



RHINOCEROS CONSERVATION IN NAMIBIA - A FRAMEWORK FOR PRIVATE SECTOR PARTICIPATION

1994

Contributors: K.P. Erb, L. Geldenhuys, I.D. Grobler, M. Lindeque,
R. Loutit, H. Rumpf, H.J. Schrader and K.A.E. Venzke.

Edited by M. Lindeque

**THE MINISTRY OF ENVIRONMENT AND TOURISM
Private Bag 13306
Windhoek
NAMIBIA**

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Preface

The escalating threat against rhinos and the real possibility of catastrophic declines of rhinos in Namibia within a relatively short period, underline the need for improving national coordination and maximizing the impact of conservation programmes. Government might not be in a position to meet ever-escalating costs of rhino protection and the Namibian people should not have to bear the ever-increasing burdens of such costs. Traditional conservation policies such as protection in national parks and reliance on law enforcement have largely failed to prevent the decline in rhino populations in Africa. To cope with the current threat of illegal hunting, the implementation of such policies have to be intensified to a level requiring vast sums for recurrent costs and a commitment of other resources that few institutions have been able to sustain for long enough. A new approach is therefore needed to maximize the cost-effectiveness of conservation management and to prevent dependency on external support. Until innovations can be implemented, however, a concerted effort and a diversified strategy will be required to limit losses due to illegal hunting in Namibia.

Even the most extreme efforts to protect rhinos might prove to be fruitless, as eg. experienced in parts of Zimbabwe, and may ultimately unravel as funds dry up or public opinion swings against seemingly futile efforts. There is at this time no recipe that will guarantee the survival of rhinos in Namibia, leaving us with the need to diversify the rhino conservation effort in Namibia. Little help can be expected from outside Namibia. The international conservation community has failed to commit sufficient resources to prevent a decline in eg. black rhinos from about 70000 to 3000 in 20 years, and funds are scarce even now when the risks of extinction are higher than ever before. On the other hand, South Africa offers an example of a country which used its own resources to lead the last southern white rhino population from the brink of extinction to extraordinary recovery. It is not too late to do the same for the black rhinos of Namibia, with the combined resolve and resources of the public and private sectors.

As serious a threat as illegal hunting is the gradual loss of rhino habitat in Namibia. The primary concern here remains the rhinos on communal farming land, that could well be displaced by people in the next century. Even a relatively brief period of denying rhinos access to drinking water when springs are occupied by people and stock during droughts could lead to local extinction. This threat requires a different approach that must focus on the perceptions of people and local economics in the rural areas. When rhinos lose all value and meaning to people, they have no

future in marginal agricultural lands. Rural communities are becoming impatient about waiting to exploit their wildlife resources, and it is up to government to create a suitable milieu that will ensure sustainable exploitation and the distribution of benefits in an equitable way.

The Ministry of Environment and Tourism (MET) (formerly Wildlife, Conservation & Tourism) is engaged in a continuous process of developing and refining conservation policies designed to cope with the threats and opportunities of the conservation problems experienced today. Such policies already recognise the potentially beneficial role of private land owners in rhino conservation, and two black rhino breeding groups have already been established on private land. Private land owners maintaining rhinos on their land nevertheless undertake a significant risk and a major commitment is required from all concerned. It has never been the intention of MET to translocate conservation problems from State to game farmer and not stay involved. MET will provide whatever assistance possible to help private land owners achieve optimal protection and population increase for their rhinos, and even more important, MET will do whatever it takes to enhance the functional conservation partnership established by private sector and the government in Namibia.

The management of rhinos in private ownership and custody should be closely linked to the other main conservation options practised by MET, such as enlarging and redistributing the population of rhinos in the national protected area network, establishing breeding nuclei on communal lands, and the support of breeding nuclei outside Namibia. Rhinos on private land have unfortunately become the main target for illegal hunters in recent months. As long as there is a greater security risk on private land, the option of starting additional breeding nuclei on such land cannot be fully exploited. Ways need to be found to face this new challenge and safeguard the population in private ownership. Such developments underline the need for an adaptable conservation strategy and an ongoing process of evaluation and refinement.

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The document was updated in 1995 and reflects changes in the international treaty status of rhinos following the 9th Conference of the Parties to CITES.

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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. It is now widely accepted, however, that the major markets for rhino horns have all along been the dagger handle carvers of the Arabian peninsula, and the traditional pharmacies and pharmaceutical factories of China (including Hong Kong and Taiwan), South Korea, and formerly Japan. Rhino horns are used as an important antipyretic agent in the treatment of fever, as well as an ingredient in numerous complex medicines used primarily to prevent ill health, within the traditional holistic healing philosophy found in many parts of Asia. Important new markets are nevertheless emerging for traditional medicines containing rhino horn amongst the large and affluent Chinese communities in the USA and Canada, and are predicted to crop up in Europe as well.

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 presenting Asian cultures in a prejudiced way to their western supporters. The USA has recently 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 rhinos are not indigenous to the USA and that the rhino horn trade in Taiwan had already been declared illegal. Threats of similar sanctions lead to a doubling in price of rhino horn in South Korea, which could end up doubling the stakes in Africa as well.

The main international effort still strives for the complete cessation of the use of rhino horn in the world, 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 consideration has yet been given to alternative options closer to the conservation philosophy of Southern African countries, i.e. legalizing trade to undermine illegal trade and slash the value of stockpiles; sustainable production of horn to meet annual consumption; promoting trade relationships with, and sustainable use practises in

consumer states; maximizing sustainable economic benefits from rhinos to support conservation costs and promote rural development; and increasing the number and diversity of stakeholders in rhino survival.

Implications for Namibia

It appears as if attempts to isolate consumer nations through cultural judgement and political pressure have not had any obviously beneficial effects for rhino range states. Even if international coercion gradually reduces the volume of international horn consumption, the demand for horn might not decline due to the buffering role of illegal stockpiles in Africa and Asia. Speculators and 'middlemen' will probably continue to accumulate stockpiles at relatively low cost and speculate that horn prices will inevitably rise as rhinos approach extinction.

The killing of rhinos in Africa is thus not directly affected by pressure on consumer States, because of the vast differences in commodity price and the motives of trade participants on the two continents. People are already killing rhinos at enormous personal risk for tiny rewards, but there are many more destitute persons and entrepreneurs who regard these risks as acceptable. If the reward for illegal hunting increases for whatever reason, even more people might become tempted.

The achievement of a much reduced international rhino horn trade volume, which is the current policy objective of CITES and prominent western countries, could thus still result in extinction. Several hundred million people in China alone are believed to be users of traditional medicines. It is wishful thinking to hope that 2000 year-old cultural practises will change before all rhinos are gone, and it will be irresponsible for any nation to base the prospects of survival of any species on such speculation. It is furthermore 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 already been exposed to the media and educational campaigns that are now supposed to stop the demand for horn in China itself.

A different conclusion might be reached if preconceived ways of looking at the rhino horn dilemma are abandoned in favour of innovative approaches such as:

- To consider rhino horn as the most valuable natural renewable product in Africa (Asian rhino horns are worth even more than African rhino horn), and thus a highly valuable renewable resource for a developing country in need of economic

diversification and rural development.

- To recognise that the demand for horn will likely continue in one form or another, and will not disappear as long as some people see a value in the product.
- To recognise that law enforcement in whatever form has not been sufficient to completely prevent the killing of rhinos in most places or the smuggling of high value-low volume products anywhere in the world.
- To recognise that current illegal harvesting of horns in Namibia result in minor gains for a few individuals to the cost of the rest of society, yet the rhino resource of eg. former Damaraland could be the most valuable renewable natural asset for people in that region. A high commercial value on rhinos will surely prevent their displacement by less valuable livestock.
- To recognise that current illegal harvesting practises are wasteful, but can be replaced by sustainable techniques, eg. periodic dehorning which does not require the killing of the individual. The full potential economic value and role of rhinos and thus the greatest likelihood of their future survival will only be achieved by diversifying the forms of revenue-generating use of rhinos.

There seems to be little sense in letting history repeat itself in Namibia, to become just one more African country losing its rhinos to organized illegal hunting. This outcome is very likely, however, if our arsenal is limited to traditional conservation practices. Many common sense principles need to be incorporated in our conservation thinking, such as spreading risks (eg. placing rhinos on private land), altering the economic factors and incentives (eg. by preventative dehorning), finding real incentives to protect rhinos (eg. ways to generate revenues from rhinos) and more. Such radical policy changes have not yet been made in Namibia, but will receive further attention given the tradition of conservation innovation in this country and the guiding principles on this subject in the Namibian Constitution.

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 for the

protection and use of its natural resources and biodiversity in its national Constitution. The Namibian Government fully subscribes to the sustainable use of wildlife resources to the benefit of all Namibians, and the Ministry of Environment and Tourism is actively promoting policies for the implementation of this philosophy. Wildlife-based tourism and utilization together with marine fisheries are the expanding industries at present and are likely to be the principal sources of sustainable economic development in future. Wildlife utilization has all the potential to become a major growth industry, and 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 as much of their historical range as possible, and the restoration of the functional role of wildlife in local and national economies through various forms of wildlife utilization.

The bulk of the rare and more valuable species of Namibia currently occur in protected areas (game reserves and national parks). Proclaimed conservation areas extend over 14,5% (99 616 km²) of Namibia's total surface area, but individual units are often too small to maintain viable wildlife populations. Conservation resources are frequently stretched to the limits, 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, and will in future be closer to a situation of protected core areas integrated into the rural landscape than the fenced conservation islands which they resemble now.

