

3) RHINO STATUS, PROTECTION AND UTILISATION WITHIN THE LEGAL FRAMEWORK OF NAMIBIA

- options and constraints

Status of rhino in Namibia

Two species of rhino occur in Namibia, namely *Diceros bicornis bicornis*, the large black or hook-lipped rhinoceros of the arid and semi-arid regions of south-western Africa, and *Ceratotherium simum simum*, the southern white or square-lipped rhinoceros. The latter species became extinct in Namibia before 1900 and has been reintroduced from South Africa. Virtually all *Diceros bicornis bicornis* occur in Namibia, with possibly a few individuals remaining in south-western Angola and breeding nuclei in South Africa which originated from Namibia. The Namibian black rhino is the largest of all the subspecies, adapted to arid conditions and not represented in any zoo or captive breeding programme. Its protection has been given the highest priority by both the Namibian government and the international scientific community. Namibia thus holds an irreplaceable part of the world's biodiversity and clearly has a major responsibility to conserve rhino effectively. Furthermore Namibia has one of the largest remaining populations, numbering more than 600, of black rhino in the world. Approximately 130 of these occur outside designated conservation areas. This is the last substantial population of any species of rhino anywhere in the world outside a protected area. Currently, the white rhino is not endangered internationally. In Namibia the population only numbers around 90 and this group is under considerable threat from poaching.

The Nature Conservation Ordinance of 1975 lists both species as "specially protected game", the highest status and maximum legal protection that can be conferred on any species at present. This classification does not preclude the hunting or other use of rhino in Namibia, but places such activities under the strict control of the State through a permit system. Also, all populations of both species are listed in Appendix I of CITES, which prohibits any international trade for commercial purposes) in these species or their products (except from 1995 limited commercial trade in live white rhino from South Africa). This listing has done nothing to prevent the continuous decline of the species throughout the existence of CITES and the Appendix I status and therefore is not universally accepted as the most appropriate for rhino conservation. One consequence of the present CITES listing is that alternative management options cannot be implemented. As soon as a blanket ban on commercial trade is applied to stop illegal trade, all options for legal trade close down and even non-commercial use of a

species is compromised. A CITES Appendix I listing is not supposed to affect sport hunting, but in practice, this label is an additional obstacle in the increasingly difficult process of exporting trophies. Most important sport hunting countries impose so-called stricter domestic measures and prohibit the import of sporting trophies from black rhino, although some allow the import of white rhino trophies. The basis of refusing imports of black rhino trophies is that such "trade" is considered detrimental to the survival and conservation of the species. Nevertheless, the mechanism is in place should it be possible to demonstrate that hunting would benefit black rhino.

Current options for using Namibian rhino

Currently in Namibia the use of black rhino, from populations in conservation areas and in the Kunene and Erongo Regions, is restricted to providing donors for the establishment of new populations. Black rhino belonging to the State can be sold to private individuals and even exported from Namibia. Otherwise they are provided through the custodianship scheme for the establishment of satellite populations in Namibia.

Namibia is one of the last countries with a large population of rhino that can be seen relatively easily by tourists, thus rhino provide an important attraction for game viewing. The allure of rhino in the northern Namib Desert is a significant attraction for foreign visitors, and the spectacular rhino viewing at e.g. the Okaukuejo waterhole is equally famous. The prestige and attraction of a park or game farm is added to considerably by the presence of rhino, and this contributes to the expansion of the Namibian tourist industry. The actual value of the rhino in Namibia has not been calculated, but rhino greatly contribute to the quality of a wilderness experience and must account for a large part of the foreign currency earned through tourism.

White rhino provide the same benefits as black rhino, and are even a greater tourist attraction in view of their different habits. This species is already hunted in Namibia, and trophies can be exported to several countries. It is possible under certain conditions to practise non-lethal "hunting" methods which may include the removal of horn. MET should be approached for approval in all such cases. Some countries, based on their current legal definitions of a hunting trophy, may not allow the import of a trophy acquired from non-lethal hunting. Various amendments to domestic legislation may be necessary in the long run to provide the necessary framework for new revenue generating enterprises involving rhino.

Future options for using Namibian rhino

Many private landowners in South Africa, Zimbabwe and Namibia have converted their cattle farms/ranches to game ranches and have invested in white rhino. The inclusion of a white rhino in a hunting package has made the hunting safari business a sound financial investment throughout Southern Africa, the last region on earth where free-ranging rhino can be hunted in their natural habitat.

Experience has proven that, wherever profit is the incentive, the prospects for successfully achieving wildlife management objectives in the private sector are very good. An excellent illustration of this is the recovery of the white rhino population in South Africa. Another example of the role of private enterprise and wildlife utilisation in the recovery of a species is what is just starting to happen to the black rhino. The commercial use, including sport hunting, of black rhino will be allowed in Namibia, as soon as is appropriate. The Namibian Government views the selling of rhino and rhino horns and other products as a future source of conservation and development revenue. Some of the poorest people in Namibia live in close contact with valuable wildlife and have a right to derive some benefit from whatever natural resources are available to them. Currently all horns acquired from dehorning operations and mortalities are stockpiled and represent a significant asset.

Rhino range states have been encouraged to explore non-consumptive options for rhino use that benefit rhino conservation and enhance the well-being of local communities. Traditionally the cultural value of the rhino is considerable over large parts of Namibia. This needs to be better understood and incorporated into long term conservation plans. The old problem of the ownership of rhino and wildlife on communal lands need to be resolved to give people a proper say in rhino management and a legal right to a share in the benefits derived from them. Greater participation by rural communities in ecotourism ventures would also increase the value placed on rhino in communal lands.

Legal provisions for rhino conservation and protection in Namibia

Permit control applies to virtually every aspect of rhino conservation and management, i.e. possession, translocation and hunting of both species (even those in private ownership), as well as the possession of, trade in, and the export or import of rhino or rhino parts (including parts derived from rhino in private ownership). Contravention can be punished by a fine of up to NS 200,000 and/or imprisonment for up to 20 years, yet the future of the rhino is far from secure. Similar penalties have not prevented massive illegal hunting in neighbouring countries.

Innovative penalties and legal provisions such as minimum fines equivalent to the value of the rhino or product involved, and compulsory imprisonment for certain offences have been introduced recently in Swaziland. Time will show if such measures deter poaching and if, where possible under the Namibian Constitution, Namibia should follow suit. There is an understandable sense of scepticism within Namibia, and elsewhere, about the effectiveness of legal provisions to prevent rhino poaching in the long term. Nevertheless legal deterrents and law enforcement are potent components of any protection strategy. Past successes in this field, mainly due to superb collaboration and support from the Namibian Police, have resulted in severe sentencing of poachers and the continued survival of many rhino. However, the incentives remain high enough to attract new candidates to illegal hunting and trade. A continued effort is required to maintain and enforce an effective legal deterrent. In 1993, the Namibian Police, in recognition of their increasing role in combating poaching and illegal trade in endangered wildlife, established a Protected Resources Unit (PRU) to replace the "Diamond and Gold Branch". This unit is a welcome addition and plays an important role in the law enforcement and crime prevention system in Namibia.

The most important current provisions in Namibian legislation for rhino conservation and management are outlined (Annex 1). Currently MET, in consultation with all interest groups, is preparing to revise the conservation legislation. The existing legislation on rhino has been updated frequently, and our law enforcement is considered to be amongst the most effective in Africa. Legislation covers virtually every facet of rhino protection, ownership, trade, use, transport, capture, hunting, etc. and landowners should be familiar with their legal obligations. The most pertinent legislation is the Nature Conservation Ordinance (Ordinance 4 of 1975, as amended) and the Controlled Game Products Proclamation (Proclamation AG 42 of 1980, as amended). Many regulations relating to rhino also apply to other species, but there are also some specific differences. Relevant legislation should be consulted, and the nearest MET office can be contacted for clarification if necessary.

MET will gladly, through its regional offices, provide advice and assistance concerning the protection of rhino on private land. Special training may be offered depending on demand, and will hopefully be co-ordinated through a representative body (Section 10). A basis for protecting rhino on private land is provided in the Nature Conservation Ordinance (Annex 1; Ordinance 4 of 1975, Article 40), which allows action to be taken against persons found hunting on private land. Arrests may be made, under certain circumstances, by several different categories of people. All such persons should be careful to familiarise themselves

with other statutes relating to the use of firearms, the use of force, reporting suspected crime, and the legal rights of suspects and should consult the Namibian Police. Apprehended rhino poachers face severe sentences, and thus will often seek a way out by alleging assault or another form of maltreatment. It is always better if more than one person handles an arrest, and is thus able to offer corroborating evidence. It is always best to hand over a suspect as soon as possible to the Police, whose standing procedures ensure the correct treatment of persons in custody. Furthermore MET advises that suspects should not be searched for anything except weapons, or questioned except by the Police or an authorised MET official (identifiable as a Peace Officer), and that no one should approach the vicinity of a rhino carcass or any area related to a suspected poaching incident before an MET Investigating Officer or Police team has screened such an area for evidence. Evidence facilitates convictions, and all care should be taken not to jeopardise the law enforcement process. MET can provide general and emergency advice and assistance to landowners (Annex 8).

4) ACHIEVING OPTIMAL SECURITY FOR RHINO ON PRIVATE LAND

- is the sanctuary/IPZ model appropriate for Namibia?

The sanctuary concept in other countries

In current terms, wildlife sanctuaries have become known as areas given unusually intensive protection against external human threat. Sanctuaries are advocated internationally as the last hope to safeguard the remaining rhino against poaching, and are usually portrayed as relatively small areas with secure fences, frequent patrols, armed response, strict access control, frequent monitoring of rhino, and often electronic surveillance systems. Larger intensively protected zones in conservation areas are sometimes referred to as Intensive Protection Zones (IPZ), and these are also promoted as essential for the survival of the species. Features common to sanctuaries and IPZ are their high establishment and maintenance costs and manpower requirements. Before this type of programme can be applied, cost-benefit assessments must be carried out to quantify the increased cost per rhino unit which will occur as a result of the lower carrying capacity in Namibia. Both Kenya and Zimbabwe have considerable experience in this field and the following examples could indicate the appropriateness of this approach in Namibia.

The Kenyan example

It was recognised, following the disastrous crash in black rhino numbers from 20,000 black rhino in 1970 to around 500 in the early 1980's, that the only hope for protecting the remaining black rhino in Kenya was to concentrate security provisions within smaller areas where protection was intensive, i.e. sanctuaries. Kenya has pioneered the protection and breeding of black rhino in relatively small areas or sanctuaries since the early 1970's, and this appears to have been effective in conservation terms. Crucial to the success of the rhino conservation and management programme in Kenya are the protection of existing sanctuary rhino populations from illegal hunting; the management of these to obtain maximum sustainable breeding output and genetic diversity; to provide surplus animals for translocation to optimally stock existing sanctuaries; and to establish new populations which have the potential to increase in number to more than 100 animals.

A large portion of the country's black rhino have been protected within these relatively small sanctuaries, many of which are enclosed completely with advanced electric fencing systems, and their

numbers have slowly increased. Private sanctuaries have been developed through co-operation between the parastatal Kenya Wildlife Services, private landowners and various conservation NGOs. Successful models are Solio Ranch (private) and Nairobi National Park. Kenyan sanctuaries appear to have provided a relatively successful emergency measure for the protection and breeding of black rhino. Sanctuaries, as a short term back up to efforts to control poaching of larger populations that remain *in situ*, hold the best hope for the recovery of black rhino numbers in Kenya. One-third of Kenya's black rhino population will continue to be held on private land. Currently, about 290 black rhino (69% of the total population) are located in nine sanctuaries (4,000-39,000 ha (40-390 km²); four in national parks, and five on private land). Rhino populations have increased annually at an average rate of 5% since 1986, however there are large variations in population growth rate between sanctuaries. For example, the populations in Solio and Nairobi National Park have grown at 10% or more per year, while others have shown little or no increase. Substantial mortality rates, primarily due to interspecific fighting, occurred during the establishment of some sanctuaries. To date Solio ranch has been the most successful rhino sanctuary in Kenya. The reserve was stocked, between 1970 and 1980, with 23 rhino which originated from different areas. By 1986, at least 80 black rhino had been bred within the 6,500 ha (65 km²) reserve with population growth rates in excess of 10% per annum for much of this period. From 1984 to 1990, 30 black rhino were captured in Solio and moved to four other rhino sanctuaries, and following this a photographic census of Solio identified a minimum of 60 rhino remaining. Rapid breeding has continued with another 11 rhino born in the reserve in 1991-1992. This success has been achieved entirely at the owner's expense.

There are some disadvantages inherent to sanctuaries: they are relatively small, enclosed areas which are very expensive to develop and maintain, and require management that is highly intensive. In the long term, the development and maintenance of rhino sanctuaries is limited by cost (Table 4.1). It is unlikely that a sanctuary would remain viable after a major breakdown in security, maintenance of infrastructure or management capability (e.g. electric fence maintenance, rhino translocation, monitoring and management of the enclosed wildlife). If there is a total or partial breakdown in security, the aim of the original action of capturing and translocating rhino and bringing them to a supposedly secure area can be negated. Scattered, remote rhino may survive better *in situ* than a cluster of "rescued" animals which unintentionally makes the task of illegal hunters easier. This situation arose in the Meru

National Park rhino sanctuary in Kenya during 1988, where a group of five white rhino and all of the four black rhino within a small fenced area were eliminated.

Table 4.1. Staffing levels in Kenyan sanctuaries (The present establishment of rangers is listed in parentheses.)

Sanctuary/ conservation area	Area (km ²)	Sergeants	Corporals	Rangers	Total Ranger Force	Ranger Density (km ² per ranger)	
						Required	Present
Nairobi NP	114	2 (0)	4 (1)	114 (16)	20 (7)	16	6
Lake Nakuru NP	142	1 (0)	4 (0)	113 (13)	23 (3)	47	6
Ngulia Rhino Sanctuary (Tsavo West NP*)	65	1 (0)	3 (2)	16 (9)	20 (11)	6	3
Aberdares NP (Salient)	70	1 (0)	2 (1)	12 (4)	15 (5)	14	6
Kitchich Station (Mathews Range)	>500	1 (1)	4 (0)	17 (6)	22 (7)	>60	20
Total		6 (1)	17 (4)	77 (25)	100 (33)		

*Patrols of large areas of Tsavo West National Park (>500 km²) surrounding the Ngulia sanctuary are essential for rhino protection and security.

In Kenya, a rhino sanctuary on private land may only be stocked with rhino from another sanctuary on private land, or with individuals from non-viable groups. At present in Kenya rhino are being moved back from private sanctuaries into parks. In these instances, rhino are released from small sanctuaries into larger surrounding areas, as in the Zimbabwe model of IPZ.

The Zimbabwean approach

The decimation of the rhino population in National Parks and open state land has left Zimbabwe in almost the same position as Kenya was in the mid-1980's. The programme that has been implemented in Zimbabwe is slightly different in that the "safe areas" for rhino on private land, usually a number of adjoining farms, are known as conservancies. On state land, the plan is to create four IPZ in national parks. Rhino from outlying areas will be moved into these IPZ.

A clear aim has been established for low veld rhino conservancies, i.e. to keep poaching losses at a level which is below the natural growth rate of the rhino population in these conservancies, and thereby to increase the total number of rhino in these areas to e.g. over 100 by the year 2000. Excerpts from the detailed management plan for these conservancies are provided as an example of the level of planning and organisation considered essential to achieve success in

Zimbabwe (Annex 2). MET can be approached to facilitate further contact with the relevant persons in Zimbabwe, and it would be worthwhile for Namibian land owners to visit such facilities in Zimbabwe and other countries.

The Namibian approach

The Rhinoceros Conservation Plan for Namibia makes provision for an ongoing and adaptable project, known as the Custodianship Scheme, to translocate black rhino onto commercial farmland. This scheme differs in several respects from the approaches used in Kenya and Zimbabwe. In addition, MET auctions breeding nuclei to approved buyers, which, in addition, demonstrates the high economic value of black rhino to the Namibian public. Black rhino from donor populations in Namibia will periodically become available for translocation to private land as part of MET Custodianship Scheme, if conditions are suitable and security risks are limited.

The following protocol is utilised to facilitate the placement of black rhino on private land:

- MET announces in the press that it intends to place rhino onto private land and interested landowners are invited to submit an application to have their properties assessed.
- MET personnel visit each applicant to rank the property and the perceived management capability of the landowner according to specified criteria (Annex 3).
- MET Rhino Advisory Committee makes recommendations, based on inspection reports, on the allocation of rhino. All farmers are notified of the decision and are given time to build bomas and, where necessary, make adjustments to their infrastructure.
- Landowners sign a mandatory Memorandum of Agreement with MET when the rhino are delivered (Annex 4). They are expected to provide brief quarterly reports on the status of rhino in their custody.

The extra-ordinarily high rhino carrying capacity of some Kenyan and Zimbabwean sanctuaries and IPZ is unlikely to occur anywhere in Namibia where much larger land units, with much higher establishment and recurrent costs, will be needed to protect similar numbers of rhino. Nevertheless, MET is starting to place black rhino on private land, whilst contemplating sanctuaries and IPZ-like facilities on state land. Special protection to threatened rhino may be provided by local conditions, thus a flexible approach is likely to yield the best results.

5) PROFILES OF POACHERS AND PROTECTORS

- people with no options?

In Namibia, insufficient information is available to provide an accurate profile of those involved in the illegal hunting of rhino, but some useful background information is provided here. Commonly two stereotypes are described; the traditional or subsistence hunter and the modern entrepreneur ("commercial poacher") (Tables 5.1a and b). However, depending on circumstances, the two stereotypes may not be distinctly demarcated. Not all the characteristics described will apply to every individual, but a reasonable mental image can be formed nevertheless.

Table 5.1. Typical characteristics of rhino hunters in Namibia

Criteria	Traditional or subsistence rhino hunter	Modern entrepreneur or commercial poacher
Sex/Age	male; often mature family bread-winners with many dependants	male; usually younger than the traditional hunter
Urban/rural inhabitant	primarily rural inhabitants, usually from nearby area, and very familiar with the target area and how it is managed	at ease in both urban and rural environments
Previous involvement in illegal activities	unlikely	often not a newcomer, may be involved in other illegal trades (e.g. ivory, narcotics, diamonds)
Type of hunter	opportunist; not only after rhino	resourceful; often without formal skills but with military training; take risks; less regard for personal safety
Motivation	dire economic circumstances; often under pressure from their wives	unemployment
View of hunting rhino	solely as a source of cash or meat	solely as a source of cash
Aware of the scarcity of rhino	yes	not necessarily
Knowledge of rhino horn use	unlikely	unlikely
Aware of real value of rhino horn	no; accept payment of a few hundred NS or less	no; expect payment of a few thousand NS or more
Size and organisation of hunting party	often hunt in groups and use dogs	hunt alone; assisted with e.g. transport; well-organised
Tracking and bush-craft skills	adequate	skilled
Traces	leave ample traces of activities	skilled at concealing tracks, signs, trophies and firearms

Table 5.1 cont.: Typical characteristics of rhino hunters in Namibia

Criteria	Traditional or subsistence rhino hunter	Modern or commercial entrepreneur
Transport	use animal transport or on foot	use vehicular transport to access rhino populations; back-up system of predetermined escape routes, pre-arranged transport and safe hideouts, even abroad
Mobility	tend to stay nearby at night and move by day	in good physical condition; capable of making long-distance movements by day and night
Weapons	poorly armed; often only one rifle (usually inferior 0.303 with open sights) per hunting party (often borrowed or hired)	well-armed with unregistered assault rifles, often borrowed or hired; more rarely modern sport hunting rifles (open sights)
Ammunition	sparse	ample
Shooting skills	adequate marksmen over short distances; shoot at any exposed spot on target animal, then follow it until a better shot can be made or the animal dies	usually mediocre shots relying on greater fire-power
Resist arrest	unlikely	more likely, rarely violent
Attempt escape	unlikely	likely
Behaviour on apprehension	remorseful and ashamed	inclined to lay charges of wrongful treatment or assault if arrested by a person who is not a member of the Police
Supply information	voluntarily; and likely, if treated humanely from the moment of arrest	unlikely; influential, persuasive and successful in coercing others into providing information and/or assistance; intelligence systems sophisticated
Aware of legal rights	unlikely	very likely
Aware that hunting rhino or possessing horn is illegal	very likely	very likely
Aware of maximum penalties provided by legislation	unlikely	unlikely
Deterred by legal provisions for fines and imprisonment	no	no
Aware of sentences given to other poachers	very likely	very likely
Reimbursed and rewarded for fines and time served in prison	unlikely to have financial back up or to have someone manage affairs during imprisonment	very likely; someone provides financial support and manages affairs during imprisonment
Respond to community court and traditional leadership discipline	yes	no; very likely to have been promised financial support to obtain legal representation
Resume poaching	unlikely, unless recruited to the ranks of the commercial poacher	likely; may engage in activities motivated by revenge

MET, without implying undue leniency or dereliction of duty, has considerable sympathy for the subsistence hunter. However, MET aims to establish wildlife utilisation practises that will provide rural people with an alternative or supplementary source of income on a sustainable basis, and produce a greater regional economic role for protected areas. Furthermore, traditional hunters should not be underestimated as they are ideal recruits for commercial enterprises.

PROTECTION STAFF (Anti-Poaching Units) need to be selected carefully using a number of criteria including loyalty, motivation, discipline, physical ability and personal skills. They must be able to operate under harsh conditions for extended periods and skilled in bushcraft and tracking of both humans and animals. It is essential that they are well-trained in, e.g. surveillance techniques, the operating methods and profiles of their adversaries, the protection of evidence in the field, and the permissible use of force. The unit must be able to operate with maximal mobility and independent decision-making. Morale and efficiency will be maximised if the staff are treated as an elite component of the work-force, well-rewarded, with performance perks and bonuses, and provided with good leadership. Information is critical thus they must be supported by a functional informer network and obtain co-operation from local people. Such a unit cannot function without being adequately equipped for their task.

MET and PRU can provide assistance with the training of privately employed protection staff. It is important that these staff represent an effective skilled deterrent who fulfil their role with minimal personal risk. Many Namibians have developed outstanding field skills from childhood and are exceptional trackers. Employing such persons will be to the advantage of every land owner facing a poaching threat. In addition, this offers an incentive for the retention of indigenous skills which may otherwise disappear.

The basic set-up of the Wildlife Protection Services (WPS) in Etosha National Park (1996) is outlined to give an indication of how such a unit operates.

1. Staff. MET has positions for one warden, four rangers, and 21 work-hands. The post of warden and the 21 work-hands positions are filled. Only two rangers are in place. One has been seriously injured and may never recover fully. The two vacancies are earmarked to be filled by ex-combatants but to date no-one has been appointed.
2. Vehicles. At present the following vehicles are available: Two donated Unimog trucks, two donated Landcruiser pick-up trucks, one Landcruiser station wagon, and four WPS

vehicles. The possibility exists to purchase a completely overhauled Unimog truck with funds provided by Namibia Nature Foundation.

3. Deployment. The Unit is subdivided into five sticks, made up of four to six members per stick, with their area of responsibility (Otjivelo to Klein Riviertjie; Klein Riviertjie to Paradys; Paradys to Owangombati; Owangombati to Galton Gate; Kaross) allocated on a rotational basis. At present supervision on the ground is a big problem. The Control Room is situated at Okaukuejo and the warden organises the Unit from there. It is planned that the Control Room will be relocated to the more suitable location of Pan Point, but the infrastructure there needs to be improved, because there are big problems at present, e.g. no telephone.
4. Radio communication. A new radio system, donated by the Overseas Development Administration, was installed recently. It is a huge improvement on the previous system. All vehicles are fitted with both a HF (long distance) and a VHF radio. Vehicles will also have ground to air communication once it is installed completely. Telescopic antennae will extend the VHF range by a further 30-40 km. necessary when operating in the north or north west of Etosha, for example.
5. Budget. The cost of keeping the WPS Unit operational is around NS 90.000.00 per calendar month. This amounts to 30% of the Annual Budget for Etosha National Park and will increase greatly if donated uniforms and other items were no longer available.
6. Duties. The tasks of the WPS unit include routine patrolling of park boundaries. In addition, they must be in continuous liaison with neighbouring communities. Assisting with problem animals, capture operations e.g. tracking of rhino and with the investigation of poaching cases provides a morale boost for WPS staff. In future, this unit will have greater involvement in the monitoring of game populations.

6) INDIVIDUAL IDENTIFICATION AND MONITORING

- optimising management with up-to-date information

It is impossible to satisfactorily measure the success or failure of rhino conservation and management if a minimum level of information is not available for a given population. The number of individuals, and their sex and relative age groups are critically important, yet it is remarkable how rarely such information is available for a rhino population. Part of the reason for this is that both species of rhino are amongst the most difficult large game species to observe from the ground or air.

Census and monitoring techniques are more reliable and efficient if as large a fraction of the population as is possible can be identified individually. New populations on private land are usually started with identifiable (artificially marked) individuals. However, adults may change in appearance: horns grow continuously, are rubbed down, and frequently broken off, and ears acquire new tears and holes. Calves will not necessarily be identifiable. In fact for the first few years most calves look identical, in other words they are "clean". Thus, individual identity records must be continuously updated. The valuable information provided by these records is more than adequate reward for the considerable work required to repeatedly identify rhino accurately. Monitoring requirements differ with population size, therefore it is important that the appropriate monitoring technique be applied (Table 6.1).

Table 6.1. Numbers of identified individuals in rhino populations of different sizes

Criteria	Large rhino populations (>20)	Small rhino populations (<20)
Size of population.	unsure of exact population size	exact population size is known
Number of identifiable rhino	many are unknown	all individuals identifiable
Number of "clean" animals	many	few

Monitoring large rhino populations: Etosha National Park, Waterberg Plateau Park, and Western Kunene Province

In Etosha National Park the first aerial census of large game were carried out in the late 1960's. It soon became apparent that rhino cannot be counted accurately from the air, and since the 1970's rhino have been monitored primarily at waterholes by park rangers. Various new

techniques have been tried, such as the use of ear marks and implanting reflectors in the horns. Waterhole counts have been used extensively in Etosha National Park and Waterberg Plateau Park during full moon periods in the dry season. All waterholes are monitored systematically for a period of two to four days, and the identification of individual rhino is based on drawings of horn shapes and ear notches, and ideally on photographs taken in addition to the field notes.

Currently, in Etosha National Park, the aim of the black rhino monitoring programme is to determine population size and composition based on the accurate identification of individuals. This project was started in the west of the park in 1986, and later extended to include the whole park. Waterholes are observed from May to October when veld-water has dried up. Ideally teams of observers monitor waterholes in a particular area and stay at these waterholes for three to four consecutive nights during full moon periods. Observations usually start five to six days before the date of the full moon. The observer is situated away from major routes used by rhino and about 50 m downwind from the waterhole. The observer determines the sex of each individual as they approach the waterhole, then moves to a previously marked place, 25 m from the site where the rhino drink, to photograph the animal. A frontal photo with the animal's head up is taken first. The animal is usually disturbed by the flash-gun and turns sideways allowing a photograph of its profile to be taken. After the animal leaves the waterhole its hind footprints can be measured provided that the substrate is suitable, i.e. dry or damp but not wet, and fine grained but not too loose. Field staff carry pocket-sized notebooks to record details for each individual (e.g. sex, ear notches, hind foot measurements, horn shape, misshapen tail, and distinct scars) (Figure 6.1).

Identification photographs (Figure 6.2.) of each individual are kept on file along with other relevant information such as spoor measurements, recorded observations and the presence of new calves (Figure 6.3). Observations are recorded on a computer database to allow easy manipulation and summarising of information. Photographs can be scanned into the computer and stored as part of the information in the database. A number of pieces of equipment are required for this type of monitoring. A SLR camera fitted with a 200-400 mm lens and flash-gun (e.g. Metz CT45) rated to 30 m. MET staff develop the black and white 400 ASA film used and produce prints. At night, both good binoculars and a spotlight with a red filter are essential to enable identification of the rhino and accurate sex determination. The response of white rhino to the spotlight and flash-gun appears to be more marked than that of black rhino; the former tend to run away sooner.

Age class

SINGLE COW BULL

COW WITH BABY CALF

COW WITH LESS THAN 1/2 SIZE CALF

COW WITH 1/2 OR MORE THAN 1/2 SIZE CALF

COW OR BULL WITH SUB-ADULT

R L

LOCALITY		
Rhino code no.		
Ear-notch no.		
Date identified		
Sex		
IDENTIFICATION	Ears	
	Horn	
	Sores / scar	
	Tail	
	Other	
	Photo No.	
Spoor width (cm)	LF RF	TIME:
Spoor width (cm)	LH RH	
Photo File		
Behavior/Remarks		

Figure 6.1. Field note book for rhino identification

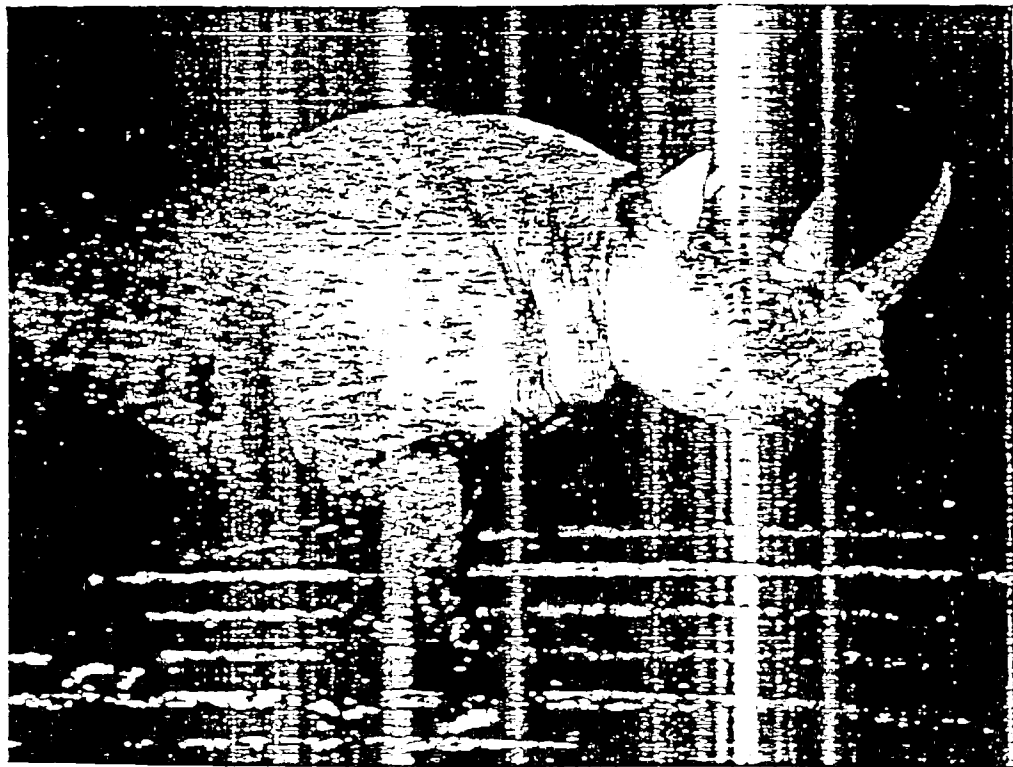
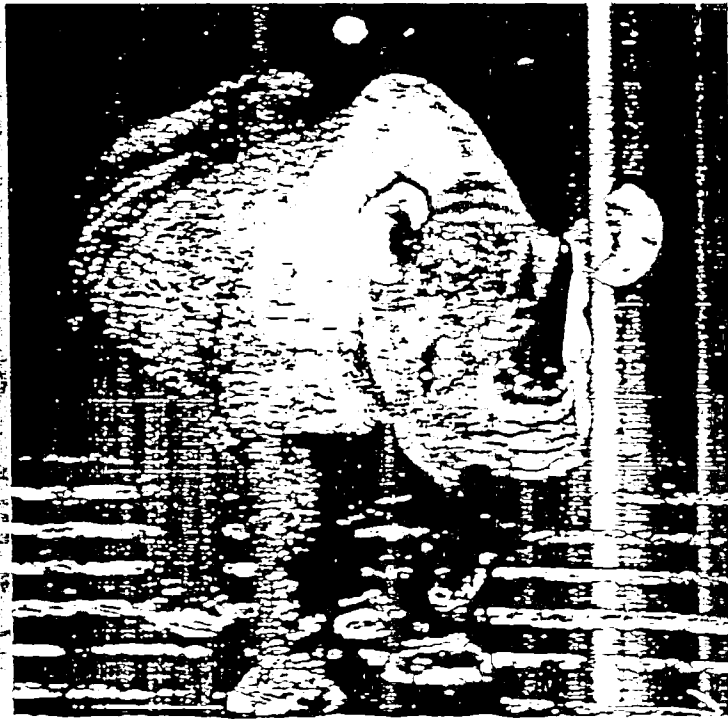


Figure 6.2. Identification Photographs taken of a rhino during full-moon at a waterhole in Etosha National Park.