Illegal traffic in smuggled animal products such as rhino horn and ivory continues to pass through Namibia en route to South Africa and overseas. Increasing commercial traffic through Namibia resulting from infrastructural development would make it even more difficult to control the smuggling of wildlife products. No country on earth is able to prevent all smuggling, and other incentives have to be found to reduce the impact of such illegal trade. Illegal hunting is expected to 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, although comparatively low due to the low human population density and the relative aridity of most rhino habitat, is nevertheless increasing. The unresolved issues of land tenure and use are central to the problems facing the conservation of rhinos. MET policy therefore focuses on the establishment of new rhino populations in existing parks, reserves, and suitable communal lands; transferring individuals to private land for safekeeping; proving the intrinsic economic value of rhinos by selling breeding nuclei to approved buyers; expanding anti-poaching efforts; and generating sustainable revenue for the

rhino conservation effort. The long-term management goals for rhino conservation in Namibia are currently 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 of the subspecies *Diceros bicornis bicornis*. This population needs to be enlarged in the long-term to some 2000 individuals to ensure its long-term genetic viability. Smaller populations have a high risk of extinction. Almost the entire Namibia is suitable for black rhinoceros, but the current protected areas are inadequate in a number of ways for hosting a much larger population than at present. Secure land further away from international borders need to be found for additional populations. Limited suitable and safe habitat exists in Namibia for white rhinos, and a lesser number will be aimed for.

2. Develop a sustainable use programme for black and white rhino to advance and justify the abovementioned goal, preferably within the CITES environment:

Live rhinos, rhino trophies and products represent amongst the most valuable wildlife items on earth, and thus 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 to benefit from the rhino resource. The cost of rhino management and protection is nevertheless extraordinarily high, and means need to be found to compensate landholders with rhinos through the generation of revenue in a sustainable way.

3. Coordinate the protection and management of rhinos in Namibia:

MET in conjunction with other interested parties will develop a National Rhino Conservation Plan; an annual Action Plan; monitoring and research projects dealing with short-term management actions, eg. dehorning, vaccination, translocation and sale of live animals; and promote collaboration with SADC neighbours and international organisations.

Further detail is available in the national "Rhinoceros Conservation Plan" which is periodically updated by MET in conjunction with local interest groups and is available upon request. This plan recognizes the role that private land owners can play and makes provision for the provision of breeding nuclei to private land owners with the specific goals of spreading the risks and burdens of rhino conservation and increasing

the 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 level, in view of sudden catastrophes as occurred in Zimbabwe, as well as review its ability to prevent such catastrophes.

2. Provide ongoing training and support of MET staff to enhance law enforcement and crime prevention capacities:

Government rationalization will provide new opportunities for developing the human resource of MET, through the establishment of training opportunities and giving better career advancement for 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 from local communities and the private sector will be sought through sharing the benefits of rhino conservation and use, but also the responsibilities and costs. New ways of generating revenue sustainably for rhino conservation need to be found, to justify the high recurrent expenditure and reduce dependency on external funds.

3. RHINO STATUS, PROTECTION AND UTILIZATION WITHIN THE LEGAL FRAMEWORK OF NAMIBIA - options and constraints

Status of rhinos in Namibia

Two species of rhinos 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 was reintroduced from South Africa. Virtually all *D.b. bicornis* occur in Namibia, with possibly a few individuals remaining in southwestern Angola and reintroduced breeding nuclei in South Africa which originated from Namibia. This subspecies is not represented in any zoo or captive breeding programme. The Namibian black rhino is the largest of all subspecies and is adapted to arid conditions, and

its protection has been given the highest priority by the international scientific community, not to mention the Namibian government. Namibia thus holds an irreplaceable part of the world's biodiversity and clearly has a major responsibility to conserve rhinos effectively.

Namibia furthermore has one of the largest remaining populations of black rhino in the world, numbering more than 500. Of this number, approximately 130 occur outside designated conservation areas, including the last substantial population of any species of rhino anywhere in the world outside a protected area. The white rhino is currently not endangered internationally, but the population in Namibia only numbers about 90, and is currently under considerable threat from poaching.

Both species are listed as "specially protected game" in the Nature Conservation Ordinance of 1975, the maximum legal protection and the highest status which can be conferred on any species at present. This classification does not preclude the hunting or other use of rhinos in Namibia, but places such activities under the strict control of the State through a permit system.

All populations of both species are currently also listed on Appendix I of CITES which prohibits any international trade for commercial purposes in these species or their products (except from 1995 the limited commercial trade in live white rhinos from South Africa). This listing is not universally accepted as the most appropriate for rhino conservation, as it has done nothing to prevent the continuous decline of the species throughout the existence of CITES and the Appendix I status. One consequence of the present CITES listing is that alternative management options cannot be implemented. As soon as a blanket ban on trade for commercial reasons is applied to stop illegal trade, all options for legal trade close down first 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 rhinos, 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. The mechanism is nevertheless in place, should it become possible to demonstrate that hunting would primarily benefit black rhinos.

Current options for using Namibian rhinos

The use of black rhinos in Namibia is currently restricted to:

- using populations in conservation areas and the Kunene and Erongo Regions as donors for the establishment of new populations elsewhere. Black rhinos belonging to the State can be sold to private individuals and even exported from Namibia, but are otherwise provided through the custodianship scheme for the establishment of satellite populations in Namibia.

- providing an important attraction for game viewing by tourists, as Namibia is one of the last countries with a large population of rhinos that is relatively easily seen by tourists. The allure of rhinos in the northern Namib Desert is a significant tourist attraction for foreign visitors, and the spectacular rhino viewing at eg. the Okaukuejo waterhole is equally famous.

- the presence of rhinos on game parks and farms adds considerably to the prestige and attraction of a park or game farm, and thus contributes to the expansion of the tourism industry in Namibia. The actual value of the rhinos in Namibia has not been calculated, but rhinos greatly contribute to the quality of a wilderness experience and must account for a large part of the foreign currency earned through tourism.

White rhinos provide the same benefits as black rhinos, 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 horn removal. MET should be approached for approval in all such cases. Some countries may not allow the importing of a trophy acquired from non-lethal hunting, based on current legal definitions of a hunting trophy in such countries. Various amendments to domestic legislation might be necessary in the long run to provide the necessary framework for new revenue generating enterprises involving rhinos.

Future options for using Namibian rhinos

Many private landowners in South Africa, Zimbabwe and Namibia have invested in or converted their cattle ranches and farms to game ranches and have invested in white rhinos. The hunting safari business, when a white rhino can be included in a hunting package, has become a sound financial investment throughout southern Africa, the last region on earth where free-ranging rhinoceroses can be hunted in their natural habitat.

Experience has proven that wherever the profit motive is the incentive, the prospects for successfully achieving wildlife management objectives in the private sector are very good. The example of the recovery of white rhinos in South Africa is an excellent case history illustrating this point. What is just starting to happen to the black rhino could be another example of the role of private enterprise and

wildlife utilization in the recovery of a species. As soon as appropriate, commercial use of black rhinos will therefore be allowed in Namibia, including sport hunting.

The Namibian Government also views the selling of rhinos, rhino horns and other products as a source of conservation and development revenue in future. 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 available to them. All horns acquired from dehorning operations and mortalities are currently stockpiled and represent a significant asset.

Rhino range states have also been encouraged to explore options for the non-consumptive use of rhino species that both benefit their conservation and enhance the well-being of local communities. Traditional cultural values of rhinos are considerable over large parts of Namibia, but need to be better described, and incorporated in long-term conservation plans. Old problems of ownership of rhinos and wildlife on communal lands need to be resolved to give people a proper say in rhino management and a legal right to share in benefits derived from them. Greater participation by rural communities in eco-tourism ventures would also increase the value placed on rhinos 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 rhinos or rhino parts (including parts derived from rhinos in private ownership).

Contraventions could be punished by imprisonment of up to 20 years and/or a fine of up to N\$ 200 000, yet the future of rhinos is far from secure. Similar penalties have not prevented massive illegal hunting in neighbouring countries. Innovative penalties and legal provisions such as charges for which no bail may be granted, minimum fines equivalent to the value of the rhino or product involved, and compulsory imprisonment for certain offences have recently been introduced in certain countries. Experience will show if such measures deter poaching and if Namibia should follow suit where possible under the Namibian Constitution.

There is an understandable sense of scepticism within Namibia (and elsewhere) about the effectiveness of legal provisions to prevent rhino poaching over the long-term. Legal deterrents and law enforcement are nevertheless potent components of any protection strategy. Past successes in this field, in great part due to superb collaboration and support from the Namibian Police, have resulted in severe sentences

to poachers and the continued survival of many rhinos. The incentives remain sufficiently high, however, to attract new candidates to illegal hunting and trade. A continued effort is required to maintain effective legal deterrence and enforcement. The Namibian Police, in recognition of their increasing role in combating poaching and illegal trade in endangered wildlife, has recently established a 'Protected Resources Unit' in place of the former Diamond and Gold Branch. This new unit will have an important role to play and is a welcome addition to the law enforcement and crime prevention system in Namibia.

The most important current provisions in Namibian legislation for rhino conservation and management are outlined in Annex 1. MET is currently preparing to revise conservation legislation in consultation with all interest groups. Existing legislation on rhinos has nevertheless 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 and protection.

The most pertinent legislation remains the Nature Conservation Ordinance 4 of 1975 (as amended) and Proclamation AG42 of 1980, the Controlled Game Products Proclamation (as amended). Many regulations relating to rhinos also apply to other species, but there are also some specific differences. The relevant legislation should thus be consulted in such cases, 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 rhinos on private land. Special training might be offered depending on demand, and would hopefully be coordinated through a representative body (see Section 9). A basis for protecting rhinos on private land is provided in Ordinance 4 of 1975, (see Ord. 4 (1975) Art. 39) in Annex 1, where action may 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 familiarize 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. Beware that apprehended rhino poachers face severe sentences, and will often seek a way out by alleging assault or another form of maltreatment. It is always better if more than one person handles arrests, and are 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.