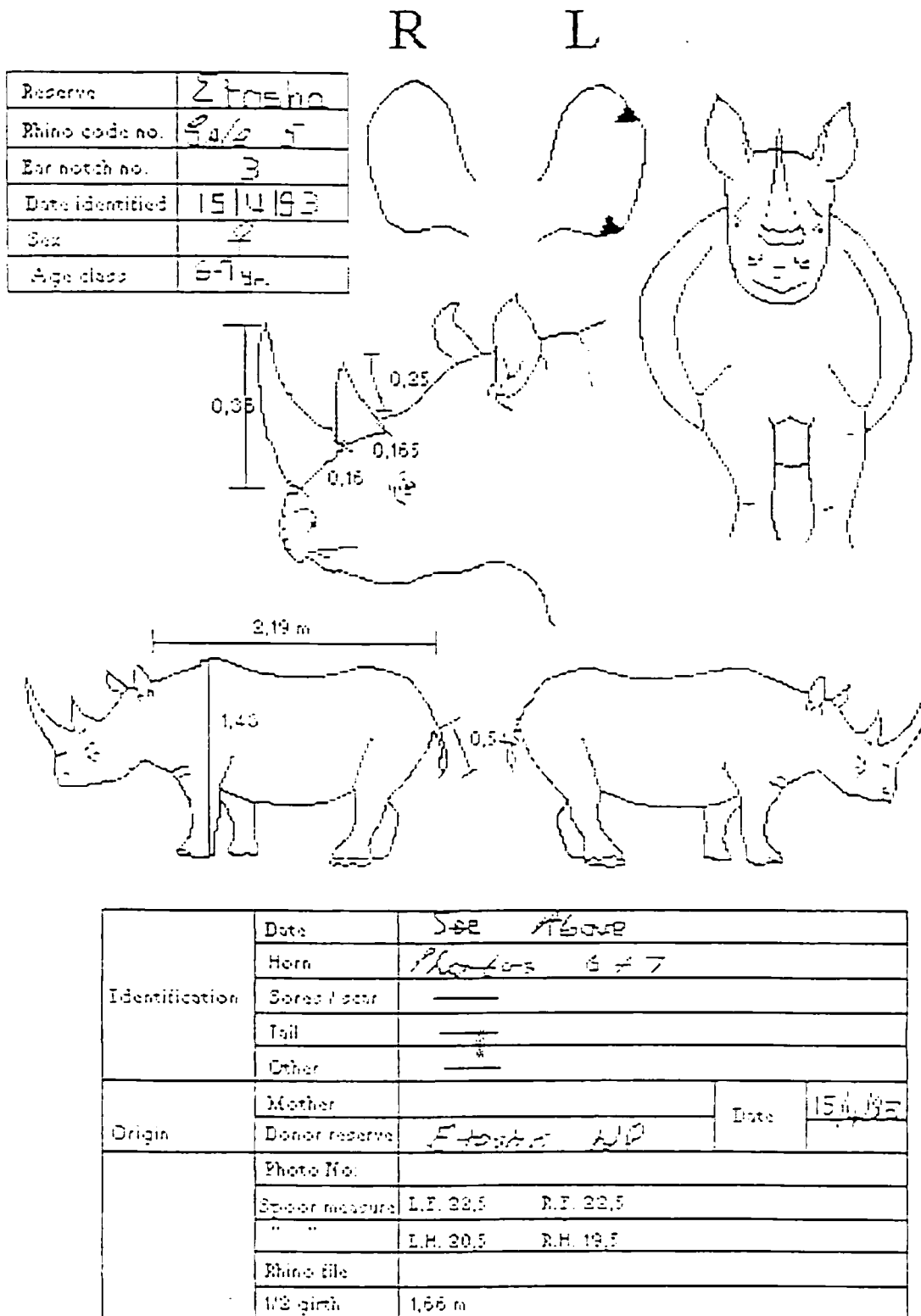


Figure 6.3. An example of an identification record.

At present, Etosha National Park staff are investigating the possibility of identifying rhino using characteristic markings in their tracks. Photographs of fresh rhino tracks could then be scanned into a computer. Analysis of these photographs, using appropriate software, could allow the identification of an individual from its footprint. Indirectly, a lot of data on rhino could be collected using this method. This technique needs to be used in conjunction with other monitoring methods.

In western Kunene region, emphasis is placed on tracking rhino. This is done both opportunistically, when fresh tracks are found, and on an organised basis. Aerial reconnaissance patrols, rainfall, proximity to human settlements, etc. are used to determine probable areas of relatively high rhino population density. However, aerial surveillance does not allow the collection of detailed information, therefore ground teams (mainly financed and manned by Save the Rhino Trust) move into the areas highlighted for attention following aerial surveillance and follow all fresh rhino tracks until an individual is found.

Once an individual has been tracked down photographs are taken from the front, side and rear (the latter to determine and document the sex and tail shape). These rhino are observed from close range so all ear notches (even minute nibbles or holes); horn shape, angle and size; scars and anatomical defects; tail length and shape; hair on ears and tail; and anything else that may help to identify the rhino can be noted. In addition, spoor measurements and close up photographs of the ears and of wrinkles on the nose are taken for identification purposes. About 80% of the rhino in this area can be identified using this data which is kept on file using a system similar to the one used in Etosha National Park. Database records are updated continuously. Additionally, very important information on the position of rhino, waterholes, sites of mortality, etc. are recorded using a global positioning system (GPS). All tracking teams carry a radio to maintain contact with other trackers and senior staff, and a hand-held GPS.

In Waterberg Plateau Park, with its 40,000 ha of sandy terrain, horseback patrols are used to monitor rhino. The information obtained from these is supplemented using regular counts obtained during full moon periods in the dry season. A two person mounted unit patrols for a period of five consecutive days, three times per month, during ten months of the year. In the remaining two months, the horses are rested after being vaccinated against African Horse Sickness, rabies and tetanus. Riders, usually labourers, carry rhino monitoring forms (similar to Figure 6.1), a tape measure for taking spoor measurements, a hand-held two-way radio, and binoculars.

The horses are trained in the park with all rangers undergoing an intensive training programme for a minimum of three days. In addition, tuition is given on general care and husbandry of horses (e.g. grooming and nutrition) and routine veterinary care (e.g. deworming and vaccination programmes, injection techniques). There is also instruction on horse riding and patrol procedures (e.g. stop every hour; avoid grouping horses too closely; dismount to monitor rhino; do not loop the reins over a branch; check hooves; remember to tighten the girth before remounting). On horseback one can follow a track much faster than on foot and for greater distances, therefore more rhino can be located per day. In addition, rhino can be seen from further away and an approach route can be planned.

A horse is relatively cheap to run and costs an average of 30-35 cents/km. There have been a few accidents and close shaves but, so far, no losses or major injuries during the horseback patrols. It is essential if horseback patrols are to remain successful that staff are trained and motivated, correct patrol procedures are followed, and senior staff involved and interested. On average, each horse in Waterberg Plateau Park works for 40 hours per month. In addition, Wildlife Protection Services personnel carry out regular foot patrols in Waterberg Plateau Park. The number of these patrols is increased during the summer months when the horses are being rested. A regular presence in the "Wilderness Area" of the park is ensured by the weekly conducted "Wilderness Trails" for tourists.

Monitoring small rhino populations

The efficiency of management and protection measures for small rhino populations depends largely on the quality of monitoring. Ideally this can be achieved by:

- Using a combination of techniques for monitoring e.g. water-hole counts, horseback patrols, tracking, regular vehicle patrols, aerial surveillance using light aircraft (small plane, microlight or helicopter) (Section 9). In addition, although the initial cost is high, radio tracking is extremely useful.
- Recording all positive sightings of rhino (including locality, time, activity, response to observer, condition, etc.) on all occasions
- Issuing pocket identification guides to all anti-poaching, tourism and field staff to maximise the probability of a positive identification from each sighting
- Preparing a set of identity photographs, which clearly show frontal and lateral views of the horns and ears of each individual, and annually updating these

Setting monitoring targets, e.g. at least one positive record per individual once every 30-60 days. If no record is obtained, a special effort should follow to determine if all rhino are still alive and in good condition.

- Using some form of permanent identification e.g. ear-notches and microchips (see "Other methods of identification")
- Collecting samples of blood and tissue from each individual at translocation. e.g. skin from the ear-notch can be taken
- Immobilising all offspring at circa 2-3 years of age for marking and sampling

Ideally, all privately owned white rhino should be marked using a number of different techniques. This will facilitate future population monitoring and management, and law enforcement. MET can offer advice and assistance; and maintains lists of current suppliers, and costs of marking and monitoring equipment. It is recommended that, where rhino occur on private land, standardised monitoring practices are established and monitoring targets set. The database established will be invaluable to the landowner and can be used for monitoring the health of the population, and determining the efficiency of surveillance and protection efforts.

Other methods of identification

Individuals can be identified using ear notches made according to a marking scheme when the animals are immobilised (Figure 6.4.). All individuals translocated have notches made in their ears unless distinctive marks are present already. Ear-tags are no longer used because they are almost always lost within a few months. MET will, whenever possible, launch special capture operations to notch the ears of juvenile rhino and thus increase the proportion of individually identifiable rhino in each population.

Microchip transponder implants are becoming popular. Each implant has an unalterable identity code and effectively, inconspicuously and safely marks an animal for life. The implants are usually placed under the skin in areas not normally consumed by scavengers, but may also be placed within the horn. Electronic scanners are used to record the microchip identity from a distance of up to 45 cm. The microchip is completely passive, has no battery and should last for the life time of the rhino.

Radio transmitters have been used to identify and track animals, especially after translocation. Different types are available commercially and these can be fitted around the neck of the animal or implanted into the horn. All transmitters have a limited life-span of 2-4 years.

depending on the size and make. Expensive tracking equipment is needed to use this system, and aircraft may be required in some terrain. The average range that can be expected on level terrain in typical Namibian savannah will rarely exceed 5 km. Suitable radio transmitters are available from the USA and cost approximately US\$ 240 each; receivers cost about US\$ 2,675 and hand-held antennas about US\$ 125. An automatic tracking station has been tested successfully in Etosha National Park and has been used to monitor several radio transmitters in rhino visiting one particular waterhole. This method should save time and effort in monitoring of rhino in smaller areas. Rhino that move into receiver range are recorded as present and alive, and then the monitoring team can concentrate on finding rhino that have not been recorded. Recently GPS-transmitters have been developed. At programmed intervals these transmitters give the exact location of the animal to which they are fitted.

A variety of other techniques can be used in special circumstances. Large numbers or codes can be painted on rhino during translocation to facilitate monitoring immediately after release. Rhino that undergo dehorning usually also have a groove made in a toe nail so that their tracks can be identified. Distinctive cracks in soles of the feet can be used to identify individuals if the substrate is suitable. An accurate age estimate might also be sufficient to identify individuals in small populations. MET are using tooth impressions to obtain accurate age estimates for all black rhino undergoing translocation. The use of a similar technique will be investigated in white rhino.

A number of novel techniques, such as using rare chemical isotopes, have been developed to identify and characterise rhino from different areas. The most promising method is based on individual genetic differences. In future, it will be possible to use so-called genetic fingerprinting to reveal very important information about each individual and population. For example, this technique can show which bull rhino has sired which calf, and the degree of relatedness and inbreeding in a population. MET already keeps a small sample of tissue from every rhino captured, and urges private rhino owners to take part in this scheme.

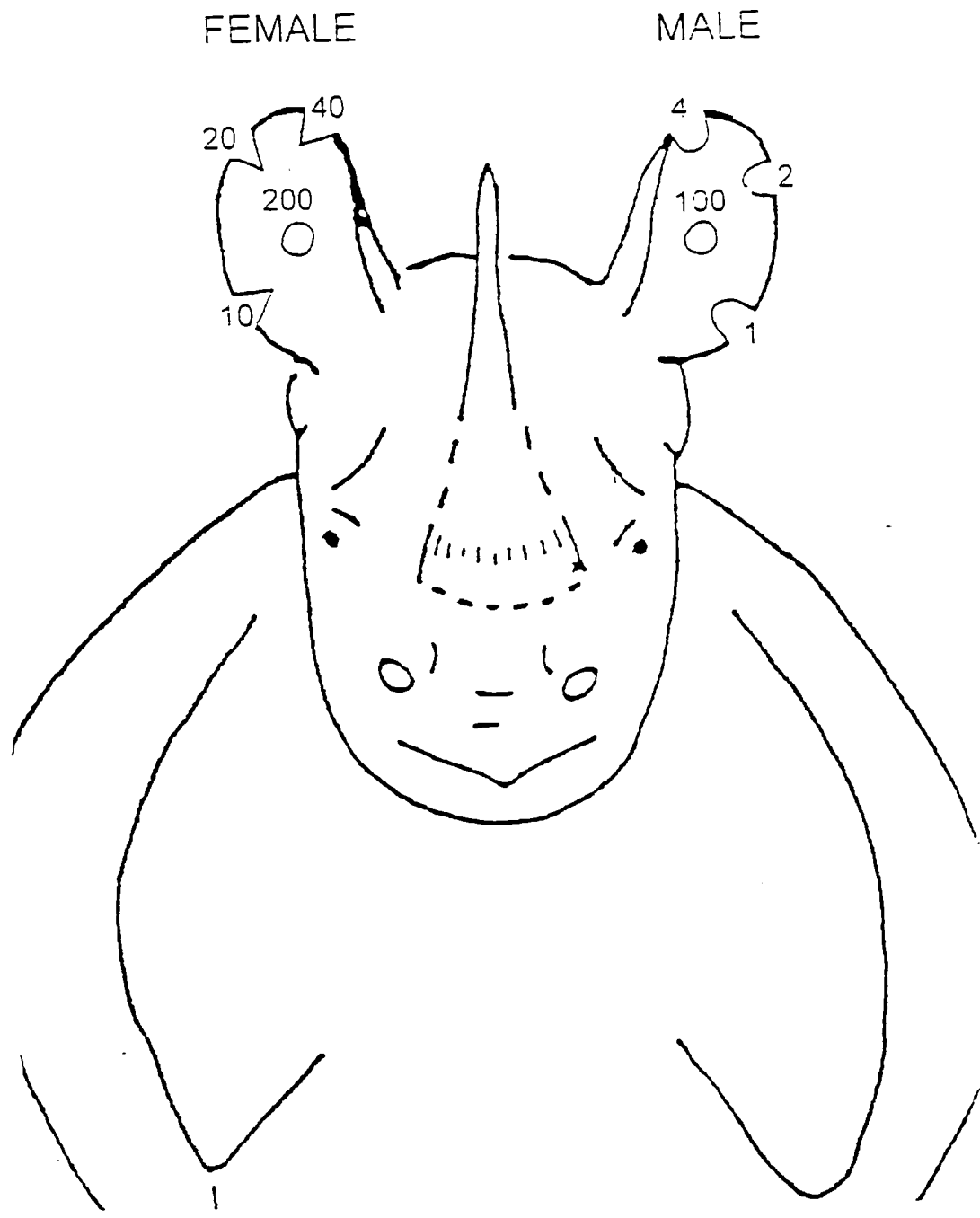


Figure 6.4. Official marking system for rhino in Namibia

7) SPECIAL MANAGEMENT NEEDS OF SMALL POPULATIONS

- striving for optimal growth

Small groups of slow-breeding large mammals, such as the black rhino breeding nuclei and the expected maximum population of black rhino that can be carried on game farms in Namibia, are unusually prone to extinction due to chance effects. These small groups are easily killed off by disease, climatic catastrophes and poachers, and are very susceptible to the effects of e.g. one unusually aggressive or less fertile group member. Ultimately small groups may suffer the effects of inbreeding e.g. an increase in calf mortality with the degree of relatedness of the population. Special management techniques might be considered if population growth is to be maximised. However, increasing management sophistication elevates the cost and effort required.

Extremely valuable experience is gained from translocating black rhino, but there is still room for improvement and innovation in every field (Section 10). Many aspects of the management of small rhino populations remain unclear, but some progress has been made in reducing the negative impact.

PROVEN MANAGEMENT GUIDELINES FOR SMALL RHINO POPULATIONS

Stress reduction

Dramatic reductions in stress e.g. rhino capture, handling and holding in a boma, can be achieved using simple precautions (Section 8). Personnel with ample experience are present in Namibia and MET can offer help and advice. Namibia has one of the best success rates in rhino capture and handling. Do not take too much notice of e.g. foreign video material of rhino capture and handling. Do not let inexperienced persons immobilise or treat rhino where less risky services are available. The responses of black and white rhino to the same drugs, handling and holding procedures are dramatically different and carelessness will produce preventable losses.

Pattern of introduction

Initially, the stocking of several sanctuaries and reserves resulted in high mortality rates which were caused by e.g. the pattern of release. It is important to simultaneously release as many individuals as possible into a particular confined area. Unless special measures are taken late-comers may either be killed or never get a chance to breed.

The best successes, so far, have been achieved with young adults (5-10 years) which originate from an area similar to their translocation destination. In practice, it will not always be possible to supply breeding nuclei composed of such groups. It appears that rhino which originate from the same area, are familiar with each other, and thus have fewer problems forming a stable population in a confined area. Nevertheless familiar rhino might also have a greater degree of relatedness than strangers.

Managing occasional escapes

Two black rhino, out of the 24 delivered to four farms in 1995 and 1996, escaped. Currently, MET is responsible for returning escaped Custodianship Scheme black rhino back to a farm. However, an alternative plan is required in case MET cannot respond immediately or funding is too limited, e.g. to afford a helicopter. A record should be kept of all escapes so that the probable causes and whether a specific individual is responsible can be determined. Escapes can be an early sign of aggression, which if unchecked may lead to deaths in the population.

Dehorning

Dehorning was pioneered by MET in 1989 as a means of protecting rhino against poaching. In Kunene region, poaching has decreased dramatically since the first dehorning operation: between 1987 and 1989, 38 rhino were lost through poaching, but only four have been lost since then. No poaching has been recorded in Waterberg Plateau Park or Kaross since the rhino there were dehorned in 1993. Subsequently, most of the smaller rhino populations in Namibia have been dehorned.

In 1993, many dehorned white rhino were killed in Hwange National Park in Zimbabwe. The exact reasons for this are unknown. It seems likely that the poachers were shooting every rhino they tracked down so as to avoid wasting time tracking dehorned rhino. Moreover, it is not impossible that the rhino poachers in Hwange National Park were paid to shoot dehorned rhino out of spite or so that the value of illegal stockpiles was driven upwards. This problem has not occurred in Namibia but, as a result of this episode, it may become essential to publicise the fact that all rhino in a given area have been dehorned.

In Namibia, dehorning has proven to deter illegal hunting effectively. Not a single mortality has occurred during any of the dehorning operations in Namibia. Some critics claim that dehorning renders the female defenceless against predators which results in higher juvenile

mortality rates. However, there is no concrete evidence to support this. Currently, all black rhino placed on private land, as part of the Custodianship Scheme, are dehorned to prevent horn damage during boma confinement, as a protective measure and to reduce the chance of injury through fighting in the critical post-release period.