MET furthermore advises that suspects should not be searched for anything except weapons, or questioned except by the Police or an authorized 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 before an MET Investigating Officer or Police team has screened such areas for evidence. Such evidence facilitates convictions, and all care should be taken not to jeopardise the law enforcement process. MET will gladly provide advice and assistance to landowners, and emergency assistance can be obtained from the Deputy Director: Resource Management (061-263131), Director: Resource Management (061-2842184) or Permanent Secretary (061-2842184), until other contact names and numbers are provided.

4. ACHIEVING OPTIMAL SECURITY FOR RHINOS 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 remaining rhinos against poaching, and are usually portrayed as relatively small areas with secure fences, frequent patrols, often electronic surveillance systems, armed response, strict access control and frequent monitoring of rhinos. Larger intensively protected zones in conservation areas are sometimes referred to as Intensive Protection Zones (IPZs), and these are also promoted as essential for the survival of the species. Features common to sanctuaries and IPZs are their high establishment and maintenance costs, and high manpower requirements. Before these concepts are applied in Namibia, cost-benefit assessments should be done in view of the expected greater cost per rhino unit due to the lower carrying capacities 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

With a disastrous crash from 20 000 black rhinos in 1970 to some 500 in the early 1980's, it was recognised that the only hope for protecting the remaining black rhino in Kenya was in concentrating security provisions within smaller areas of intensive protection, i.e. sanctuaries. Since the early 1970's, Kenya has pioneered the

protection and breeding of black rhino in relatively small areas or sanctuaries, which appear to have been effective in conservation terms. In Kenya's rhino conservation and management programme, a crucial part to the success of such programme is the protection of existing sanctuary rhino populations from illegal hunting, and the management of these to obtain maximum sustainable breeding output; to maintain genetic diversity; to provide surplus animals for translocation to complete the stocking of existing sanctuaries; and to establish new populations which have the potential to increase to more than 100 animals.

Within these relatively small areas, many which are completely enclosed by advanced electric fencing systems, a large portion of the country's black rhinos have been protected and have slowly increased in numbers. Private sanctuaries have been developed through cooperation 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 been relatively successful as an emergency measure to protect and breed black rhino. In the short term they seem to hold the best hope for the recovery of black rhino in Kenya, as a back-up to efforts to control poaching of any larger populations that remain in situ. One-third of Kenya's black rhino population will continue to be held on private land. About 290 black rhino (69% of total population) are currently located in nine sanctuaries (ranging from 4000 to 39000ha (40-390 km²), four sanctuaries in national parks, five on private land).

Rhino populations in sanctuaries have increased annually at an average rate of 5% since 1986, but with a large variation in growth rate amongst them (eg. Solio and Nairobi N.P. with growth at 10% or more per year, while others have shown little or no increase over the same period). Substantial mortalities occurred during the establishment of some sanctuaries, primarily due to fighting amongst rhinos. Solio ranch has been the most successful rhino sanctuary in Kenya, this success achieved entirely at the owner's expense. The Solio reserve was stocked with 23 rhino between 1970 and 1980, which originated from different areas. By 1986, at least 80 black rhinos had been bred up within the 6500ha (65km²) reserve with population growth rates exceeding 10% per annum for much of this period. From 1984 to 1990, 30 black rhino were captured on Solio and moved to four other rhino sanctuaries. A photographic census of Solio identified a minimum of 60 rhino in 1990. Rapid breeding has continued, with another 11 rhinos born in the reserve in 1991-1992.

There are nevertheless some disadvantages inherent to sanctuaries which should be noted:

- Sanctuaries are relatively small, enclosed areas. They are very expensive to develop and maintain, and are highly management intensive. The costs required to develop rhino sanctuaries, and to maintain them in the long term, are a major limitation to this approach (see staffing levels in Table 1).
- It is unlikely that sanctuaries can remain viable after any major breakdown of security, maintenance of infrastructure or management capability (eg. electric fence maintenance, rhino translocations, monitoring and management of enclosed wildlife numbers).
- If there is a total or partial breakdown of security in a rhino sanctuary, the original action of capturing and translocating rhino and bringing them to a supposedly secure area can work in the reverse direction. Scattered, remote rhinos may survive better in situ than clustered "rescued" animals gathered in one area to unintentionally make the task of illegal hunters easier. This situation did in fact occur in Kenya within the Meru N.P. rhino sanctuary during 1988, when in addition to the elimination of a herded group of five white rhino, all of the four black rhinos within a small fenced area were killed illegally.

In Kenya, rhino sanctuaries on private land may only be stocked with rhinos from other sanctuaries on private land, or with individuals from non-viable relict groups. Rhinos are now being moved back into parks from private sanctuaries in Kenya. In these instances, rhinos are released from small sanctuaries into larger surrounding areas, much like the Zimbabwe model of IPZs.

The Zimbabwean approach

Zimbabwe has a slightly different approach in that its "safe areas" for rhino on private land are known as "conservancies" (usually a number of adjoining farms). On state land the plan is to create only four Intensive Protection Zones (IPZs) in national parks. Rhinos from outlying areas will be moved into these IPZs.

A clear aim has been established for the Lowveld rhino conservancies, i.e. to keep poaching losses at a level which is below the natural growth rate of the rhino populations in the Lowveld conservancies, and to thereby increase the total number of rhinos in these areas to over e.g. 100 by the year 2000. As an example of the level of planning and organization considered essential to achieve success in Zimbabwe, excerpts from a detailed management plan for these conservancies are provided in Annex 2. MET can be approached to facilitate further contact with the relevant persons in Zimbabwe, and it will be worthwhile for Namibian land owners to visit such facilities

Table 1. Staffing levels in Kenyan sanctuaries (present establishment of rangers are listed in parentheses).

Sanctuary/Conservation area	Area (km ²)	Sergeants	Corporals	Rangers	Total Rangers force	Ranger density (km ² per ranger)	
						Present	Required
Nairobi NP	114	2 (0)	4 (1)	14 (6)	20 (7)	16	6
Lake Nakuru NP	142	1 (0)	4 (0)	18 (3)	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 (Matthews Range)	> 500	1 (1)	4 (0)	17 (6)	22 (7)	> 60	20
TOTAL		6 (1)	19 (6)	77 (28)	100 (35)		

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

in Zimbabwe and other countries.

Zimbabwe is now almost in the same position as Kenya in the mid-1980's following the decimation of most rhinos in National Parks and open state land. There is currently a programme where rhino are being moved onto private land, i.e. the conservancies, as well as into IPZs in some parks.

The current Namibian approach

The current Namibian approach to establishing black rhino on private land differs in several respects from Kenya and Zimbabwe. The National Rhino Conservation Plan makes provision for the translocation of black rhino onto commercial farmland, as an ongoing and adaptable project known as the custodianship scheme. MET also auctions breeding nuclei to approved buyers, however, to demonstrate the high economic value of black rhinos through such sales to the Namibian public.

Under suitable conditions and limited security risks for rhinos on private land, black rhinos from donor populations in Namibia will periodically become available for translocation to private land as part of MET's custodianship scheme, based on the following steps:

- MET will announce in the press that it intends to place rhino onto private land and landowners are invited to apply to have their properties assessed.
- MET personnel visit each applicant to rank properties and the perceived management ability of the landowner according to specified criteria (Annex 3).
- MET's Rhino Advisory Committee makes recommendations regarding the allocation of rhino, based on inspection reports. All farmers are notified of the decision taken by MET and are then given a chance to build bomas and make adjustments to their infrastructure where necessary.
- Landowners have to sign a contract (Annex 4) with MET when the rhino are delivered and are expected to provide brief quarterly reports on the status of rhinos in their custody.

The extra-ordinary high rhino carrying capacities of some Kenyan and Zimbabwean sanctuaries and IPZs are unlikely to be replicated in Namibia. Much larger land units will be needed to protect similar numbers of rhinos in Namibia, with consequently much higher establishment and recurrent costs. Namibia is nevertheless starting to place black rhinos on private land, while contemplating sanctuaries or IPZ-like facilities on state land. Local conditions may result in a different way of providing special protection to threatened rhinos, and a flexible approach is likely to yield the best results.

5. PROFILES OF POACHERS AND PROTECTORS

- people with no options?

Insufficient information is available in Namibia to provide accurate profiles on those involved in illegal hunting of rhinos, but the following could provide useful background information. Two stereotypes are commonly described, i.e. the modern entrepreneur ("commercial poacher") and the traditional or subsistence hunter, but this distinction could fade according to circumstances. Not all characteristics described below will apply to every individual, but a reasonable mental image can nevertheless be formed.

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

"TRADITIONAL" or "SUBSISTENCE" rhino hunters operating in Namibia can typically be described as:

- male, often mature family breadwinners with many dependants, forced by dire economic circumstances to hunt, often under pressure from wives
- likely to hunt opportunistically, and are thus not only after rhinos
- likely to see rhinos and other species solely as a source of cash or meat, despite being aware of the obvious scarcity of rhinos in the areas which they know well
- unlikely to have any idea what rhino horn is used for
- likely to be unaware of the real value of horn, prepared to accept payment of a few hundred N\$ for horns, or less
- primarily rural inhabitants, usually from a nearby area, and very familiar with the target area and how it is managed
- often operating in groups with dogs and animal transport, otherwise on foot
- likely to shoot at any exposed spot on the target animal, then following it until a better shot can be made or until it dies
- adequate marksmen over short distances and adequate trackers
- likely to leave ample traces of their activities and are likely to stay nearby at night and move by day

- poorly armed, usually with inferior .303 rifles with open sights, which they may have borrowed or hired for the occasion, with sparse ammunition, often only one rifle per hunting party
- most unlikely to resist arrest using violence or to attempt to escape
- usually remorseful and ashamed when apprehended
- likely to provide information on similar activities if treated humanely from the moment of arrest
- very likely to have been aware that it is illegal to hunt rhinos or be in possession of horns
- unlikely to have been aware of the exact penalties and thus not deterred by maximum legal provisions for imprisonment and fines
- very likely to be aware of sentences given to other poachers, and thus equipped with the necessary information to make a personal assessment of risks and benefits
- unlikely to have been promised that someone will pay his fine, or reward him for time served in prison, or take care of his affairs whilst in prison
- responsive to disciplinary measures enforced by community courts and traditional leadership
- unlikely to return and resume poaching in the same area, or elsewhere within a relatively short period, unless recruited to the ranks of the commercial poacher through increased incentives or another source of motivation

By contrast, the "MODERN" or "COMMERCIAL" entrepreneur is typically:

- male, younger than the former group
- risk takers, with less regard for own life than former group
- likely to be unaware of the real value of horn, expecting payment of a few thousand N\$ for horns, or more
- often without formal skills and usually unemployed
- at ease in both urban and rural environments
- likely to see rhinos and other species solely as a source of cash, not necessarily aware of the scarcity of rhinos
- unlikely to have any idea what rhino horn is used for
- usually well-armed with assault rifles which they may have borrowed or hired for the occasion, rarely with modern sport hunting rifles (open sights), firearms likely to be unregistered, ample ammunition
- mostly mediocre shots relying on greater fire-power
- in good physical condition, capable of making long distance movements by day and night; currently use cars, buses and trains to get to rhino populations
- likely to have had previous military training and are resourceful

- skilled at concealing firearms, trophies, tracks and signs, superb at tracking and bushcraft
- hunts alone, but relies on others for assistance with other aspects such as transport
- influential and persuasive, often successful in coercing someone else to provide information or assistance, often has own sophisticated intelligence system
- well-organized, with a back-up system of predetermined escape routes, prearranged transport and safe hideouts, even in other countries
- often not a newcomer to illegal activities, might be involved in illegal trade in firearms, narcotics, ivory and diamonds
- more likely to resist arrest, rarely by violent means however, likely to attempt to escape
- often inclined to lay charges of wrongful treatment or assault if arrested by a person not a member of the Police; very likely to be aware of legal rights
- unlikely to volunteer any information
- very likely to have been aware that it is illegal to hunt rhinos or be in possession of horns
- less likely to have been aware of the maximum penalties provided by legislation and thus not deterred by legal provisions for imprisonment and fines
- very likely to have been aware of sentences given to other poachers
- very likely to have been promised that someone will pay his fine, reward him for time served in prison, and take care of his affairs whilst in prison
- very likely that he would have been promised financial support to obtain legal representation
- more likely to return upon release and hunt again, could engage in activities motivated by revenge

Protection staff (anti-poaching units) therefore need to be:

- carefully selected on the criteria of loyalty, motivation, discipline, personal skills and physical ability
- able to operate under harsh conditions for extended periods
- skilled in bushcraft and tracking of wildlife and humans
- well-trained in all aspects of their profession, eg. surveillance techniques, profiles of their adversaries and their operating methods, evidence protection in the field, allowable use of force etc.
- operating with maximal mobility and independent decision-making
- well-rewarded, with performance perks and bonuses
- led by good leaders

- supported by a functional informer network and cooperation from local people
- adequately equipped for the task
- treated as an elite component of the workforce

MET will in future offer to assist with the training of protection staff in private employment. It is important that those in the forefront become an effective deterrent, and fulfil their role with skill and 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 threat of poaching, and offers an incentive for the retention of indigenous skills otherwise likely to disappear.

6. INDIVIDUAL IDENTIFICATION AND MONITORING

- optimise management with up-to-date information

It is impossible to have any satisfactory measure of success or failure in rhino conservation and management if some minimum level of information is not available for a given population. The number of individuals, their sexes and relative age groups are critically important, yet it is remarkable how rarely such information is available for rhino populations. Part of the reason for this situation is that both species of rhinos are amongst the most difficult large game species to observe from the air or ground. Census and monitoring techniques are nevertheless far more efficient and reliable if the individual identities are known for as large a fraction of the population as is possible. Even through new populations on private land are usually started with identifiable (artificially marked) individuals, their offspring will not necessarily be, and the adults will change appearance in one way or another. Horns grow continuously, and are abraded continuously, frequently break off in parts or whole, ears acquire new tears and holes, and for the first few years, most calves look identical. Individual identities thus need to be updated continuously, but the quality of the information provided is more than adequate reward.

Rhino monitoring techniques used in Etosha and elsewhere in Namibia

In Etosha National Park, the first aerial censuses of large game were done in the late 1960's. It soon became apparent that rhinos cannot be counted accurately from the air using the usual methods, and since the 1970's rhinos have primarily been monitored at waterholes by park rangers. Various new techniques were tried such as the use of ear marks and implanting reflectors in the horns. Waterhole counts have also been used

extensively in Etosha in the dry season over the full moon periods. All waterholes were covered systematically for a period of 48 hours, and individual rhinos were identified based on drawings of horn shapes and ear notches.

The current black rhino monitoring programme aimed at determining population sizes based on accurate individual recognition was started in western Etosha in 1986, and later extended to the rest of the park. Other monitoring programmes followed and all black rhino populations under the jurisdiction of MET are currently monitored using similar techniques. All individual rhinos in former Damaraland have been photographed and recorded, and the records are continuously updated. Other valuable information has been gathered as well, which cannot be done with aerial censuses. Equipment required for black rhino monitoring include a SLR camera fitted with a 200mm lens and flash rated to 30m, preferably a camera with a shutter speed setting of 1/60 for flash photography. Black and white ISO 400 print film is used. A spotlight with a red filter and binoculars are essential to identify and determine the sex of rhinos accurately at night.

In Etosha, waterholes are observed systematically during the dry months, usually from May to October, when no open veldwater occurs. Teams of observers stay at waterholes for three consecutive nights during full moon periods, starting six days before the date of the full moon. The observer is situated about 50 meters downwind from the waterhole, away from major routes used by rhino. The observer determines the sex of each individual as they approach the waterhole, then moves to a previously marked place 25 meters from the site where rhinos drink, to photograph the animal. A frontal photo is taken first with the animal's head up, looking at the observer. The flash usually disturbs the animal, which then usually turns sideways, allowing a second photograph of its side profile to be taken.

The animal's hind footprints are measured after it leaves the waterhole, provided that the substrate is suitable (dry or damp but not wet, fine grained, not too loose). Individuals are thus identified according to a combination of characteristics including sex, ear notches, horn shape, misshapen tails, distinct scars and hind foot measurements. Two photographs of each individual are kept on file for identification purposes along with other relevant information like spoor measurements, observations and new calves present (see Figure 1). Field staff carry pocket-size identification note books to make the recording of observations easy (see Figure 2).

Rhino monitoring in the former Damaraland part of the Kunene region is done both opportunistically, when fresh tracks are found and followed, and on an organised basis. Aerial reconnaissance patrols are used to determine probable concentration