The dehorning of rhino is expensive and could adversely affect tourism. Therefore, it must be used in conjunction with other conservation strategies such as improved monitoring, translocation to secure areas, fitting of radio-transmitters and extensive public awareness campaigns. Close liaison between MET and landowners is important in the development of such practises. By ensuring optimal horn re-growth, dehorning can be used as a method for protecting rhino, harvesting horn, and as a means of non-lethal hunting. The revenue generating potential is great and one day the rhino may be able to pay for its own protection.

Method: Rhino are darted individually, preferably from a helicopter. Helicopter flying time, and thus the cost of the operation, is reduced by first locating the animals using a survey plane. Locating the animals by tracking on foot or horseback is also cost effective. In addition, costs are influenced by the type of helicopter used, rhino population density and area size. The cheapest method is to use trackers and dart rhino from the ground. However, this has an increased risk of mortality as animals cannot be monitored after darting. Once the animal has been immobilised, the horn is cut off using a chain-saw. Initially, MET cut the horn to 5-6 cm long and rounded off the edges of this stump. However, following the recent finding of defective horn re-growth, the method has been changed. Currently, 12-15 cm of horn is left and the stump is not rounded off.

Horn re-growth: Normal re-growth is in the region of 6-8 cm per annum. The back horn grows more slowly than the front horn, and the horns of juvenile animals grow more rapidly than those of adults. In 1996, three years after initial horn removal, the dehorning operation was repeated in the black rhino population in Kaross. Various patterns of abnormal horn re-growth were found. The abnormal re-growth varied from central cavitation to abscess formation in the horn core. All horns, including those that appeared to have normal re-growth, had small cracks on the cut surface and scar tissue formation. These abnormalities probably relate to an incorrect cutting technique resulting in the exposure of the germinal area at the horn base. Repeated trauma to the horn surface results in the development of a haematoma between the horn and the germinal area. Central cavitation results when there is complete retardation of the

growth of the center of the horn, and thus growth in the horn wall only. However, if horn growth is normal, the haematoma can develop into an abscess which drains at the skin-horn junction. By leaving a longer horn stump and a flat cut surface, there is less trauma to the germinal area and consequently normal horn re-growth. This is evident in rhino from whom only the horn tip was removed to prevent injury during boma confinement.

Captive rearing

Considerable effort and commitment is required to hand-rear abandoned or orphaned rhino calves successfully. The intrinsic value of the animals is high enough to warrant the effort. However, MET is not always in a position to do this and has experienced difficulties in the past. Nevertheless, staff in Etosha National Park succeeded in rehabilitating a hand-reared black rhino. This animal went on to become the first hand-reared black rhino to breed successfully in the wild. Private landowners are better equipped to rear calves. In 1994, a black rhino calf born in the bomas in Etosha National Park was successfully hand-reared by Mr. and Mrs. J. Oelofse at Mount Etjo Safari Lodge.

Case study: At birth the calf weighed 27.5 kg and its shoulder height was 48 cm. Initially the calf was fed every two to three hours. During the first few days, it exhibited frequent shivering, a fast heart rate, restlessness and hind limb weakness. The calf urinated and defecated regularly. On day three the calf developed diarrhoea and, two days later, laboured breathing (dyspnoea). The clinical signs were resolved by treating the calf with oral rehydration fluids, kaolin and systemic antibiotics. The milk formula was changed to a low fat milk powder (Protea 2%, with glucose and lime water added, by volume, in the ratio 4:1:1). After around ten days, night feeds were stopped at 22:00, i.e. the calf was fed every three to four hours (six times/day) between 05:30 and 22:00. An average of four litres of reconstituted milk was fed per day until the calf was two weeks old. Enemas had to be given on several occasions to treat constipation, and intermittent bouts of diarrhoea were treated with kaolin. The concentration of the milk was increased (more powder added) after two to three weeks, and the quantity was increased gradually. After four weeks the volume consumed daily had increased to six litres. By eight weeks old, one teaspoon of ProNutro was added to every feed and the calf consumed 12 litres of reconstituted milk daily. This increased to 15-17 litres per day by the time the calf was three months old. At four months of age, the frequency of feeding was reduced to four

times daily. The calf had its first incisor teeth at five weeks old and started nibbling on solids at the age of five months. At seven months old, the calf's diet was changed to maize meal porridge (cooked for three hours with 1.5 cups of sugar added per five litres). The rhino was fed 15 litres of maize porridge twice daily. The amount of solid food consumed increased gradually. At 15 months of age, the calf consumed 15 litres maize porridge in the morning and 4 kg of horse cubes in the evening. The calf remained in good body condition and started to browse and eat lucerne.

UNRESOLVED MANAGEMENT PROBLEMS

Maintaining an ideal sex ratio

The sex ratio of small groups may be critically important in the achievement of successful breeding. Interspecific fighting will increase if too many males are present; while a shortage of bulls may result in prolonged calving intervals or inbreeding. Currently, black rhino are introduced into farmland at a sex ratio of 1:1 (males to females). At auction the sex ratio is usually 2:4 to add to the attraction of the group. Moreover, it is important to maintain optimal sex ratios in the donor populations (e.g. Etosha National Park and Kunene region). However, this may result in the need to alter the sex ratio when establishing breeding nuclei.

Landowners, through detailed monitoring and record keeping, can provide valuable information on the breeding performance of the black rhino in their care. This information will enable MET to optimise the reproductive performance of the breeding herd in each region and habitat type by adjusting the sex ratio. In a small population, genetic research may help to determine the parentage of calves born, how many of the adult males actually breed, and thus how many breeding bulls are required. Males of both rhino species are capable of vicious and lethal fights, which often result in serious injury to one or both combatants, or even worse, kill a cow or calf. It is not always clear why such fights occur, but they seem to be related to population density and sex ratio.

Preventing inbreeding

In Namibia, it has been proposed that inbreeding might be prevented by exchanging females, not males, in established populations. The resultant increase in genetic diversity may be sufficient but will occur much more slowly than if new males were introduced. However, the introduction of new males into a population almost always leads to serious fighting which may kill males, females or calves. The development of a reliable system to monitor genetic

... and the ... in each population is a research priority. ... and the Namibian Game Farmers Association will develop and keep a rhino stud book (Section 10). Before this can be achieved much more information will be required on all the individuals in each population.

Achieving optimal reproductive performance and population survival

One of the main objectives of introducing rhino onto commercial farmland is to maximise their reproductive performance so that the national goal of 2000 black rhino and 500 white rhino can be reached as soon as possible. Maximum population growth can only be achieved by simultaneously optimising a number of factors. For example, breeding should commence as soon as possible after young adults reach sexual maturity; intercalving intervals should be relatively short; weaning rates must be as high as possible; and the survival rate of adults should be high. A population will tend to increase in number rapidly if provided with a suitable and sufficient habitat (abundant good quality food, space, water, and shelter). Furthermore, management programmes can contribute to rapid population growth by ensuring the most suitable initial age and sex ratios, controlling disease, and providing protection against disturbance, poaching and injury. Management can also prevent temporary setbacks, e.g. by providing supplementary food and mineral/high energy licks during drought, and by rearing abandoned calves. In future, it might be possible to manipulate small populations so that maximum breeding rates can be achieved. For example, in zoos calves of around 12 months old are removed from their mothers for a few weeks. This brings the cow into fertile heat earlier than would occur naturally. After mating the calf is reintroduced to its mother and there is a reasonable chance that they will be reunited successfully. The information gained from monitoring populations will provide the key to achieving and maintaining optimal population growth. It will become easier to fine-tune the management of each population as more knowledge becomes available about each individual and group.

Optimal population sizes and carrying capacities

Currently, groups of six black rhino are released onto selected farms. However, no one really knows what the optimum size of a so-called "founder group" is. The breeding nucleus will increase in size if no interference occurs, but eventually it will begin to breed less rapidly, or even stagnate completely. Typical indications of the limiting effects of insufficient resources on a population are longer calving intervals, increased calf mortality, and increased fighting

amongst adults. Population density must be kept below the level where such signs of stress and limitation start to become apparent.

Surplus individuals

White rhino may be hunted for sport but hunting black rhino is not permissible at present. The impact of hunting on white rhino populations should be monitored carefully, as small white rhino populations seem to have increased less rapidly than expected. However, the financial returns from each rhino should be maximised so that investment in rhino protection and management are encouraged and costs recovered. Unwanted individuals (e.g. highly aggressive, infertile, aged) are unsuitable for translocation and could be used to theoretically serve as a buffer against poaching of more valuable individuals, to produce horn and for sport hunting.

Disease prevention

Anthrax and rabies are widespread in Namibia although rhino are less susceptible than other species. Research has shown that there are marked species and individual variations in the response to vaccination. An effective anthrax vaccination programme needs to be developed for rhino. MET should be consulted to ascertain the most appropriate current vaccination programmes. It is possible to immunise rhino without immobilising them. However, every time a rhino is immobilised, blood samples should be collected so that the degree of post-vaccination immunity and exposure to a range of different important diseases can be determined. This will yield information on disease prevalence and the duration of immunity following vaccination, which will allow immunisation programmes to be refined.

Materials

Wooden poles of 10-15 cm diameter are the most suitable for construction. Creosoted poles must be avoided as rhino are highly susceptible to creosote poisoning, but tanalith-treated poles can be used. Iron pipes of different diameters are ideal for the sliding mechanism of doors, especially if mechanisms are greased. An I-beam and roller system works well but is more expensive (Figure 8.2). A mixture of cement, gravel and sand in a ration of 1:1:3 will be ideal for concrete.

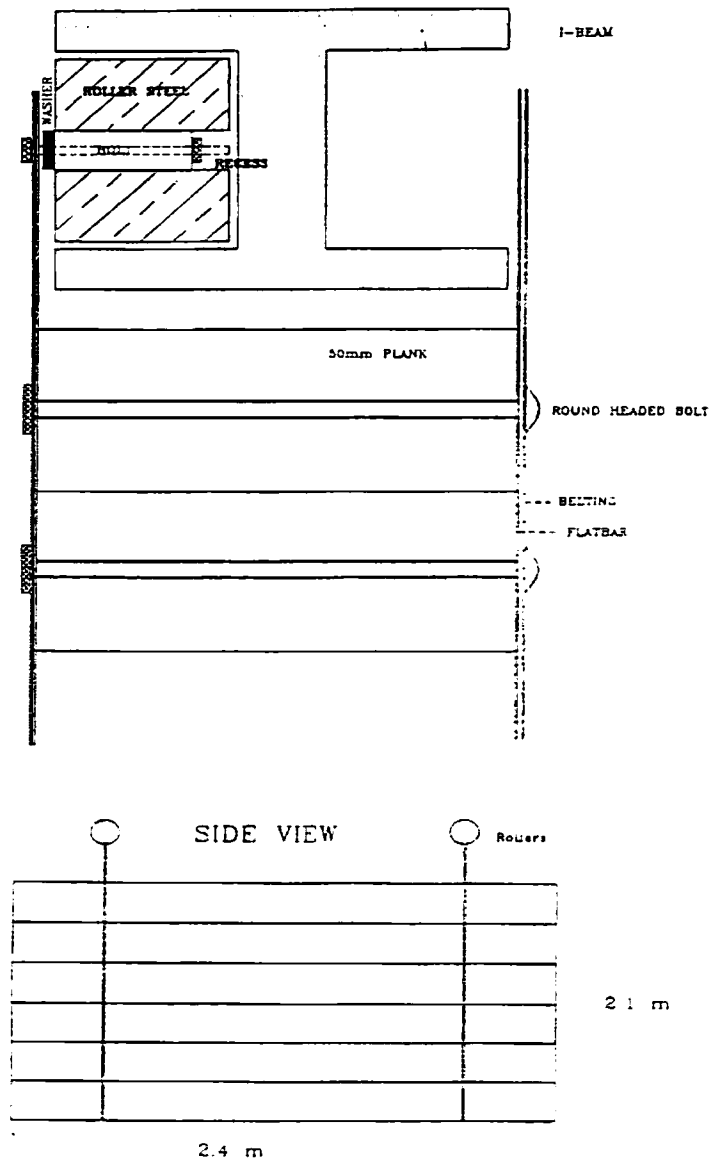


Figure 8.2. Sliding door mechanism with I-beam and rollers.

Loading and off-loading components

At ground level, the loading and release doors must be between 2.4-2.8 m internal diameter, to fit the MET special black rhino transport truck (Figure 8.3). The ramp gradient should be 1:5, with the first 7 m level or sloping gently to encourage the animal to disembark. The ramp should be filled with compacted soil. It is useful to construct catwalks on either side of the ramp to facilitate handling of difficult animals. The ramp should have sturdy swinging gates at both ends.

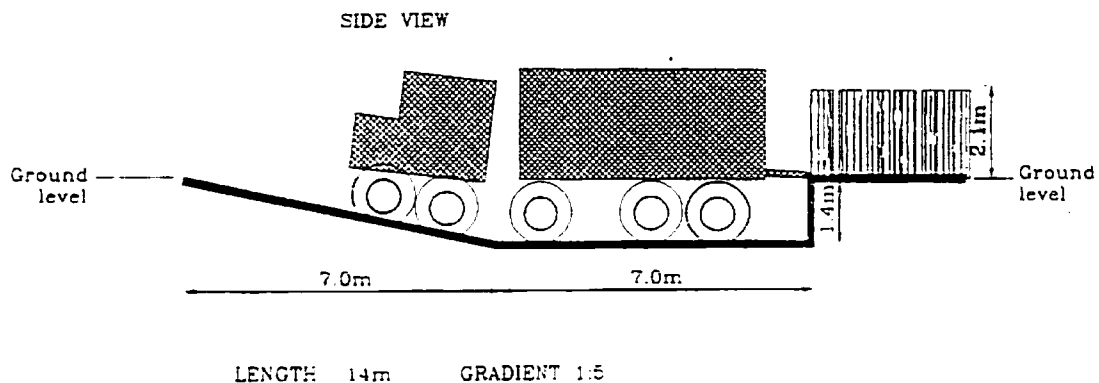


Figure 8.3. Boma loading ramp dimensions.

Gates

Sliding gates are preferred to any other design. Wooden boards (50 mm thick) are used to construct gates, and an outer layer of conveyor belting is applied to provide reinforcement and prevent injury. Metal doors work well but have to be padded with belting. Ideally all nuts and bolts should be recessed, but protruding sharp edges can be trimmed and rounded. Heavy grade material has to be used throughout, and in particular the sliding mechanisms have to work well. Rhinos tend to fight with moving gates, therefore gates have to be especially sturdy and well secured to the sliding mechanism. A damaged door cannot be handled efficiently and may result in unnecessary stress or injury to the rhino. Whenever wooden planks or poles are bolted to metal (e.g. to a metal gate frame), a flat bar must be placed on either side, to distribute the weight and tension and prevent the plank or pole breaking at this point.

All gates must have a reliable locking device!!

Water

A buried PVC pipeline, not less than 32 mm diameter, with taps at each trough, is ideal. The pipeline should be placed 25 cm underground to ensure that cool water is available throughout the day. Troughs should be saucer-shaped with reinforced shoulders at least 15 cm thick, since the animal will step on or walk through the trough while in the boma and during release. If troughs are situated in the release doors they can be cleaned from the outside.

Shade

If there is insufficient natural shade, additional shade should be provided. Shade cloth (80%) can be elevated about 3 m above ground level on the northern side of the pens to provide sufficient shade. The elevation of the shade cloth is necessary to keep the animals from being irritated and to allow ample air flow between the wall and the cloth. Shade cloth should be suspended from a framework welded onto the corner, gate and wall support posts and supported with taught steel wire. It should be tied down to prevent flapping.

Walls

All corner and gate posts must be made out of steel (e.g. railway ties or heavy gauge pipe) and should be properly concreted into the ground. Support posts must be made of steel and secured with concrete at 3 m intervals. Walls can be constructed using a variety of materials. Wooden poles at the top and bottom can be used to provide horizontal support (Figure 8.4a). Upright poles can be bolted onto these supports, but only every second or third pole needs to be bolted. Other poles can be wired onto the frame with wire (no. 8). Angle iron welded back to back also works well as a horizontal support. Round bars can be welded onto the angle iron to keep the upright poles attached (Figure 8.4b). Alternatively uprights can be tied onto steel cable (5-14 mm diameter) with wire (no. 8), provided that all protruding sharp edges are removed. In addition, holes can be drilled through the poles at the same level and poles suspended from the cable when it is strained taught. This type of suspension wall needs three cables suspended at various heights if 14 mm cable is used, but up to five cables if 5 mm diameter cable is used. Spacers of any suitable material can be placed between the poles to create gaps not wider than 50 mm between uprights (Figure 8.4c).