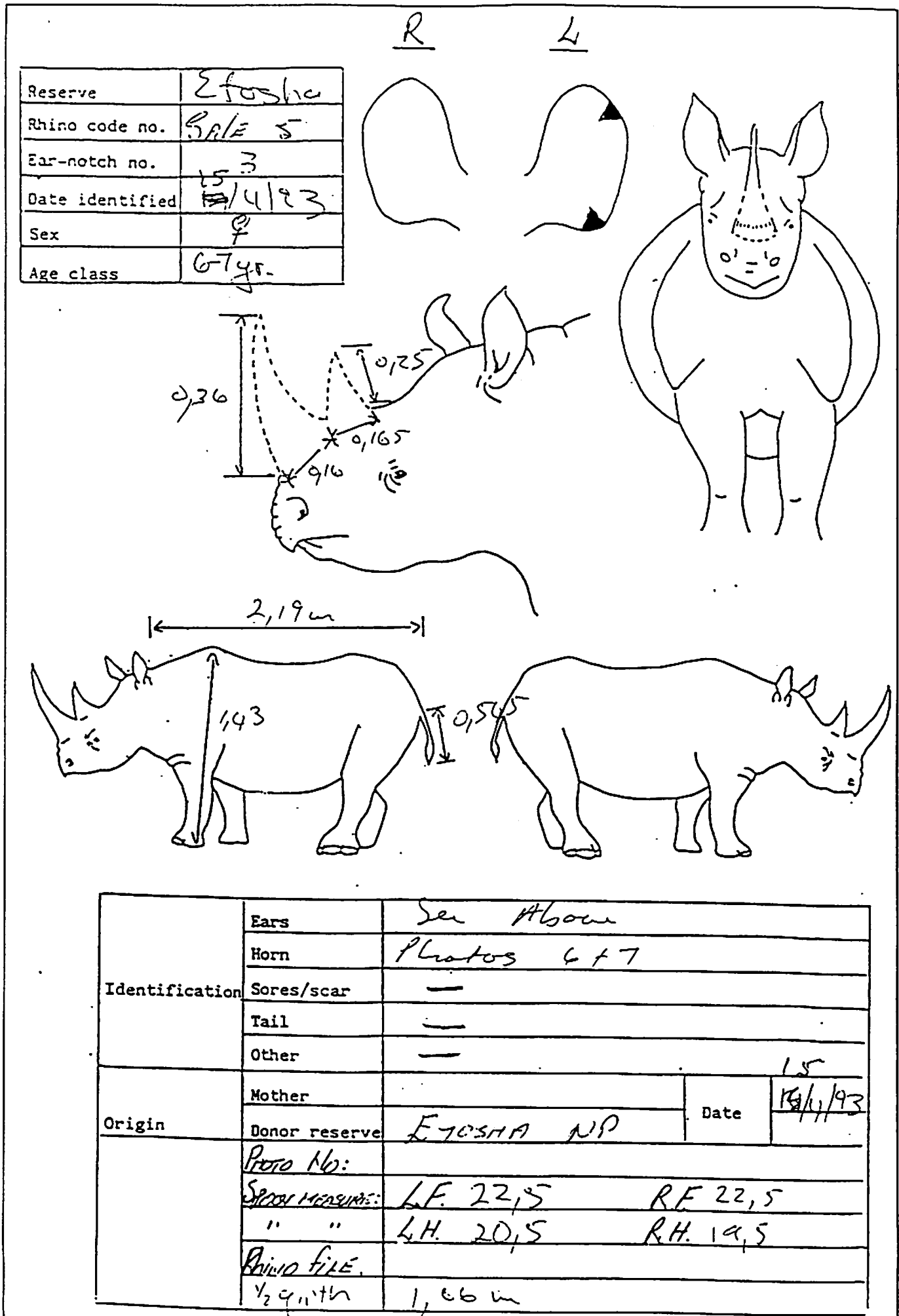
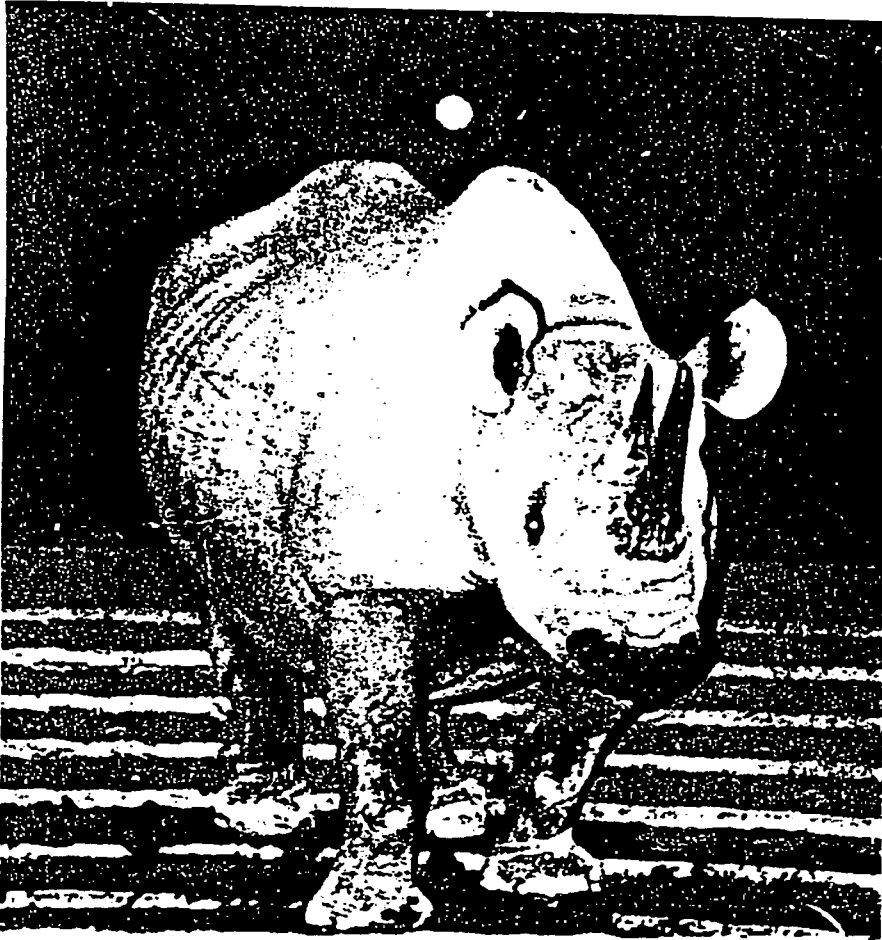


Figure 1. Example of an identification record, and examples of frontal and lateral identification photographs at night.

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ADULT

COV WITH BORN CALF

COV WITH LESS THAN 1/2 SIZE CALF

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

COV OR BULL WITH SUB-ADULT

IDENTIFICATION

Behavior/Remarks

LOCALITY

Rhino code no

Ear-notch no

Date identified

Sex

Ears	No Notches	
Horn	Front Point	
Sores / scar		
Tail	Complete	
Other	Vertical Groove from Distal	
Photo no.		
Spoor width (cm)	LF	RF
Spoor width (cm)	LH	RH
Photo File		

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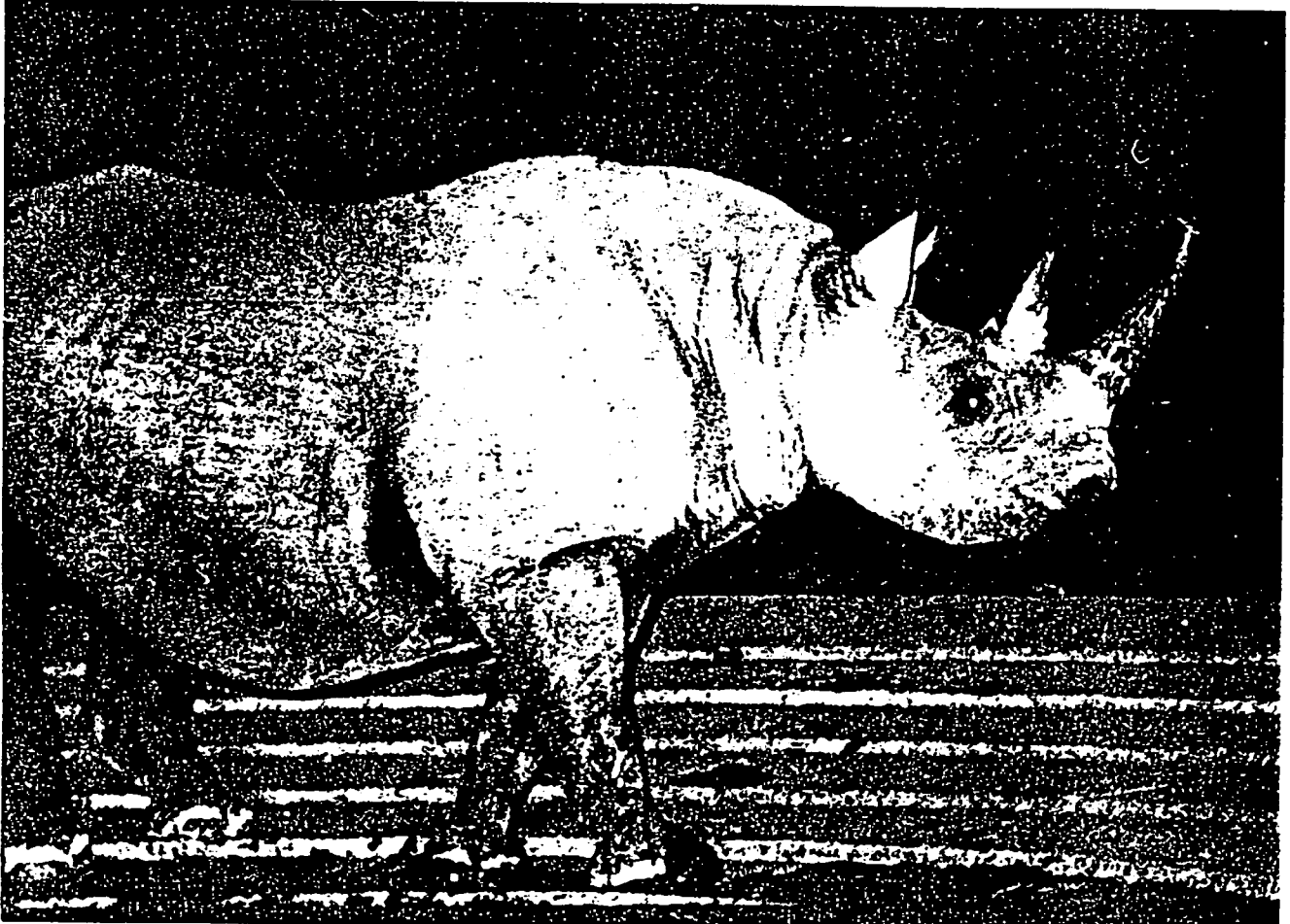
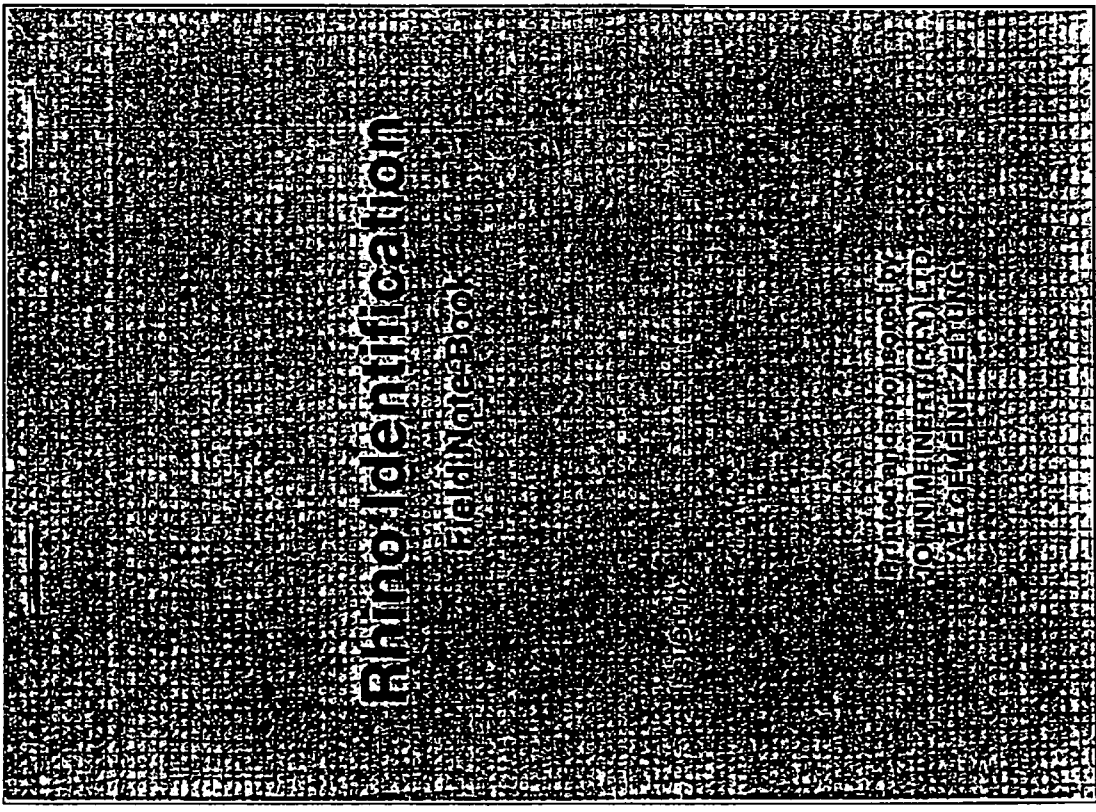