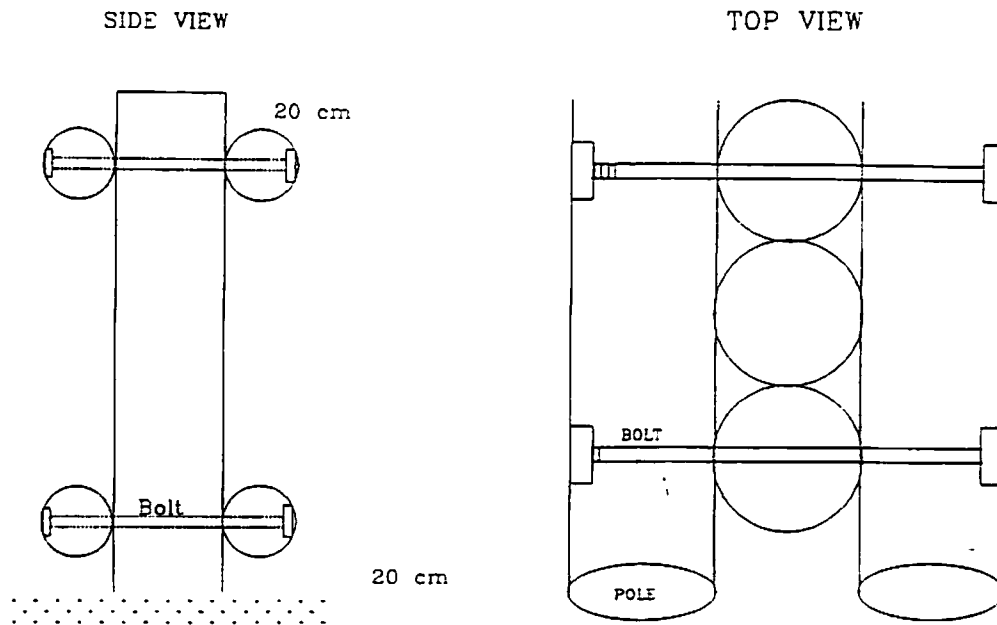


Figure 8.4. a. Wall construction using poles and bolts as supports.

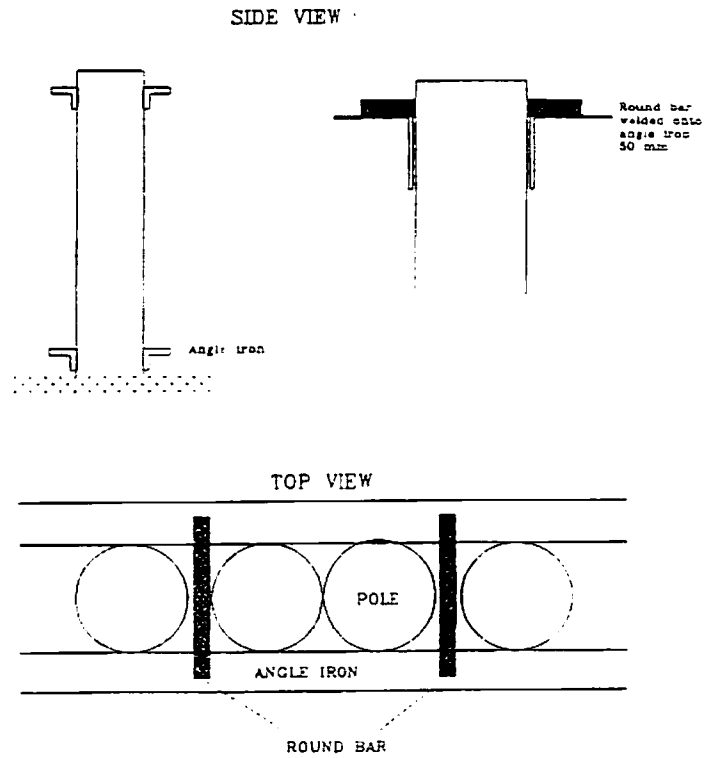


Figure 8.4.b. Wall construction using angle iron with round bar supports.

first week of confinement. In addition, it acclimatises them to the presence of humans and to a specific feeding routine.

Daily routine

Twice a day rhino are moved from one pen to another, this allows the pens to be cleaned and fresh browse provided. All faeces and old browse are removed from the pens, and water troughs are cleaned. Fresh browse is packed against the pen wall well away from the water trough and the place that the rhino uses as a toilet. To control flies, the soil around the pens should be kept dry and fly traps suspended at each pen.

Patience is needed to move a rhino from one pen to another. It should be enticed (by waving a stick or a cloth at the entrance to the clean pen) rather than forced to move (e.g. by hitting with sticks or throwing stones). Normally, rhino learn very quickly, and it is not unusual to have a rhino eating out of your hand within one week of entering the boma. Young animals are less aggressive and adapt much more quickly to the boma and their post-release environment and thus are preferred to older animals. Once a routine has been established, for a group of six rhino, it will take a work-force of four to six people two to three hours every morning and evening to move the animals, clean the bomas and provide fresh feed.

All rhino are potentially dangerous. Rhino confined in a boma should not be crept up on, but should be made aware of any approach. Ideally, the animals should be exposed to all the sounds that they are likely to hear later on the farm. Staff should always remain alert, be very patient, and never excite a rhino.

Never get into a pen with a rhino no matter how tame it seems!

Feeding

Black rhino should have feed available throughout the day and night (*ad libitum*) and fresh feed should be provided twice every day. At least four or five species of natural browse must be given, and this can be supplemented with lucerne and horse cubes or "bos korrels". Captive black rhino require approximately 100 kg of fresh browse (of which about 40 kg will be consumed) every 24 hours and additional lucerne and cubes. In Namibia, natural browse species that are consumed readily by rhino in bomas include *Acacia* species (*A. ataxacantha*, *A. hereroensis*, *A. karoo*, *A. mellifera*, *A. nebrownii*, *A. reficiens*), *Ziziphus mucronata*, *Grewia* spp., *Catophractes alexandri*, *Rhigozum* spp., *Terminalia prunoides*, *Combretum*

appendiculatum, *Monechma* spp. and *Baphia masaiensis*. Daily monitoring will soon establish which browse species each rhino prefers and the quantity of each. Usually, only the tips of branches are eaten and if a rhino eats branches of finger thickness or greater, this indicates a shortage of food. By feeding a mix of different browse species a well-balanced diet resembling the natural diet of the rhino is ensured. In this way, rhino are also introduced to the browse species of their new environment. At first lucerne is spread over the fresh browse and leaves of preferred plants are mixed with the lucerne until the rhino develop a taste for lucerne. Once lucerne is eaten readily, cubes can be placed on the lucerne or mixed with lucerne. Some rhino cannot be trained to eat lucerne, but at the end of the four week period most rhino will eat between 10-20 kg of lucerne and 3-5 kg of cubes daily. Before release the diet of the rhino has to be gradually changed from lucerne to the feed available in the veld. Wilted browse and mouldy lucerne must be avoided to prevent poisoning.

White rhino must be provided with fresh green grass immediately after capture. Teff should be mixed into the grass fodder from day four. The fodder should be loose, completely teased apart, and tossed ("fluffed") with hay forks. As soon as the rhino begins to feed readily on this mixture, lucerne should be added. Initially, lucerne should not exceed 10% of the diet and this should be reduced if diarrhoea develops. At each feeding time, about 1 kg of horse cubes can be fed in addition to grass and lucerne. Adult white rhino will consume at least 40 kg food every 24 hours. *Panicum* spp. and sweet-grass types can be tried instead of teff or green grass. Generally, nutritional stress and disturbances can be avoided by keeping forage quality as constant as possible and mouldy grass or lucerne must not be fed. Captive white rhino can be very reluctant to start feeding, and any individuals which refuse to eat within ten days of capture should be re-released. Ideally, rhino should be released in good condition or, at least, during a period of stable or improving body condition.

Water

Water troughs must be cleaned at least once daily and fresh water must be available at all times. Medication such as antibiotics and vitamins can be added to the water if necessary.

Problems encountered during boma confinement

A number of dilemmas, some of which are avoidable, can arise during the boma confinement of rhino. Common problems that are encountered include:

- Bedsores: White rhino are very prone to developing bedsores from lying on a hard surface for prolonged periods. These usually develop inside the fore feet and on the pastern joint of hind feet and are very difficult to treat. The best option is to release the rhino as soon as possible.

- Calving: At capture it is impossible to visually diagnose pregnancy even if it is at an advanced stage. Consequently cows may give birth in the boma. Adult rhino injure and kill small rhino in confined spaces, such as a boma pen. If a rhino gives birth in a boma, an urgent decision is required and MET staff should be contacted immediately for advice and assistance. The provisional recommendation is to release the mother and calf immediately, if conditions are otherwise suitable (e.g. cow in good condition, near the end of boma confinement, and veld conditions ideal (abundant food and water)). If conditions are not ideal and the mother, as the more valuable individual, needs to be kept in the boma, the calf must be removed and hand-reared. In the past, no problems have been experienced with cows once calves were removed.

- Escape: Rhino can escape out of the boma if doors are not secured!!

- Inappetance: This occurs occasionally in black rhino but seems to be self-limiting and does not usually require treatment.

- Injury: This is usually due to aggression and often occurs during the first few days of confinement. Common injuries include superficial wounds, broken horns, lacerations, especially of the lips, and nose bleeding. Doors may be destroyed and serious injury can result from fighting between rhino.

- Other medical problems: These include conditions such as pneumonia, abscessation, and constipation and must be dealt with promptly by a veterinarian.

Translocation to new habitat

After a period of four weeks in the boma the rhino are loaded individually into a mass-crate. As before, they are loaded facing backwards to facilitate off-loading at the destination boma. Long distance transport of up to 55 hours without food or water has been carried out successfully. During the journey the rhino must be encouraged to stand up every two to three hours to prevent the development of muscle cramp or partial paresis.

Release into the new boma must be carried out with the least possible disturbance. The rhino should be kept confined for a further two to four weeks in the new bomas before release.

9) POST-RELEASE ASSESSMENT, DISEASE AND BODY CONDITION

- monitoring the well-being of translocated rhino

POST-RELEASE MONITORING

In translocated animals mortality frequently occurs during the adaptation period shortly after release. This is also the period when a rhino is most likely to break through a fence, injure itself in rocky terrain, become dehydrated if it cannot find water, and be maladjusted to a change in diet and there is often a noticeable loss in body condition. Losses and problems can largely be reduced by boma training rhino at the capture site, allowing-recovery from transport stress, re-adaptation to local browse, etc. by keeping them in bomas at the release site, and releasing them at an optimal time. Rhino should, preferably, be released at night and should be allowed to exit from the boma independently and without any disturbance. One rhino should be released daily to simplify post-release monitoring. This is essential, allows the early detection of problems, and must be intensive during the initial post-release period. A combination of various monitoring techniques should be used with the main objective being the determination of how well the rhino are adapting to their new environment.

Ensure that the rhino stay inside the game camp

The perimeter fence must be checked on a daily basis. During the initial post-release period rhino often walk along the perimeter fence sometimes in search of water. Spoor can be picked up easily here and frequently a rhino is seen near the fence. Rhino often find water holes in close proximity to fences first. A rhino breaking through a fence will usually settle for a few days near a drinking hole, if it finds one. It is advisable that the movements of such animals be monitored daily and that recapture takes place once the rhino has settled and is browsing and drinking regularly. Usually, animals released back into a game camp under these conditions, adapt well and do not break through the fence again.

Ensure that rhino are drinking

Most rhino find water within the first two days post-release and often settle in the vicinity of this water hole. It is easy to confirm this by checking all waterholes every day. It may be impractical to do so, if there are too many waterholes, open pans or rivers, but in this case the rhino will not have a problem finding water. If a rhino is found wandering along fences or

elsewhere in search of water, water troughs should be placed at various strategic points. These should be kept full until the rhino finds the permanent waterholes. Troughs can be moved gradually towards permanent drinking places.

Give the rhino a chance to adapt to the new environment without disturbance

Rhino must be given a chance to adapt to the new environment. It is essential to find evidence of the rhino eating, drinking, defaecating and urinating. It is, however, not necessary to see the individual animals during the first few days. Fresh tracks will provide sufficient information (i.e. fresh tracks at water holes, then moving on to a feeding site, a resting site, etc.) Spoor should be followed to check for utilisation of browse, dung heaps, urine, etc.. In addition, movements of individual rhino with radio collars can be determined by radio-telemetry without needing to see them.

After a week find rhino to assess body condition

Usually rhino settle into a selected range within a short period. At some stage, they will probably move on to discover more of their available range, and either settle in elsewhere or return to this first "home range". It is likely that the rhino will be seen regularly during intensive post-release monitoring, even without attempting to do so. If rhino have not been seen within a week it is advisable to find them to assess body condition, confirm that tracks coincide with the suspected individuals (if they are not fitted with radio-transmitters). At this stage, it is unlikely that such disturbance will affect the rhino adversely.

Intensive monitoring should be carried out for the first few months, and preferably indefinitely so that problems can be detected rapidly and maximum safety provided. A combination of procedures (e.g. tracking rhino on foot or horse back, observations at waterholes during full moon, radio-telemetry, and aerial surveillance with a plane or microlight) should be carried out regularly. Monitoring sheets have been provided to farmers with black rhino on their land (Annex 5). These can be summarised easily to produce regular progress reports.

DISEASES OF BLACK AND WHITE RHINO IN NAMIBIA

A few diseases and conditions that occur in rhino in Namibia are mentioned here. The diagnosis, treatment, and prevention of these is discussed in a few important instances.

It is difficult to treat disease in wild animals. It must be remembered, if intensive care treatment is required, that, for example, an adult black rhino that is 10% dehydrated will need a minimum of 80-100 litres of intravenous fluid therapy immediately and 60 litres per day for maintenance purposes. Unfortunately, even the most intensive treatment that can be practically administered usually does not save a seriously debilitated rhino. However, several subacute and chronic conditions can be treated successfully if they are detected early enough. Poor condition predisposes to disease and chronic disease results in progressive weight loss.

Abscesses: These are localised pockets of bacterial infection which can form under the thick, non-pliable skin of rhino following injury, e.g. fighting or darting. These often do not drain and become evident as swellings in animals that have lost body condition. In addition, they can produce more widespread bacterial infection (septicaemia). Abscesses that are discovered early enough should be drained and cleaned whilst the animal is under general anaesthesia. This should be followed by a course of treatment with an appropriate antibiotic.

Anthrax: Infection with the bacterium *Bacillus anthracis* produces death rapidly in all mammals including rhino. The number of spores ingested, health status and body condition of the animal and stress are amongst the factors predisposing to the development of clinical anthrax. The condition manifests as a haemorrhagic non-coagulating discharge (dark runny blood) which exudes from external orifices (e.g. nose, mouth, eyes and anus) of affected animals and often a number of different species and individuals will die in a single outbreak. A diagnosis of anthrax can be confirmed by the microscopic examination of stained blood smears, bacterial culture, serological isolation of antibodies, and a novel dip stick. Anthrax spore vaccine can be administered whilst rhino are immobilised, confined in a boma using a pole syringe, or by darting free-ranging rhino from a helicopter, vehicle or on foot. Vaccination should be repeated within 4-12 weeks and annually thereafter. Anthrax bacilli occur in high numbers in animals that have died of anthrax. However, *B. anthracis* only sporulates on exposure to air. Thus, if a carcass is not opened, the bacilli will decompose. Hyaena, jackal and vulture play a major role in spreading spores. The spores are extremely resistant and can still infect susceptible animals after 50 years in soil. They are destroyed only by hot fire or high concentrations of disinfectants, such as chlorine or formalin.

Carcasses should be suitably disposed of and areas where blood has exuded onto the ground treated to destroy spores.

Bacterial infections: For example, dermatitis, enteritis, haemolytic anaemia, meningitis, pneumonia, pyelonephritis and septicaemia can be caused by a variety of different bacteria. These can be treated using antibiotics and preventative treatment may occasionally be used during stress, e.g. boma confinement and transport.

Burns: Rhino caught in a veld fire may sustain serious burn wounds to their feet, skin, genital and facial organs. The inhalation of both hot air and smoke can cause serious lung damage. Subsequently, shock, respiratory distress and secondary bacterial infections often result in mortality.

Capture myopathy: This results following over-exertion, due to excessive chasing and stress, at capture. Muscle fibres break down releasing excessive amounts of myoglobin into the blood stream. Myoglobinaemia/myoglobinuria (dark brown urine) results. The animal dies as result of associated organ failure, e.g. acute kidney failure. This condition can be prevented by using good capture and handling techniques. In addition, long-acting tranquillisers and vitamin E/selenium are administered routinely at capture.

Colic: This syndrome has a large variety of causes and manifests as acute abdominal pain. Sand impaction and high levels of internal parasitism are frequently associated with the development of colic. (Sand may sometimes be ingested to alleviate abdominal pain.) Complete intestinal obstruction results in the development of severe shock and death.

Dental problems: Malocclusion, tooth abscesses and broken teeth can result in feeding difficulties, digestive problems due to poorly chewed browse and chronic weight loss. In aged animals, teeth may wear down as far as the gums and expose root cavities which then become impacted with food. Secondary bacterial infection occurs following tooth impaction and this can even spread into the maxillary sinuses. Sometimes dental problems can be treated by removing hooks, cutting off overgrown teeth, filing teeth, etc..

Dystocia: Rhino births are hardly ever observed, thus a rhino in difficulty during parturition (dystocia) will usually die. Fortunately dystocia is rare. Abortions and foetal resorption will normally occur undetected. Some rhino have aborted during boma confinement or long transport.

Hypothermia: This is most likely to occur in new born calves, rhino confined in bomas during extremely cold weather and animals in poor condition. Hypothermia can predispose to infections, e.g. pneumonia in severely cold, windy winters and can be fatal.

Injury: Capture-related injuries such as jaw fractures from hitting crates or boma walls, may occur and can cause chronic condition loss and death. In the early post-release period, rhino sometimes fall down cliffs, get stuck between rocks, fall into pits or injure themselves in rocky terrain. These accidents sometimes occur as the rhino attempts to find water. Injuries sustained during interspecific fighting are often fatal. In addition, death may result from injuries inflicted by other species, e.g. elephant or predators. Bullet wounds usually become infected if they do not cause immediate death. Metal detectors can be used to locate the bullets. Snares or loose wire can inflict serious injury and occlude blood supply (dry gangrene). Injury is often followed by severe secondary bacterial infection.

Lightning: It is suspected that several rhino have been killed by lightning strike.

Malnutrition, maldigestion and starvation: Malnutrition and maldigestion can occur if there is a sudden change of diet, e.g. following the release of rhino on a lucerne and cube diet directly into veld where only poor quality browse is available. Malnutrition may lead to starvation particularly if insufficient food is available in the dry season and during severe drought years. It can be prevented by providing supplementary feed.

Neoplasia: Cancerous growths are sometimes seen, usually in elderly rhino.

Old Age: Chronic enteritis, dental problems, hepatopathy, kidney failure or generalised organ failure may eventually cause the death of aged animals.

Parasitism: Internal parasites: The intestinal tract of the rhino normally contain numerous parasitic worms and insect larvae. Deworming (e.g. ivermectin) can be carried out when rhino are immobilised. External parasites: A variety of ticks (depending on the regional distribution) are found commonly on rhino, mainly around the tail, udder, perineum, external genitalia, groin and axilla. Rhino in poor condition or debilitated animals usually have a much higher parasite burden. The underlying cause, rather than the parasites, can lead to mortality. Tick-borne diseases such as babesiosis or insect-borne disease such as trypanosomiasis have been diagnosed frequently in rhino in East Africa and Zimbabwe but at present have not been described in rhino in Namibia. Rhino can be treated routinely prior to translocation using either an organophosphate ectoparasiticide (e.g. "Deadline") or an endectocide (e.g. ivermectin). Microfilariae: Microfilarial skin lesions are common in rhino

in other regions (East Africa, Zimbabwe, South Africa (Natal)) but have not been described in Namibia.

Poisoning: Aflatoxicosis is a poisoning which is caused if lucerne or feed contaminated with fungi is fed to rhino. Creosote poisoning can occur if rhino are placed in bomas constructed using creosote-treated poles. Plant poisoning most commonly occurs if rhino are introduced into habitats where these plants (e.g. gifblaar (*Dichapetalum cymosum*)) are abundant and little good quality browse is available (usually poorly managed veld in drought years in the spring). Prussic acid poisoning can occur if certain types of wilted *Acacia* spp. are eaten.

Viral infections: Not commonly diagnosed in rhino.

The importance of intensive monitoring in the detection and prevention of mortality

It is difficult to diagnose disease in rhino and therefore this is most commonly done at *post mortem* examination. A complete *post mortem* examination can be carried out on a fresh carcass, but few causes of mortality can be detected in a decomposed carcass. A number of samples can be taken (e.g. blood and fresh tissue samples for histopathological, toxicological and micro-biological examinations).

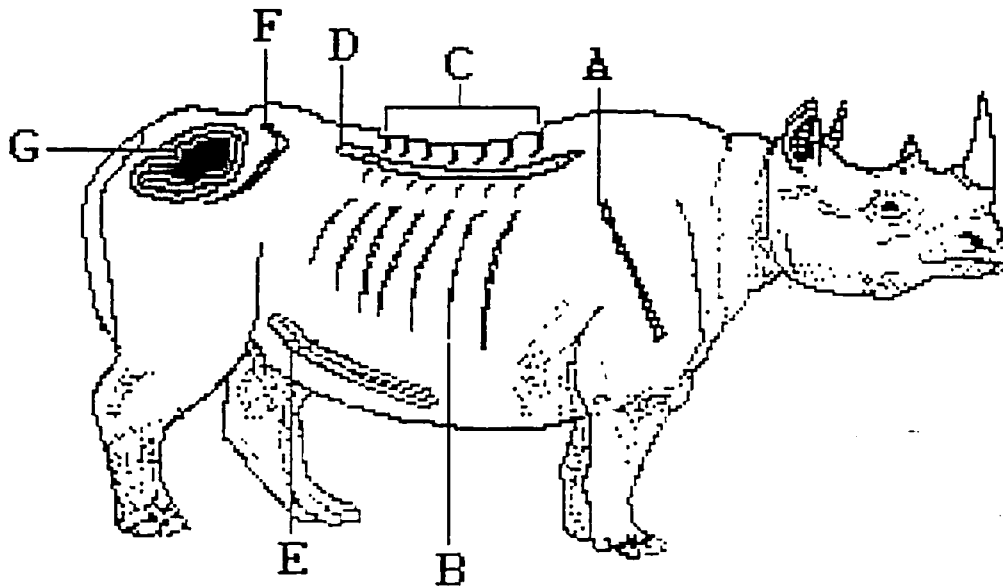
Intensive monitoring of rhino will detect condition loss promptly and allow appropriate treatment, such as supplementary feeding, to be instigated. In addition, any deaths that occur will be detected rapidly, thus increasing the chances of determining the cause of mortality. Preventative measures (e.g. anthrax vaccination, fencing off a patch of gifblaar) may then save the remainder of the rhino population and other rare species. It is important to critically assess the body condition of rhino at regular intervals in addition to seeing the rhino frequently, and/or following their movements, e.g. by radio-telemetry.

Assessment of Body Condition

Anatomical features used to assess body condition are shown in Figure 9.1. To classify body condition accurately black rhino must be viewed:

- in the open at close range (around 100 m) e.g. from the safety of a tree.
- using good binoculars
- in good light e.g. early morning or late afternoon: the ribs and pelvic bones show best if slightly back lit.

Figure 9.1. Anatomical landmarks to observe when assessing body condition in black rhino



Body condition can be given a numerical score (1-5) representing condition ranging from very poor to excellent (Table 9.1). Body condition score 5 is very unlikely to occur in free-ranging black rhino but may be seen in rhino confined in a boma or a zoo.

Table 9.1. Body condition scoring of black rhino

SCORE	5	4	3	2	1	
Condition	excellent	good	fair	poor	very poor	
A	Shoulder blade	well covered	covered	visible	obvious	very obvious
B	Ribs	well covered (skin folds)	covered (skin folds)	visible	obvious	very obvious
C	Spinal processes	well covered	slightly visible	visible	obvious	very obvious
D	Back muscles	well rounded	flat	slight groove	obvious groove	deep groove
E	Flank fold	none	slightly visible	visible	obvious	very obvious
F	Pelvic bones	well covered	slightly visible	visible	obvious	very obvious
G	Rump	well rounded	slightly rounded	slightly concave	concave	obvious depression

* Condition score 5 is very unlikely to occur in free-ranging black rhino but may be seen in rhino confined in a boma or a zoo.

Assessment of the habitat will indicate potential problems e.g. browsing pressure. A drop in faecal concentrations of protein, calcium and phosphate are often detected and reflect poor feed quality, which often occurs during dry months. Blood samples for standard haematological and serum chemistry profiles (e.g. total plasma protein, and liver, kidney and muscle enzyme concentrations) may be useful. Although rhino in poor condition often have normal haematological and clinical chemistry parameters, underlying disease can sometimes be detected. An unusually high parasite burden in an animal is indicative of a problem.

PROCEDURE TO BE FOLLOWED IN THE CASE OF SUSPECTED DISEASE, FINDING A DEAD RHINO OR IF A RHINO IS LOSING CONDITION

1. Call out an experienced veterinarian immediately. A list of emergency contacts in MET is included (Annex 7). In the unlikely event of none of the MET veterinarians being available immediately to perform a *post mortem* examination, the closest State Veterinarian or a private veterinarian with wildlife experience should be called out. Remember that a dead rhino calf can be loaded into a vehicle and taken to a vet. If for any reason it is not possible to get a veterinarian to carry out a *post mortem* examination, veterinary advice should be sought regarding what to look out for and which samples to take for laboratory analyses. This will vary considerably depending on a number of factors (e.g. the freshness of carcass, diseases suspected, etc.). Do not destroy the carcass (e.g. by burning or burying it) before a thorough *post mortem* examination has been carried out. If anthrax is suspected, it will be tested for before the carcass is opened.
2. The Protected Resources Unit must be informed immediately if poaching is either suspected, or has not been ruled out.

10) CO-ORDINATING RHINO CONSERVATION AND MANAGEMENT ON PRIVATE LAND

- The Rhino Co-ordinator and the Namibian Game Farmers Association

The future of the rhino will probably be decided during the next decade, and conservation objectives need to be urgently transformed into effective management practices. Appropriate, cost-effective management strategies have to be designed and integrated into existing conservation programmes, to achieve this. The support of all Namibians is crucial.

Inadequate funding of the Department of National Parks and Wildlife Management in Zimbabwe led to the dramatic increase in rhino poaching in 1993. In Namibia, rhino conservation has already been affected by serious financial constraints. Thus far, international donor support has been inadequate, therefore Namibia has to develop greater self-sufficiency. Currently in Namibia both government and public investment in rhino conservation are sizeable. The respective strengths of both the public and private sectors must be combined to optimise rhino conservation and prevent disaster. It is absolutely essential that an open line of communication is maintained between MET, private rhino owners and farmers who act as custodians for black rhino. In April 1996, MET appointed a National Rhino Co-ordinator to facilitate the Custodianship Scheme, the Rhinoceros Conservation Plan for Namibia, and to communication between MET and farmers. A workshop entitled "Rhino on private land in Namibia" was held in October 1996, and following this Namibian game farmers joined together to form the Namibian Game Farmers Association. The founder members of this association include game farmers with rhino on their land and those who will potentially become rhino custodians. The draft constitution of this association is included (Annex 6).

The primary aim of black rhino conservation is to establish safe nuclei which can breed rapidly on suitable land. The achievement of this goal depends upon reviewing and continuously updating the most suitable management strategy, based on the input of both the State and landowners. The detailed implementation of the Custodianship Scheme and the exact role of the State, custodians and landowners requires further attention. It has never been the intention of the State to place rhino in the care of private landowners and then withdraw completely. In addition, the provision of black rhino was not solely intended to promote individual tourism enterprises.

A number of specific issues that in the past were not covered adequately by existing mechanisms or policy are highlighted here.

National Reaction Plan for the security of rhino and elephant in Namibia: This is an extensive plan which deals with the security aspects of all rhino populations in Namibia and the procedures which should be followed if a case of poaching occurs or is suspected. It has been compiled by the Protected Resources Unit of the Namibian Police. The recurrent costs of continuously maintaining superlative security on a typical, large Namibian game farm are enormous. The decline in rhino numbers elsewhere suggests that there is every reason to expect that poaching could increase in Namibia. The Reaction Plan provides for a contact channel to facilitate a quick and effective response, a Specialist Investigation Unit, and an Emergency Trust Fund held by the Namibia Nature Foundation to cope with the emergency responses required to protect rhino on private and state land. A list of contacts and the communication channel to be used if poaching has occurred are listed (Annex 8). The "National Reaction Plan for the Security of Rhino and Elephant in Namibia" is available as a separate document. The contents of this must be kept confidential, but accessible to the managers of rhino or elephant populations!!

Contingency fund for drought and other eventualities: The cost of managing black rhino in the Custodianship Scheme needs to be better understood. A contingency fund may be needed, for example to provide supplementary feed for small rhino populations on farmland during serious drought, or to cope with sudden disease outbreaks.

Management responsibilities on private land: The input of landowners is essential in the refinement of management practices in small rhino populations which are required to sustain optimal population growth rates. MET has to rely on landowners to provide feedback on the performance of each population. This allows the possible impact of a variety of factors (e.g. sex ratio, age composition, social interactions, dehorning, calf survival, predation, disease, food quality, the effects of drought, carrying capacity, inbreeding, and hunting) to be assessed.

Co-ordinating strategy on the collection and dissemination of information: The support of the Namibian public for rhino conservation must be improved and maintained. The quickest way to lose public support is to provide contradictory and inaccurate information. Some information on rhino is highly sensitive. All participants on both sides

of the Custodianship Scheme have to agree on the distribution of information and on a strategy for dealing with media enquiries. Certain international pressure groups might well try to discredit MET or landowners in order to reduce international or local support for controversial conservation programmes, e.g. dehorning or hunting.

Research: A wide range of aspects of rhino management require investigation and research priorities, which meet the needs of both MET and landowners, must be established. MET can contribute to research, and the benefits will be maximised if landowners participate actively in the design and execution of research projects. Local and international academic interest in rhino research will continue. This research can contribute to our knowledge of both rhino species, and MET will support projects whenever possible. Moreover, it is imperative, that all project proposals be evaluated professionally and co-ordinated centrally.

Summary

The opportunity is ripe for improving the existing level of co-operation between the State and the private sector. MET sees the commercial game farmer as playing a significant role in the overall protection and breeding programmes of rhino and other game species in Namibia. The distribution of black rhino to private land through the Custodianship Scheme or by State auction is still its infant stage, but as it expands MET will have to communicate effectively with all its partners. The recently formed Namibian Game Farmers Association will provide an extremely valuable forum for exchanging information and breeding new ideas. The combined forces of MET and the Namibian Game Farmers Association will make a potent force in the support of common goals (e.g. restoring rhino to their former status in this country), and effective and methodical management. Better still, a lucrative new industry may be born from the conservation crisis. The chances of changing the rhino issue from a costly failure to a self-sustaining enterprise are becoming more likely. All involved should strive to break dependency on external funds, achieve self-sufficiency, and in the long term generate sufficient revenue to meet actual management costs. Moreover, numerous other benefits will accrue as a result of closer contact and open consultation between all of the interested parties.

Annex 1. Legal provisions relating to rhino conservation in Namibia

The following provisions are currently in force (extracts from legislation are quoted verbatim, without any implication by MET that parts of the legislation not quoted are less important or applicable). As in any legislation, the exact definition of words and terms is essential, and should be consulted in conjunction with the articles and regulations quoted.

REGULATIONS PERTAINING TO THE HUNTING OF BLACK AND WHITE RHINOCEROSES Ordinance 4 (1975) (as amended)

Article 26.(1)

No person other than the lawful holder of a permit granted by the Executive Committee (i.e. Cabinet) shall at any time hunt any specially protected game.

Article 26.(2)

A permit granted in terms of this section authorises the lawful holder thereof subject to the conditions, requirements and restrictions imposed by or under this Ordinance to hunt the number and species of specially protected game mentioned therein at the time and place mentioned therein.

Article 26.(3)

Any person who contravenes or fails to comply with any provision of subsection (1) or any condition, requirement or restriction of a permit granted in terms of this section, shall be guilty of an offence and liable on conviction -

- (a) to a fine not exceeding R200.000 or to imprisonment for a period not exceeding twenty years or to both such fine and such imprisonment if such offence relates to the hunting of any elephant or rhinoceros;

Article 26.(4)

- (a) No provision contained in this section shall prohibit the owner or lessee of land or the occupier of communal land from killing specially protected game on such land in defence of a human life or to prevent a human being from being injured or to protect the life of any livestock, poultry or domestic animal of such owner, lessee or occupier whilst the life of such livestock, poultry or domestic animal is actually being threatened.

- (b) Any person who kills specially protected game in terms of the provisions of this subsection shall report it in writing to the nearest nature conservator or at the nearest police office within ten days thereafter.

Article 26.(5)

Any person who hunts specially protected game under a permit granted in terms of this section, shall at all times have such permit in his possession while he is so hunting.

Article 26.(6)

Any person who has hunted any specially protected game under a permit granted in terms of this section, shall endorse -

- (a) the species of specially protected game and the number of each of such species which he has hunted under such permit;
- (b) the date on which he has so hunted it: and

(c) the name of the farm or a description of the land on which he has so hunted it, on such permit in ink or indelible pencil and shall sign it before he leaves the farm or land on which he has hunted such specially protected game.

Article 40.(1)

(a) Subject to the provisions of this Ordinance, no person shall without a permit granted by the Executive Committee (i.e. the Cabinet) intentionally -

(i) kill game or any other wild animal by any means other than by shooting with a firearm;

(ii) capture game or any other wild animal by means of a snare, pitfall, trap, spring-trap, net, birdlime, drug or any other device or means whatsoever or by any method whatsoever;

(iii) keep game or any other wild animal.

(d) The Cabinet may in its discretion grant exemption from any or all the provisions of this subsection to the owner or lessee of a farm which is enclosed with a game-proof fence or of a piece of land which is not less than one thousand hectares in extent and which is enclosed with a game-proof fence, or to a licensed game dealer or to any member or the members of any particular population group residing on the communal land of the population group concerned.

Some definitions of words and terms used in Ordinance 4 of 1975 (quoted verbatim from Ordinance 4 of 1975):

"catch" and "capture" include the use of any means or method to catch, capture, injure or immobilise fish, game or any other wild animal;

"game" means specially protected game, protected game, huntable game, huntable game birds and exotic game;

"hunt" -

(a) for the purposes of any provision of this Ordinance, excluding a provision of Chapter IV, means whatsoever to kill or attempt to shoot at, or to pursue, to search for, to lie in wait for or to drive with intent to kill or to shoot at, or wilfully to disturb;

(b) for the purposes of any provision of Chapter IV, means to -

(i) search for, trace, lie in wait for or pursue problem animals;

(ii) set a trap, spring-trap, net, drug, poison or any other means or device approved by the Director to capture or kill problem animals;

(iii) shoot at, or with dogs to hunt for, problem animals;

(iv) kill or capture problem animals in any other manner whatsoever approved by the Director;

"lessee" in relation to a farm or land or land on which waters are situated, means the person leasing such farm or land under a written contract with the owner thereof, and who actually resides on such farm or land, but does not include the lessee of a piece of land forming part of communal land, unless such piece of land is a surveyed piece of land which is represented on a diagram approved by the surveyor-general in terms of the Land Survey Act, 1927 (Act 9 of 1927).