Figure 1 (continued)



Age class

SINGLE COW OR 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	

Ears	Horn	Series / scar	Photo no	NAME:
Other	Spoor width (cm) LF	Spoor width (cm) LH	Photo File	TIME:

Behaviour/Remarks

Figure 2. Field note book for rhino identification (actual size).

areas according to rainfall and proximity to human settlements etc. Ground teams then move into such areas, following all fresh rhino tracks until an individual is found. Photographs are taken from the front, side and rear, the latter to determine the sex. Close-up photos of the ears and wrinkles on the nose and spoor measurements are also taken for identification, as well as spoor measurements. Individual identities are determined and kept on file as in Etosha.

Other methods of identification

Earmarks for individual identification are applied according to a marking scheme (see Figure 3) whenever animals are immobilized. All individuals translocated to other areas are supplied with earmarks unless distinctive marks are already present. Eartags are no longer used, as tags are almost always lost within a few months. MET will, whenever possible, launch special capture operations to mark juvenile rhinos with earmarks to increase the proportion of individually identifiable rhinos in each population. Microchip transponder implants are becoming popular, as each implant has an unalterable identity code and effectively marks an animal inconspicuously and safely. The implants are usually placed under the skin in areas not normally consumed by scavengers, but may also be placed within horns. Currently available electronic scanners are used to record the microchip number from a distance of up to 45 cm. The microchip could last as little as only 2 to 3 years, but further innovations are expected to result in much longer life-span and scanners able to read chips at distances of several meters.

Radio transmitters also could be used to identify and track animals. Different types are available commercially which can be fitted around the neck or implanted into the animal's horn. All transmitters have a limited life-span of 2 to 4 years, depending on the size and make. Expensive tracking equipment is needed to use this system, and some terrain might require aircraft. The average range that can be expected in typical Namibian savannas on level terrain will rarely exceed 5km. Suitable radio-transmitters are available from the USA and Germany, and cost approximately N\$700-900 each, receivers cost about N\$5000 and hand-held antennas about N\$500.

A variety of other techniques can be used in special circumstances. Large numbers or codes are sometimes painted on rhinos due to be translocated to facilitate initial post-release monitoring. Dehorned rhinos are usually given a groove in a toe nail to identify their tracks, while distinctive cracks on soles might be superb identifying characters if the substrate is suitable. An accurate age estimate might also be sufficient to identify individuals in small populations. MET aims to obtain accurate



Figure 3. Official marking system for rhinos in Namibia.

age estimates from tooth impressions for all black rhinos captured and translocated, and will investigate similar techniques for the white rhino. The most modern of techniques will also increasingly be used, such as using rare chemical isotopes to identify and characterize rhinos from each area. The most promising method is nevertheless based on individual genetic differences, and the so-called genetic fingerprinting will reveal very important information about each individual and population in future. For example, these techniques will show which bull rhino has sired which calf, and the degree of relatedness and inbreeding in a population. MET is already keeping a small sample of every rhino captured for future analysis, and urges private rhino owners to take part in this scheme.

Monitoring of rhinos on private land

The efficiency of management and protection measures for small rhino populations will largely depend on the quality of monitoring data. The ideal situation will be to:

- have every individual identified from an annually updated set of identity photographs clearly showing frontal and lateral views of horns and ears,
- have permanent marks such as an earmark, and a microchip implant on each rhino
- collect a tissue (eg. skin from the earmark) and blood sample from every individual at translocation,
- capture every offspring at ca. two years of age for marking and sampling
- issue all field, anti-poaching, and tourism staff with pocket identification guides, to maximise the probability of a positive identification from each visual observation. (MET can be approached to provide these note books, pending the availability of funds).
- record all positive sightings of every rhino every time (locality, time, activity, response to observer, condition)
- set monitoring targets eg. to have at least one positive record per individual once every 30 or 60 days, and if no record was obtained, a special effort should follow to determine if all rhinos are still alive.

It is also highly recommended that all imported white rhinos already in private ownership be marked using several different marking techniques, to facilitate future population monitoring, management and law enforcement. MET can be approached for assistance and advice at any time, as well as a list of current suppliers and costs of marking and monitoring equipment. The setting of monitoring targets and the establishment of a standardized monitoring technique are highly recommended for all private land where rhinos occur. The data base thus established will be invaluable to the landowner for monitoring the health of the population, and determining the efficiency of surveillance and protection efforts.

7. SPECIAL MANAGEMENT NEEDS OF SMALL POPULATIONS - striving for optimal growth

Small groups of slow-breeding large mammals, in the order of the size of the black rhino breeding nuclei and the expected maximum populations that can be carried on game farms in Namibia, are unusually prone to extinction due to chance effects. Small groups are easily killed off by disease, climatic catastrophes, poachers, or are very susceptible to the effects of eg. one unusually aggressive or less fertile group member. Small groups ultimately suffer the effects of inbreeding, with calf mortality increasing rapidly with the degree of relatedness in the population. Special techniques are also worth considering if population growth has to be maximised at all costs, but increasing management sophistication will require increasing costs and effort.

The experience gained from all current and future introductions will be extremely valuable, and room for improvement and innovation (see Section 9) exists in every field. Many aspects of the management of small rhino populations remain unclear, but at least some progress has been made in reducing some negative impacts.

PROVEN MANAGEMENT GUIDELINES FOR SMALL RHINO POPULATIONS

Stress reduction (see also Section 8.) Simple precautions can achieve dramatic reductions in stress related to rhino handling, capture and holding in a boma. Ample experience is available within Namibia, and MET is willing to help. Do not let inexperienced persons immobilize or treat rhinos if less risky services are available. Black rhinos and white rhinos react dramatically differently to the same treatment and drugs, and carelessness will cause preventable losses. (Namibia has had amongst the best success rates in rhino capture and handling, thus do not take too much notice of eg. foreign video material of rhino capture and handling etc.).

Pattern of introduction The initial stocking of several sanctuaries and reserves has resulted in high mortalities, caused by the pattern of releases. Of great importance is to simultaneously release as many individuals as will ever be released in a particular confined area. Unless special measures are taken, latecomers might be killed, or perhaps never get a chance to breed.

Ideal age structure and composition of breeding nuclei The best successes so far have

been achieved with young adults (5-10 years) originating from an area similar to their translocation destination. Where possible, breeding nuclei will be composed of such groups. It also seems as if rhinos which originate from the same area and are thus likely to be familiar with each other, have less problems to form a stable population in a confined area. Familiar rhinos might nevertheless also have a greater degree of relatedness than strangers.

Managing occasional escapes Twelve black rhinos were delivered to two farms in 1993 and within a few months from release, one rhino escaped from a farm. MET currently remains responsible for returning custodianship scheme rhinos back to a farm in these instances. An alternative plan is nevertheless required in case an immediate response is not possible from MET, or if funding is too limited to afford eg. a helicopter. A record should be kept of all escapes to determine probable causes and if specific individual rhinos are responsible. Escapes could be an early sign of aggressive interactions amongst the population that could lead to deaths if unchecked.

Dehorning MET pioneered dehorning and has continued to use this technique on both species to deal with short-term threats of poaching, particularly to render rhinos less valuable during the wet season when patrols are less effective. Black and white rhinos on private land in Namibia have also been dehorned, and dehorning has generally proved to be a successful preventative method with negligible consequences, if any. It seems that it might be necessary to dehorn annually to reduce poaching risks to a minimum. Routine surveillance should nevertheless be continued on dehorned groups. In future, all black rhinos placed on private land as part of the custodianship scheme are likely to be dehorned as a preventative measure and to reduce the chances of injuries through fighting in the critical post-release period.

Many dehorned white rhinos were killed in Zimbabwe's Hwange N.P. in 1993. The exact reasons behind this episode are unknown, but it seems likely that poachers were shooting every rhino which they had tracked down to reduce future time wasted by coming across dehorned rhinos. It might therefore become essential to dehorn all rhinos in a given area and publicise this fact. It is also not impossible that poachers of Hwange rhinos were paid to shoot dehorned rhinos to drive up the value of illegal stockpiles, or for reasons of retaliation or spite.

The dehorning of rhinos is expensive and could possibly affect tourism. The act of dehorning nevertheless has great revenue generating potential, as a form of non-lethal hunting. Close liaison between MET and landowners will be important in the development of such practises.