"owner" in relation to a farm; land or land on which waters are situated means

- (a) the person who is registered in a deeds registry as the owner of such farm or land, and includes every director of a company registered in a deeds registry as the owner of such farm or land; or;
- (b) the lawful heir of the owner referred to in paragraph (a) at the death of such owner; or;
- (c) where such farm or land is subject to a usufruct, the usufructuary thereof; or
- (d) where such farm or land forms part of the communal land of a population group, or is owned by the representative authority of a population group but is not communal land of the population group concerned, the executive authority of that population group; or;
- (e) where such farm or land is owned by a local authority, the town clerk or the secretary of such local authority;

"wild animal" -

- (a) for the purposes of any provision of this Ordinance, excluding a provision of Chapter IV, means any vertebrate (including any bird, fish and reptile), whether kept or bred in captivity or elsewhere, belonging to a non-domestic species and the habitat of which is in the Republic of South Africa or the Territory;
- (b) for the purposes of any provision of Chapter IV, means any vertebrate (including any bird, fish and reptile) belonging to a non-domestic species;

PROHIBITION ON THE IMPORT, EXPORT AND POSSESSION OF AND TRADING IN PARTS OF RHINOCEROSES Proclamation No. AG 42

Article 2. (1)

(a) Subject to the provisions of paragraph (b), any person who imports into Namibia, exports from Namibia, possesses or deals in any controlled game product otherwise than under and in accordance with a permit issued or deemed to be issued to such person by the Minister under this section, shall be guilty of an offence and liable on conviction to a fine not exceeding R200.000 (i.e. NS200.000) or to imprisonment for a period not exceeding twenty years or to both such fine and such imprisonment."

Some definitions of words and terms used in Proclamation AG42 (quoted verbatim from Proclamation AG42):

- (i) "controlled game product" means the tusk, horn, head, ear, trunk, skin, tail or foot, or any part thereof, of any elephant or rhinoceros;
- (iv) "deal in" means to whether as principal or as agent:
 - (a) buy, or offer to buy, or acquire by way of barter, pledge or otherwise;
 - (b) sell or exchange or offer, advertise, forward, dispatch or deliver for sale or exchange;
 - (c) supply or dispose of, whether for remuneration or otherwise;
 - (d) authorise, instruct or permit the doing of anything referred to in paragraph (a), (b) or (c).

"Minister" means the Minister of Wildlife Conservation and Tourism.

THE POWERS OF LANDOWNERS IN REGARD TO PERSONS FOUND HUNTING
Ordinance 4 (1975)

Article 39.(1) Whenever -

- (a) the owner or lessee of land; or
- (b) the lessee of the right to hunt huntable game, huntable game birds and exotic game on a farm or land; or
- (c) any other person authorised thereto in writing by any owner or lessee referred to in paragraph (a) or (b),

comes across a person who is engaged in hunting game on such farm or land he may request the person who is so engaged in hunting immediately to produce his permit, authority or permission to hunt such game on such farm or land, and if the person who is so engaged in hunting refuses or fails immediately to produce such permit, authority or permission, he may be ordered by the first-mentioned person to furnish his true name and address and immediately to leave the farm or land, and any person who refuses or fails to obey such order, may be arrested by the person who gave the order.

Article 39.(2) Whenever -

- (a) the occupier of land owned by the Government of the Territory; or
- (b) any other person authorised thereto in writing by the Executive Committee,

comes across any person who is engaged in hunting game or any other wild animal (other than a problem animal) on such land, he may request the person who is so engaged in hunting such game or wild animal immediately to produce his permit or permission to hunt such game or wild animal on such land, and if the person so engaged in hunting such game or wild animal refuses or fails immediately to produce such permit or permission, he may be ordered by the first-mentioned person to furnish his true name and address and immediately to leave the land concerned, and any person who refuses or fails to obey such order may be arrested by the person who gave the order.

Annex 2. Example of rhino sanctuary/conservancy planning, organisation and management requirements: Excerpts from an "Immediate Action Plan" for the low veld rhino conservancies in Zimbabwe (Dates and names of localities, some organisations and individuals have been obscured.)

OBJECTIVE: Develop a scheme for distribution of anti-poaching staff within each conservancy, and maintain a density of at least one trained and equipped game scout per 2500 hectares in areas where rhino are present.

RESPONSIBILITY	ACTIVITY	DEADLINE
Conservancy committees and senior staff	Develop a manpower distribution plan for each conservancy	By
Conservancy members	Recruit additional staff	Ongoing

OBJECTIVE: Select and train each conservancy scout to a minimum standard and establish similar conditions of service for scouts on all ranches within conservancies.

RESPONSIBILITY	ACTIVITY	DEADLINE
Conservancy committees	Establish basic conditions of service for all scouts	By
Ecologist (Rhino Conservancies) NGO Conservancy chairmen	Appoint an ex-police officer to run training courses for scouts. Arrange his accommodation and transportation.	By
Conservancy chairmen and senior staff	Involve police and National Parks training staff in intensive selection/training courses for scouts within conservancies	Commence early

OBJECTIVE: Provide each selected, trained scout with appropriate equipment for anti-poaching.

RESPONSIBILITY	ACTIVITY	DEADLINE
Ecologist (Rhino Conservancies)	Source additional radios for XXXXXXXX and XXXXXXXX
Conservancy chairmen	Establish basic radio system XXXXXXXX River
National Parks NGO	Arrange importation of 100 SLR for low veld conservancies
Ecologist (Rhino Conservancies) Conservancy chairmen and senior staff	Liaise with X Military Training Team regarding supply of anti-poaching equipment, according to existing arrangements

OBJECTIVE: Ensure full legal backing for bona fide anti-poaching by appointing some suitably experienced senior staff members and landowners within each conservancy as Honorary National Parks Officers, by appointing trained game scouts as Police Special Constables, and by extending legal indemnity to these scouts and members of senior staff through the Protection of Wild Life (Indemnity) Act 1990 (of Zimbabwe).

RESPONSIBILITY	ACTIVITY	DEADLINE
Director, National Parks	Select and appoint Honorary Officers; extend indemnification to suitable conservancy staff
Conservancy chairmen and senior staff	Liaise with police regarding attestation of selected conservancy scouts as Special Constables

OBJECTIVE: Involve all personnel on each ranch in detecting illegal activity and in monitoring rhinos.

RESPONSIBILITY	ACTIVITY	DEADLINE
Conservancy committees and senior staff	Establish integrated monitoring/detection systems involving all personnel on each ranch

OBJECTIVE: Establish a reaction system for rapid follow-up by conservancy scouts and Government law-enforcement staff in the event of rhino poaching within any low veld rhino conservancy.

RESPONSIBILITY	ACTIVITY	DEADLINE
Conservancy committees and senior staff National Parks	Formulate and test plans for joint reaction by conservancy staff, police, National Parks and possibly Defence Force to rhino poaching incidents	By and ongoing

OBJECTIVE: Maintain control on all vehicles and pedestrians entering conservancies.

RESPONSIBILITY	ACTIVITY	DEADLINE
Conservancy committees and senior staff	Develop system for controlling and recording entries by pedestrians and vehicles	By
	Implement control systems (full liaison with local communities)	By
	Daily fence patrols	By

OBJECTIVE: Establish and publicise a system for the payment of significant cash rewards to people who provide information leading to the conviction or execution of rhino poachers;

establish a similar system with cash payments as incentives for conservancy scouts to detect and react strongly to poaching incursions.

RESPONSIBILITY	ACTIVITY	DEADLINE
Conservancy committees	Establish schedules for rewards and incentives	By
Ecologist (Rhino Conservancies)	Publicise rewards in adjacent areas, especially Communal Lands	By

OBJECTIVE: Develop mutually beneficial relations between conservancies and Communal Land communities through the implementation of projects which link these communities to the conservancies' commercial wildlife schemes.

RESPONSIBILITY	ACTIVITY	DEADLINE
Ecologist (Rhino Conservancies) NGOs Consultant	Set up teams to identify and promote suitable Communal Land projects	By
Appointed Team Conservancy chairmen	Commence necessary fieldwork and elaboration of project proposals	By

OBJECTIVE: Develop efficient intelligence systems to supply information on the movements and intentions of poaching groups, ensure that counter-intelligence requirements are also attended to.

RESPONSIBILITY	ACTIVITY	DEADLINE
Conservancy committees and senior staff	Set up informer systems	Ongoing
National Parks Investigations Branch	Develop better liaison with key individuals in conservancies and give regular briefings on relevant illegal activity	Ongoing
Conservancy committees National Parks NGOs (via media and leaflets)	Take action to correct distorted impressions on value of rhino horn; publicise dehorning; publicise rewards for information	Ongoing - - distribute leaflets around conservancies by

OBJECTIVE: Monitor every rhino in each conservancy on an individual basis and report on these rhinos regularly according to the system prescribed by National Parks.

RESPONSIBILITY	ACTIVITY	DEADLINE
Ecologist (Rhino Conservancies)	Prepare identity files for all rhinos	By
Conservancy members and senior staff	Task specific personnel with the use of the files to monitor and report on every rhino	By
	Maintain sighting records	Monthly (minimum)
	Submit routine reports to National Parks	Six-monthly

OBJECTIVE: Develop sound commercial wildlife operations in which rhinos serve as ecotourism attractions and thereby generate revenue for their ongoing protection.

RESPONSIBILITY	ACTIVITY	DEADLINE
Conservancy committees and members	Restocking, development of tourist facilities, marketing, etc.	Ongoing
	Complete perimeter fencing (with electrification) around XXXXXXXX Valley and XXXXXXXX	By
National Parks	Facilitate restocking (especially of elephant and buffalo)	Ongoing
Consultant	Complete conservancy land-use report. Circulate to relevant Government officials and potential investors	By

Annex 3. Current MET guidelines for evaluating black rhino custodianship applications

1. Prerequisites.

A farm will not be taken into consideration if the following points are not met:

- 1.1 The applicant must be a *bona fide* land owner. (In the case of a company owned farm, the "applicant" must be the majority shareholder.)
- 1.2 The farm must be game fenced.
- 1.3 The farm must be able to support a minimum population of 10 rhino and must have a minimum size of not less than 10 000 ha (unless the habitat is exceptionally well suited).
- 1.4 A farm will not be taken into consideration if the finances are known to be unsound.
- 1.5 The applicant must be prepared to enter into a contractual agreement with the government about the rhino.

2. Major considerations.

A farm will not be acceptable if it gets less than the cut-off point for the following major considerations:

2.1 Farm size/potential maximum black rhino population size.

Besides the minimum requirements mentioned in 1.3, the farm which can accommodate a larger black rhino population must be favoured.

- a. The rhino need not be as intensively managed, i.e. it will be cheaper in the long run.
- b. It will be genetically more healthy to have a larger population.
- c. It will be a more natural situation and hopefully reproduction will benefit.

For every five rhino more than the minimum of 10 an extra point must be given. The carrying capacity for black rhino is unknown, but a reasonable estimate can be made. For example, a farm that can accommodate a maximum rhino population of 30: will get an extra four points $(30-10)/5 = 4$ (Maximum extra points 8).

2.2 Habitat.

Factors to be taken into consideration:

- Topography (very rough country can cause problems for release, monitoring and capture)
- Drought potential
- Preferred browse species and an adequate population of these
- Adequate variation of browse species
- Problems with acacia die-off
- Soil deficiencies
- Other game species on farm especially potentially competitive browsers

Habitat scored out of 10. Cut-off point 6.

2.3 Water.

Factors to be considered:

- The number and distribution of water points on the farm.
- Type of water points, i.e. dam, small stock troughs, cattle trough, game trough, wallows, etc.
- Quality in terms of salinity, fluoride, etc.
- Veld water. Are the substrate and topography suitable for the collection of ample veld water after the rains? How long does it last? Is it accessible? Are there suitable wallows?

Score out of 10. Cut-off point 6.

2.4 Management.

The quality of management is important especially for the initial translocations, the continual monitoring and the ability to respond in a crisis situation.

Factors to be considered:

- Personal knowledge.
- Is the applicant practical and dynamic?
- What is the applicant's track record? How were previous introductions handled?
- Is there a record of management continuity?
- Is the applicant on the farm most of the time?
- What is the applicant's attitude to his employees?

The above points apply to the applicant as owner or manager. A situation involving a resident owner in charge of farm management will be preferred above an absentee owner or employee manager. Score out of 10. Cut-off point 6½.

2.5 White rhino and other specially protected species.

Whether these species, especially white rhino, occur on the farm, and how successful they have been, may be a good indicator as to the possible success of black rhino introduction.

Points to consider:

- If specially protected species were supplied by MET, why was the farm considered good enough? Get reports and talk to evaluators. Because of irregularities in the past this information must be examined critically.
- Have the introduced species been successful? If not, why not?
- Has there been any poaching especially white rhino? If so what was the farmers response?
- Present management of these species, especially monitoring.

Score out of 10. No cut-off point. (A farmer without especially protected species cannot be penalised: nevertheless, a farmer who has introduced them and they have been successful must be given credit. Because of this, point 2.5 was not included with Management (2.4). If, however, the information gleaned in 2.5 reflects on the quality of management, then this must be reflected in Management (2.4) score.

2.6 Security.

2.6.1 Fence.

The farm must be completely game fenced (1.2). Extra points will be given if the fence is more than adequate, i.e.

1 point if fence solid and well constructed, e.g. Waterberg Plateau Park

2 points if solid, well constructed, extra wires and very well maintained e.g. Okosongoro farm (1993)

3 points as for above but prepared to add cable or electric fencing

2.6.2 Security risks.

Points to consider:

- Public roads/road camps
- Close to heavily populated areas e.g. towns, squatters, mines, etc.
- National borders
- Areas with history of poaching problems
- Surrounding farms and management/ attitude of farmer

Score out of 10. Cut-off point 6.

2.6.3 Anti-poaching.

Factors to consider:

- Monitoring of farm boundary, waterholes, etc. for sign of poachers
- Patrolling of farm by armed guards
- Pickets
- Gate control
- Helicopters, microlight, etc.
- Radio communications system

Score out of 10. Cut-off point 5.

2.7 Freedom from disturbance.

- Hunting
- Capture operations
- Domestic stock/ internal fences
- Gravel pits, blasting, scrap lying around
- Roads

Score out of 10. Cut-off point 6.

2.8 Disease.

- Anthrax
- Rabies
- Poisonous plants (e.g. gifblaar)
- Other diseases

Score out of 10. Cut-off point 5.

3. Scoring.

A farm inspection group must consist of at least two people. Preferably at least one person in the group must have carried out similar farm inspections previously. Farm inspections must be done as soon as possible after each other. It is recommended that the scoring guide be read thoroughly before inspecting a farm (e.g. 2.5 can have a bearing on 2.4). All factors must be kept in mind when scoring the different considerations. All scoring (except 2.1 and 2.6.1) is out of a possible total of ten. The cut-off point must be met. If so, the score is corrected by multiplying by a correction factor. This correction factor is used to give the different considerations their relative importance. The value obtained is the final score. 2.1 and 2.6.1 remain unaltered and are added to the final scores to give a grand total. Because of the very subjective nature of this farm scoring it is not recommended that the actual scoring be discussed with the land applicant. It is, however, recommended that the good and bad points of the farm be discussed, so that the applicant is in a position to make improvements. The applicant will also be in a position to defend what he sees as an incorrect impression of a certain aspect. It is recommended that the different members of the inspection group take notes and score what they observe on the farm and that afterwards the group as a whole decide on a score for the different considerations.

SCORE CARD

Criteria	Score*	Cut Off Point	Correction factor	Final score
2.1. Potential population		-	-	
2.2. Habitat		6	1.0	
2.3. Water		6	0.3	
2.4. Management		6½	1.0	
2.5. White rhino, etc.		-	0.3	
2.6. Security				
2.6.1. Fence		-	-	
2.6.2. Security risks		6	0.5	
2.6.3. Anti-poaching		5	0.4	
2.7. Disturbance		6	0.3	
2.8. Disease		5	0.2	
Total				
Possible				51

* ½ points can be awarded

MEMORANDUM OF AGREEMENT

-for the placement of black rhinoceros (*Diceros bicornis bicornis*)
outside protected areas-

Entered into between the MINISTRY OF ENVIRONMENT AND TOURISM, herein represented by S. Simenda in his capacity as Acting Permanent Secretary, (hereinafter to be referred to as the Ministry)

and _____

represented by _____

in his/her capacity as _____

hereinafter referred to as Custodian.

Whereas the Ministry has decided to place BLACK RHINOCEROS (hereinafter to be referred to as Rhino) on the land unit(s) identified as _____

_____ on acceptance of the following conditions:

1. OWNERSHIP

1.1. The rhino and their progeny shall remain the property of the Government of the Republic of Namibia. The holder of the aforementioned land unit(s) will have the position of Custodian.

2. DELIVERY

2.1. The rhino shall be delivered on a pre-arranged date. The number, sex, age and condition of the animals will be determined by the Ministry. If any problems or defects are observed on receipt of the rhino, the Custodian is expected to report this in writing to the Ministry.

Annex 6. Draft constitution of the Namibian Game Farmers Association.

1) NAME

The name of the Association shall be Namibian Game Farmers Association (NGFA). The Association shall be registered as such with the Ministry of Environment and Tourism.