Captive rearing Abandoned or orphaned rhino calves can be hand-reared successfully, but require considerable effort and commitment. The intrinsic value of such animals is high enough to warrant the effort, but MET is often not in a position to do this and has experienced problems in the past. The Etosha MET staff nevertheless succeeded in rehabilitating a hand-reared rhino to become the first known hand-reared black rhino to have bred successfully in the wild. Private landowners might nevertheless be in a better position to rear such calves in future.

UNRESOLVED MANAGEMENT PROBLEMS

Maintaining an ideal sex ratio The sex ratio of small groups could be critically important in achieving successful breeding. Too many males will result in fighting and too few in inbreeding or long calving intervals. Black rhinos are currently introduced on farmland at a sex ratio of 1:1, but are usually placed on auction in the ratio 2:4 males:females, as an added attraction. Maintaining optimal sex ratios in donor populations (i.e. Etosha and Damaraland) is equally important, however, and could result in different sex ratios of future breeding nuclei. Through detailed monitoring, landowners can give valuable input regarding sex ratios and breeding performance of the groups in their care. MET can then adjust the sex ratios accordingly to benefit the breeding herd, and ensure optimal recruitment in each habitat type and region. Genetic research could be very beneficial if the parentage of calves born in a small population can be determined, to find out how many of the adult males actually breed, and thus how many are required.

Males of both rhino species are capable of vicious and lethal fights, and it is not unusual that one or both males are seriously injured, and even worse, that a calf or cow is killed in the process. The reasons for such fighting are not always clear, but seem related to sex ratios and densities. It is important to track individuals down after a fight has occurred and to assess injuries. Most wounds result from horn punctures, and prompt veterinary care may sometimes save such individuals.

Preventing inbreeding Introducing new males almost always leads to serious fighting if not the killing of males, females or calves. A Namibian idea is to possibly prevent inbreeding by exchanging females and not males. Genetic exchange will be much slower than through introducing new males, but could still be sufficient. A research and monitoring priority is to develop a reliable system of monitoring genetic relatedness and parentage in small populations. This will reveal the real number of individuals actually breeding and those that are surplus. Much more information will be required for each individual and each population and it will be ideal if a stud book could be kept by MET and the private sector (see Section 9).

Disease prevention Anthrax and rabies could occur virtually anywhere in Namibia, and although rhinos are less susceptible than other species, some threat remains. Research is showing that species react differently to vaccinations, and a proven anthrax vaccination procedure for rhinos needs to be developed. Of great importance will be to consult with MET about an appropriate vaccination system that will also yield information for future refinements. Blood samples need to be collected at every capture opportunity to screen for exposure to a range of diseases and determine the degree of any immune response since the most recent vaccination. Vaccination can be done without immobilization, and help is available from MET.

Achieving optimal breeding and survival One of the two main objectives for the introduction of black rhinos onto commercial farmland is to breed rhinos as fast as possible (in addition to reducing poaching risks), in order to reach the national goal of 2000 black rhino and 500 white rhino as soon as possible. Maximum population growth will only result from simultaneous successes in a number of fields. Births have to occur at the shortest interval, nearly all calves have to survive for the critical period from birth to separation from the mother, young adults have to start breeding as early as possible and adult survival should be high.

By providing suitable and sufficient habitat (an abundance of good quality space, water, food and shelter), populations will tend to increase rapidly. Management programmes can furthermore contribute to rapid growth by starting with the most suitable age and sex ratios, controlling disease, and providing protection against disturbance, poaching and injury. Management can also prevent temporary setbacks that will result from drought and accident, by eg. providing extra food and licks in dry times and rearing abandoned calves. It might also be possible in future to manipulate small populations to breed at maximum rates by using a zoo technique of removing calves from their mothers at about 12 months for a few weeks, which allows the cow to come on heat about a year earlier. After mating, the calf can be reintroduced to its mother, and chances are reasonable that it will be reunited successfully.

The key to achieving and maintaining optimal population increases will be information. The more known about each individual and each group, the easier it will be to refine the management of each population.

Optimal population sizes and carrying capacities Groups of six black rhinos are currently released per farm, but nobody really knows if this is the optimum number for a so-called "founder" group. If no interference occurs, the breeding nuclei will increase in size, but eventually begin to breed less rapidly and ultimately stagnate

completely. A typical indication of a population beginning to feel the limiting effects of insufficient resources is the change from short calving intervals to longer periods, increasing calf mortalities, and increased fighting amongst adults. In view of current objectives, population size will have to be kept below the level where signs of stress and limitation are apparent.

Surplus individuals The sport hunting of black rhinos is not yet possible, although white rhinos may be hunted. To recover costs and encourage sufficient investments in rhino protection and management, it will be advisable to maximise the return from every individual. Unwanted individuals eg. highly aggressive ones, the very old and infertile, will not be suitable for translocation elsewhere, for the same reasons that they are unwanted in the first instance. In addition to being candidates for sport hunting, such individuals could theoretically serve as a buffer against the poaching of other more valuable individuals, and will also continue to produce horn. 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.

8. RHINO BOMAS AND CAPTIVE MANAGEMENT

- ways to minimize translocation risks

All black rhino translocations and the establishment of satellite populations require the use of bomas (= specially designed pens for the temporary holding of wild animals). Not only does a brief period in captivity let rhinos recover from any possible capture- and transport-related stress, but so-called "boma training" is an essential step in getting a rhino used to a new diet and locality, and also to other rhinos that would be part of the same new population. Inadequately designed and constructed bomas are nevertheless worse than having no bomas at all, and have led to the injury and death of many rhinos in the past. Of critical importance is to reduce to the minimum all possible stresses during the period from initial capture to release. Incipient effects of stress suffered in captivity might only appear once the animal has been released, and thus outside the reach of corrective management.

Please note, however, that white rhinos present special problems during translocations. The species does not adapt well to bomas and most translocations are done from source to destination without any period spent in a boma. It could be very difficult to get white rhinos to start feeding in a boma, and even fresh green grass may not be sufficient temptation. Expert advice on white rhino translocations is available from the Director, Natal Parks Board, P.O. Box 662, Pietermaritzburg 3200,

South Africa Tel.: (0331) 471961; Fax 471037).

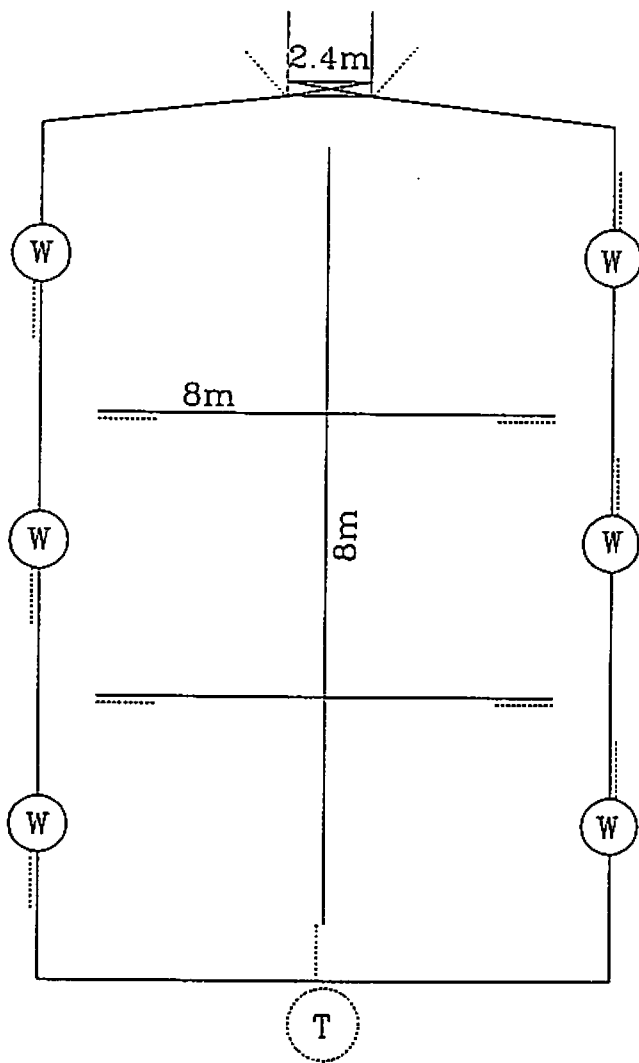
Bomas are not only expensive initial requirements for the establishment of a rhino population, warranting all possible care in design and construction to prevent waste, but could well be needed in later years. The boma will remain essential if rhinos require any veterinary care or when individuals have to be translocated in or out of the population for whatever reason. The recommended design is suitable for both African rhino species, young elephants and most other species likely to be found on Namibian game farms. For unknown reasons, Namibian rhinos are more aggressive and intolerant to bomas and the more flimsy designs used in eg. Kenya are not suitable. Initial construction must be sufficient to contain the rhinos as maintenance and repairs to the boma during the captive period of rhinos should be avoided.

BOMA DESIGN AND CONSTRUCTION

Locality: The topography and siting of the holding boma must be carefully considered in advance of construction. The ideal site is on gently sloping terrain and well-drained soil for adequate drainage. The boma should be built in suitable rhino habitat so that a rhino will be able to survive in the event of a forced release. Water should be available and a reservoir tank should be erected to ensure an adequate water supply when pipes or pumps fail. The boma should not be erected near boundary or internal fences, and not too distant from a waterhole likely to be used by rhinos after release. The boma should be accessible by heavy vehicles throughout the year.

Layout (Figure 4): Six square pens, back to back with communal walls and interconnecting sliding doors are the best design, based on Namibian experience. One pen more than the number of rhinos to be accommodated is ideal, however, and will greatly simplify the cleaning of pens. A passage between the two rows of pens could also serve this purpose. Large amounts of unused plant material have to be removed daily from each pen, and extra space will be needed. The off-loading ramp with its hinged gate can also double as a temporary pen during feeding and cleaning. Catwalks also make cleaning and feeding easy. The ideal size for a pen is 64 m² and walls 2.1m high will be suitable for both rhino species and plains game.