2) OBJECTIVES

The Namibian Game Farmers Association aims:

- 2.1) to promote game farming as a means of the conservation and protection of wildlife on private and communal farmland in Namibia and thus ensure diversification of species.
- 2.2) to promote the sustainable utilisation of this wildlife within the frame work of Namibian legislation and IUCN, TRAFFIC and CITIES regulations, where accepted by Namibia.
- 2.3) to maintain and promote high ethical standards of management, handling and keeping of game and the welfare of these animals.
- 2.4) to work together closely with Governmental and Non-Governmental Organisations that are involved with wildlife conservation and sustainable utilisation of natural resources.
- 2.5) to promote the best possible protection and sustainable financial return for the immense investment required in the game farming enterprise.
- 2.6) to promote the exchange of information on game farming and conservation issues.
- 2.7) to support efforts necessary to halt the poaching of game and illegal trade in animal products.

3) LAWS AND BYLAWS

- 3.1) The activities of the Association shall be in accordance with the conservation laws of Namibia, the relevant regulations of the IUCN, CITIES, and the bylaws of the Association.

4) MEMBERSHIP

- 4.1) Any owner (or joint owners) of a registered game farm or conservancy in Namibia,
 - 4.1.1) who farms with game exclusively on a unit economically large enough for this purpose.
 - 4.1.2) which is game proof fenced to specifications for all species on that unit, and approved as such by the Ministry of Environment and Tourism,
 - 4.1.3) and derives income from this unit solely from the game, by-products of game and other natural resources (such as hunting, live game sales, tourism, curio sales etc.) may apply to the Management Committee for membership of the Association.

- 4.2) The Association may appoint Honorary members and a Patron at its Annual General Meetings.
 - 4.3) All prospective members shall complete a membership application form, and shall submit such additional information in support of their application as may be requested by the Committee. After approval the member shall pay the required membership fee.
 - 4.4) All members shall agree to abide by such rules, regulations, ethics or codes of conduct as may be laid down by the Committee from time to time. These requirements may include the need to meet any regulations in respect of minimum standards laid down by law, ordinance or by an appropriate professional body.
 - 4.5) The Committee may refuse membership should all the necessary requirements and conditions not be met. In addition, the Committee may recommend to any General Meeting of the Association that a member resigns, if it is considered that such member has acted in a manner detrimental to the interests of the Association, or if such member fails to meet or maintain any standards that have been laid down.
 - 4.6) The offending member shall have the right to appeal. Despite such an appeal, should at least 50% of all members present vote to request the resignation of an offending member, such resignation shall be immediate and the Association shall not be liable to refund a non-expired portion of subscription. Other financial assets owed to the member may be refunded.
 - 4.7) Any member may resign provided that such resignation will be effective from the end of any financial year and that notice of intention to resign was submitted, in writing, to the Chairperson four months prior to the end of the financial year.
- 5) **THE MANAGEMENT COMMITTEE (hereafter called COMMITTEE)**
- 5.1) The Committee is in charge of the affairs of the Association and shall consist of
 - 5.1.1) a Chairperson elected at the Annual General Meeting,
 - 5.1.2) a Vice-Chairperson elected at the Annual General Meeting,
 - 5.1.3) three additional Committee members elected at the Annual General Meeting.
 - 5.1.4) a Secretary appointed by the Committee,
 - 5.1.5) a Treasurer appointed by the Committee,
 - 5.1.6) at subsequent Annual General Meetings only members who were members of the out-going Committee shall qualify for election as Chairperson and Vice-Chairperson.
 - 5.2) The members of the Committee shall retire annually but shall be eligible for re-election at the Annual General Meeting.
 - 5.3) Any member of the Committee who is absent without leave from three consecutive meetings of the Committee shall forfeit his/her seat on the Committee.
 - 5.4) Any vacancy occurring on the Committee during the interval between one Annual General Meeting and another, may be filled by an appointment made by the remaining members of the Committee.

- 5.5) The Committee shall have power to appoint Sub-Committees to promote the various objectives of the Association and such Sub-Committees shall appoint their own Chairperson who may or may not at their own discretion be the Chairperson of the Committee. The Chairperson or Vice-Chairperson of the Committee shall, however, be *ex officio* members of all such Sub-Committees.
- 5.6) Any vacancy in the office of a Chairperson or Vice-Chairperson arising during a current year shall be filled at a meeting of the Committee from amongst its members.
- 5.7) The Committee shall convene as necessary but not less than twice per year and at any meeting 50% of members shall constitute a quorum.
- 5.8) Members of the Committee, or other nominated members of the Association, may be reimbursed for any travelling or other expenses which they may incur on behalf of the Association. Approval to incur such expenses must be given in advance by the Committee.

6) POWERS OF THE COMMITTEE

- 6.1) The Committee:
 - 6.1.1) may co-opt any person because of his/ her expertise to serve on the Committee, regardless of whether such a person is a member of the Association or not. Co-opted and appointed members on the Committee will have no voting right at Committee meetings.
 - 6.1.2) will draw up and revise the bylaws of the Association for ratification by the Annual General Meeting.
 - 6.1.3) will consider all applications for membership and its decision will be final.
 - 6.1.4) may withdraw the membership of any member of the Association, who is found guilty of contravening the Nature Conservation laws, the stipulations of the IUCN or CITIES, or the bylaws of the Association.
 - 6.1.5) is empowered to raise funds and obtain property for the purposes of the Association.

7) POWER AND STATUS OF THE ASSOCIATION

- 7.1) The Association shall have the power to borrow money from time to time for its purposes whether by bank overdraft or otherwise. The Chairperson and Treasurer together shall have the power to sign any document which may be required for the purpose of borrowing any sum of money authorised by the Committee.
- 7.2) The Association shall be a *universitas* with the full legal status capable of owning immovable property independently of its members and of suing and being sued in its own name.
- 7.3) The Association has not been formed for the purpose of carrying on any business or enterprise that has as its object the acquisition of gain.

- 7.4) The income and property of the Association shall be applied solely towards the achievement of the objectives thereof, and no portion thereof shall be paid or transferred to any person whether direct or indirectly by way of dividend, bonus, or otherwise, except by way of remuneration to officers of the Association in return for services actually rendered.
- 7.5) If upon the winding up or dissolution of the Association there remains after the satisfaction of debts and liabilities, any property whatsoever, the same shall not be paid or distributed amongst the members of the Association, but shall be given or transferred to some other institution having objectives similar to the Association, to be determined by the members of the Association in return for services actually rendered, unless decided otherwise by majority by any General Meeting.
- 7.6) The Association shall have perpetual succession.
- 7.7) No member of the Association shall be liable for any debts or obligations of the Association to an extent greater than amounts outstanding in respect of subscriptions due by such member from time to time.

8) FINANCIAL ADMINISTRATION

8.1) Accounts:

True accounts shall be kept of money received and expended by the Association.

8.2) Bank Account:

- 8.2.1) The Association shall maintain a current bank account under its name at any bank and/or branch as the Committee may from time to time determine.
- 8.2.2) All income of the Association shall be deposited forthwith to the credit of such account.
- 8.2.3) All payments made on behalf of the Association, excluding those of a petty cash nature, i.e. for amounts less than NS100, shall be made by cheques drawn on such account co-signed by the Chairperson and the Treasurer of the Association.

8.3) Financial year: The Association's financial year shall be from 01 September of one year to 31 August of the next year.

8.4) Audit:

The Account of the Association shall be examined at least once annually, by an auditor or by some other suitable person appointed by the Association at its Annual General Meeting.

8.5) The Treasurer of the Association shall, not later than two months after the end of every financial year, deliver to the auditors, or appointed person, a full statement of income and expenditure by the Association for the preceding financial year, together with a balance sheet, which, after being certified correct by the auditors, shall be submitted to the Annual General Meeting (in draft form), which is to be held by 16 December, at the latest, in each year.

9) ANNUAL GENERAL MEETING

- 9.1) The Association shall hold its Annual General Meeting every year for the purpose of

- 9.1.1) receiving the Chairperson's report on the activities of the Association,
- 9.1.2) receiving the auditors report (financial statement and audited balance sheet),
- 9.1.3) election and constitution of the Committee,
- 9.1.4) appointing an auditor or other suitable person,
- 9.1.5) ratification of the bylaws.
- 9.1.6) deciding on the membership fee,
- 9.1.7) consider any other motion, which must be submitted to the Secretary in writing at least thirty days prior to the meeting,
- 9.1.8) any other matters concerning the Association.
- 9.2) The Committee may at any time call a Special General Meeting of members of the Association, stating the purpose of the meeting.
- 9.3) The Secretary shall not less than fourteen days before any General Meeting of the Association issue to all members a notice of the meeting setting out the time and place thereof and the business to be discussed and any motion of which notice has been given.
- 9.4) No business shall be transacted at any General Meeting, whether Annual or Special unless there is a quorum of at least one third of the members present. If, however, within sixty minutes of the time appointed the meeting is not constituted by virtue of lack of a quorum, the meeting shall stand adjourned without further notice for fourteen days, thereafter to be held at the same time and place regardless of the number of members present.
- 9.5) CONDUCT OF MEETINGS
 - 9.5.1) The Chairperson of any meeting may subject to the provisions of this constitution and with the consent of those present, adjourn the meeting, but no business shall be transacted at the resumed meeting other than business left unfinished at the meeting adjourned.
 - 9.5.2) Every resolution or amendment proposed and seconded at any meeting of the Association shall be put to the meeting by the Chairperson and decided by a show of hands. In the case of equality of votes, the Chairperson shall have a casting vote in addition to his ordinary vote as a member.
 - 9.5.3) The proceedings of all meetings of the Association shall be recorded and shall be submitted to the next meeting for confirmation and signature by the Chairperson. When so signed these minutes shall be taken as conclusive evidence of the transactions recorded therein and shall be binding upon all members of the Association.
- 9.6) The right to vote at any General Meeting is restricted to:
 - 9.6.1) members that have paid their annual membership fee, or any person representing such a member.
 - 9.6.2.) Only a single vote is accepted per Game Farming Unit.

10) AMENDMENT OF THE CONSTITUTION

The Constitution of the Association may be amended or added to by members of the Association at any General Meeting of the Association provided that:

- 10.1) Notice of any proposed amendment of addition shall be given to the members of the Association at least fourteen days before the General Meeting in question is held, and
- 10.2) the proposed amendment or addition to the Constitution be approved by two thirds of the members present at the General Meeting.

11) DISBANDING OF THE ASSOCIATION

- 11.1) The Association can only be disbanded by a two thirds majority vote at any General Meeting.
- 11.2) The Meeting shall decide on the disposal of the funds and assets of the Association.

Annex 7. Contact persons in the Ministry of Environment & Tourism in the case of suspected disease, finding a dead rhino, or if a rhino is losing condition.

Name	Position	Telephone numbers		Fax number
		Work	Home	
<u>Specialist Support Services</u>				
Dr. Malan Lindeque	Deputy Director	061- 263131	061-242957	061- 263195
Dr. H.-O. Reuter	Rhino Co-ordinator	061- 263131	061- 239925★	061- 263195
Dr. Hartmut Winterbach	Game Capture Veterinarian	061- 263131	06221- 502832	061- 263195
<u>Etosha Ecological Institute</u>				
Dr. Nad Brain*	Veterinarian	067- 229854	067- 229845	067- 229800
Mr. Peter Erb	Senior Conservation Scientist	067- 229854	067- 229842	067- 229800
<u>Resource Management</u>				
Mr. Danie Grobler	Acting Director	061- 263131		061- 263195
Mr. Leon van Rooyen	Deputy Director (North)	061- 263131		061- 263195

* Aircraft available for quick response

★ Telephone/fax

Annex 8. The Channel of communication if poaching occurs and relevant contact persons

In the National Security Action Plan for Rhino and Elephant a list of procedures recommended by the Protected Resources Unit (PRU) of the Namibian Police is given. This should be followed if poaching is suspected or has occurred. The plan also recommends that a specialist PRU Investigation Unit, MET Wildlife Protection Service trackers, aerial surveillance support and neighbouring farmers, local trackers, local aircraft, and local veterinarians are placed on standby.

If an incident occurs (poaching is suspected, a carcass found, an animal wounded, etc.) the owner, farm manager or local warden should immediately contact the Protected Resource Unit of the Namibian Police (Table A8.1), the Rhino Co-ordinator and any neighbouring farmers, local trackers, local aircraft, and local veterinarians (Table A8.3). Information on whether a carcass was found, an animal is wounded, or shots were heard with the exact locality, time, freshness of carcass, etc. should be given, as this will determine the type and urgency of response mounted. If the Rhino Co-ordinator cannot be contacted alternative MET officials who are in a position to co-ordinate the Investigation response effort are available (Table A8.2).

In addition, a full list of contact numbers has been included here so that if the Rhino Co-ordinator, or other relevant MET staff cannot be contacted, it is possible for the response to be co-ordinated through the correct channels.

Table A8.1. Protected Resources Unit Contacts.

Rank	Name	Telephone numbers		Cell. phone
		Work	Home	
<u>Windhoek PRU</u>				
Detective Inspector	C. J. (Mossie) Mostert	061-233610 061-234074 061-230146 *	061-244286	081-1240368
OR				
Chief Inspector	N. A. Smit	061-232420	061-252372	081-1240367
Detective Inspector	H. G. McKay	061-233610	061-251120	081-1240369
Sergeant	C. G. Routh	061-233610	061-225006	081-1270710
<u>Swakopmund PRU</u>				
Detective Inspector	Vorster	064-461157	064-462816	081-1275678
<u>Tsumeb PRU</u>				
Warrant Officer	M. J. Geldenhuys	067-220586	067-220841	
Sergeant	C. C. Mubebo	067-220586	067-220616	
Constable	C. M. Mataii	067-220586		

* Fax number

Table A8.2. Ministry of Environment and Tourism Contacts.

Position	Name	Telephone numbers		Fax
		Work	Home	
Rhino Co-ordinator	Dr. H.-O. Reuter	061- 263131	061- 239925★	061- 263195
OR, if you cannot get hold of him				
Specialist Support Services	Drs. Malan or Pauline Lindeque	061- 263131	061-242957	061- 263195
Deputy Director (RM-South)	Mr. Danie Grobler	061- 263131	061-235693	081-1298866
Deputy Director (RM-North)	Mr. Leon van Rooyen	061- 263131	061-243130	081-1246092

★ Telephone/fax

Table A8.3. Local Contacts. (Space available for individuals to enter their own contacts to be used in case of emergency.)

Position	Name	Telephone numbers		Cell. phone
		Work	Home	
Farmers				
Trackers				
Aircraft				
Veterinarian				

The Rhino Co-ordinator (or other MET official) will contact the Protected Resources Unit and discuss the need for aerial support, MET Wildlife Protection Services trackers, hired vehicles, etc. and arrange for these as required (Table A8.4). Additionally, a veterinarian should be called to the scene and the Namibia Nature Foundation (NNF) informed, as any emergency flying, etc. will be paid for from the emergency fund held by the NNF. The Minister and Permanent Secretary as well as the Rhino and Elephant Security Group Co-ordinator will be informed of the incident and a full report submitted to them when the investigation has been completed.

Table A8.4. Wildlife Protection Services/Trackers.

Position	Name	Telephone numbers		Fax/cell. number
		Work	Home	
<u>Wildlife Protection Services/Trackers</u>				
WPS Warden Etosha N. P.	Mr. J. Angula	067-229854		067-229853
Control Warden Etosha N. P.		067-229854		067-229853
Chief C. Warden Etosha N. P.	Mr. Chris Grobler	067-229398		
Control Warden Waterberg P. P.	Mr. Trygve Cooper	0658-15321		
Chief C. Warden Kunene Province	Mr. Koen Carstens	0654-313438		
Control Warden Kunene Province	Mr. Tommy Hall	0654-313593	0654-313509	
Kavango Region Save the Rhino Trust	Mr. Anton Esterhuizen Mrs. Blythe Loutt	067-255403 061-232154 065712-291	067-256366	

Table A8.5. Helicopter, Aircraft and Vehicle Hire.

Company	Name	Telephone numbers		Fax number
		Work	Home	
<u>Helicopter Services</u>				
Helicopter Services	Mr. Fritz Flachberger	061-234607	061-227845	
Comav (Pty) Ltd	Mr. Kurt Mittendorf	061-227512	061-237683	
<u>Fixed Wing Aircraft</u>				
MET or NNF Aircraft	Dr. Nad Brain, Mr. Kallie Ventzke, or Mr. Henk Burger	067-229854		067-229853
Otjivarongo Veterinary Clinic	Dr. Axel Hartman Dr. Mark Jago	0651-303242	0651-304381	
Mount Etjo Safari Lodge	Mr. Jan Oelofse	0651-304462	0651-304464	
Comav (Pty)Ltd	Mr. Kurt Mittendorf	061-227512	061-237683	
<u>Vehicle Hire</u>				
Imperial Car Hire		061-227103		252222 (Page)
PRU	W/Off. (f) Rich	061-233610	061-252028	252222 (Page)

Table A8.6. Other contacts.

Position	Name	Telephone numbers		Fax/cell. number
<u>Veterinarians</u>				
Rhino Co-ordinator	Dr. H.-O. Reuter	061-263131	061-239925	
Veterinarian: EEI	Dr. Nad Brain	067-229854	067-229845	067-229853
Veterinarian: Game Capture	Dr. Hartmut Winterbach	061-263131	06221-502832	061-263195
<u>NNF (Emergency Fund)</u>				
Director NNF NNF Project Co-ordinator	Mr. Pottie de Bruin	061-248345		061-248344
<u>Ministry of Environment and Tourism</u>				
The Honourable Minister	Mr. F. Malima	061-2842191		
Permanent Secretary	Mr. C.T. Erkana	061-2842185		
<u>Rhino and Elephant Security Group</u>				
RESG Co-ordinator	Mr. Ian Thompson	00-27-3545- 2968	083-2656708 (Cell. phone)	