Construction materials: Wooden poles of 10-15cm diameter are the most suitable for construction. Creosoted poles must be avoided as rhinos 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 (Figure 5) works well but is more expensive. A mixture of 1:1:3 cement, gravel and sand will be ideal for concrete.



PEN: 64 sq.m. each
 DOORS: 2.4 m.
 HEIGHT: 2.1 m.

KEY:





-  Sliding door
-  Water trough
-  Tank
-  Gate

Figure 4. Recommended layout of rhino bomas.

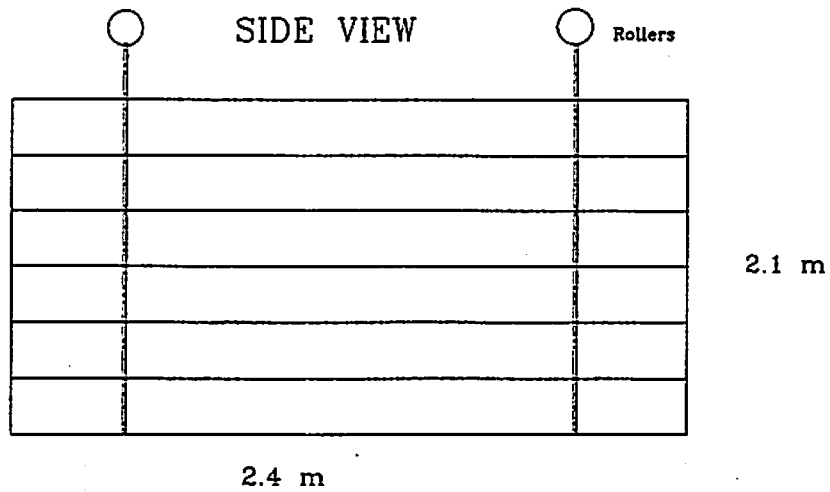
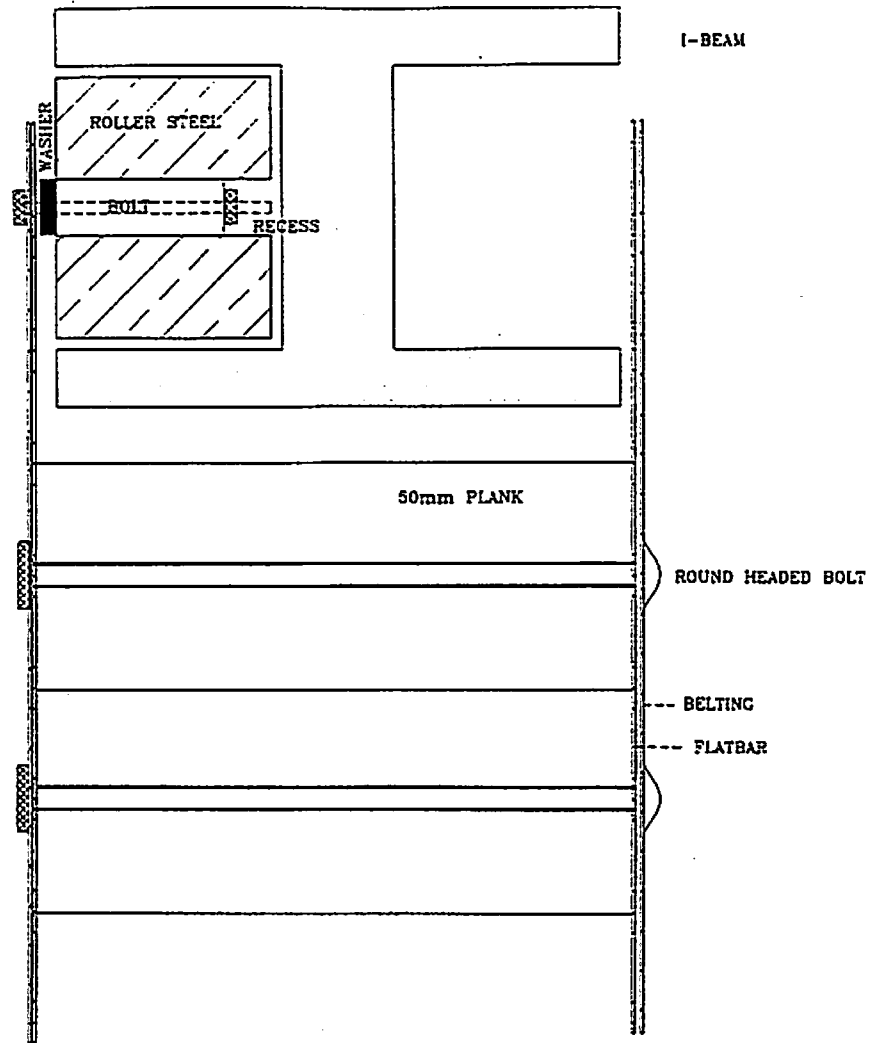


Figure 5. Sliding door and gate mechanism with I-beam and rollers.

Loading and off-loading components (Figure 6): The width of the loading and release doors on ground level must be 2.4 m minimum and 2.8 m maximum inside diameter, to suit MET's special rhino transport truck. The ramp gradient should be 1:5, with the first 7m level or gently sloped to encourage the animal to disembark. The soil used to fill the ramp should be compacted. Catwalks on either side of the ramp will be useful in dealing with a difficult animal. The ramp should have swinging gates at both ends.

Gates: Sliding gates are preferred above any other design. Wooden boards (50mm thick) are used for the construction of gates, with an outer layer of conveyor belting to prevent injuries and reinforcement. Metal doors work well but have to be padded with belting. All protruding sharp bolts and nuts should be trimmed or preferably recessed and gates should have a reliable locking device. Heavy grade materials have to be used throughout, and the sliding mechanisms in particular have to work well. Rhinos tend to fight with moving gates, which have to be especially sturdy and well secured to the sliding mechanism. A damaged door cannot be handled efficiently and can result in injuries to the rhinos.

Water: A buried PVC pipeline of not less than 32mm diameter with taps at each trough works well. Troughs situated in the release doors facilitate cleaning from outside, and the recommended depth of 25cm will ensure the availability of cool water throughout the day. Troughs should be saucer-shaped with shoulders at least 15cm thick. Reinforcing should be used since the animal will step on or walk through the trough while in the boma and when released.

Shade: If natural shade is insufficient, extra shade should be provided. Shade cloth (80%) elevated about 3m above the walls on the northern side of the pens will 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 wall and cloth. Shade cloth should be supported with taught steel wire, suspended from a framework welded onto corner, gate and wall support posts. It should be tied down to avoid flapping.

Walls: All corner and gate posts must be made out of steel (eg. railway ties or heavy gauge pipe) and should be properly concreted in the ground. Support posts are necessary at 3m intervals and must be of steel and also anchored with concrete. Various methods could be used in wall construction to suit material available. Wooden poles at top and bottom could be used as horizontal supports (Figure 7a). 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 no. 8 wire. Angle iron welded back to back also works well as horizontal support. Round bars could be welded

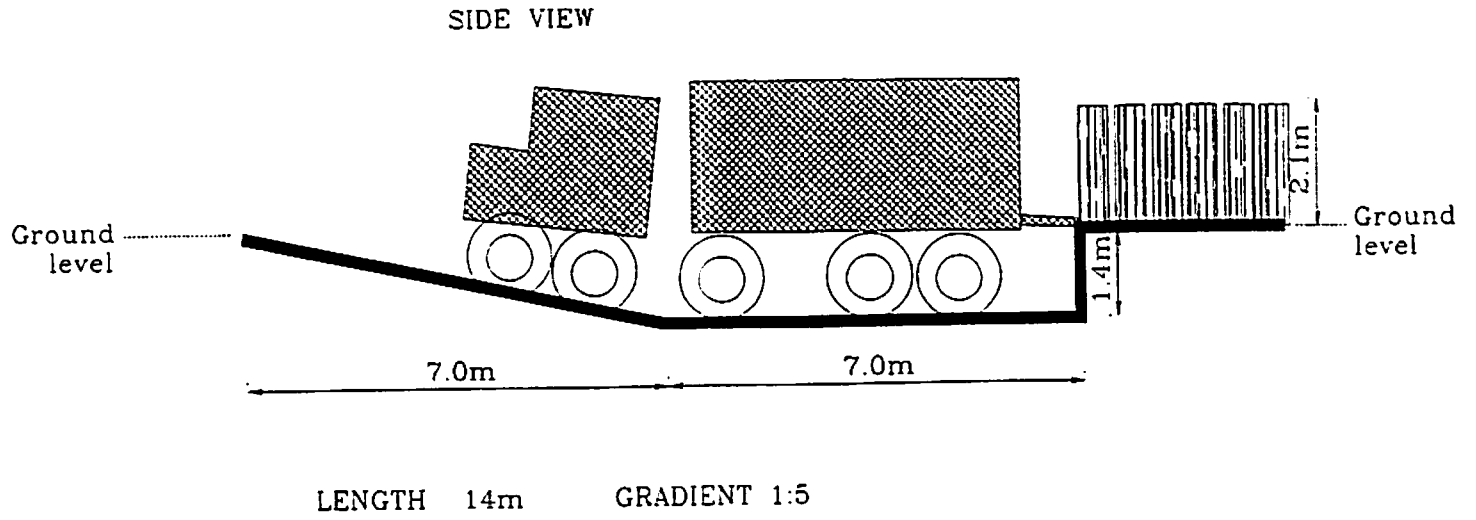


Figure 6. Boma loading ramp dimensions.

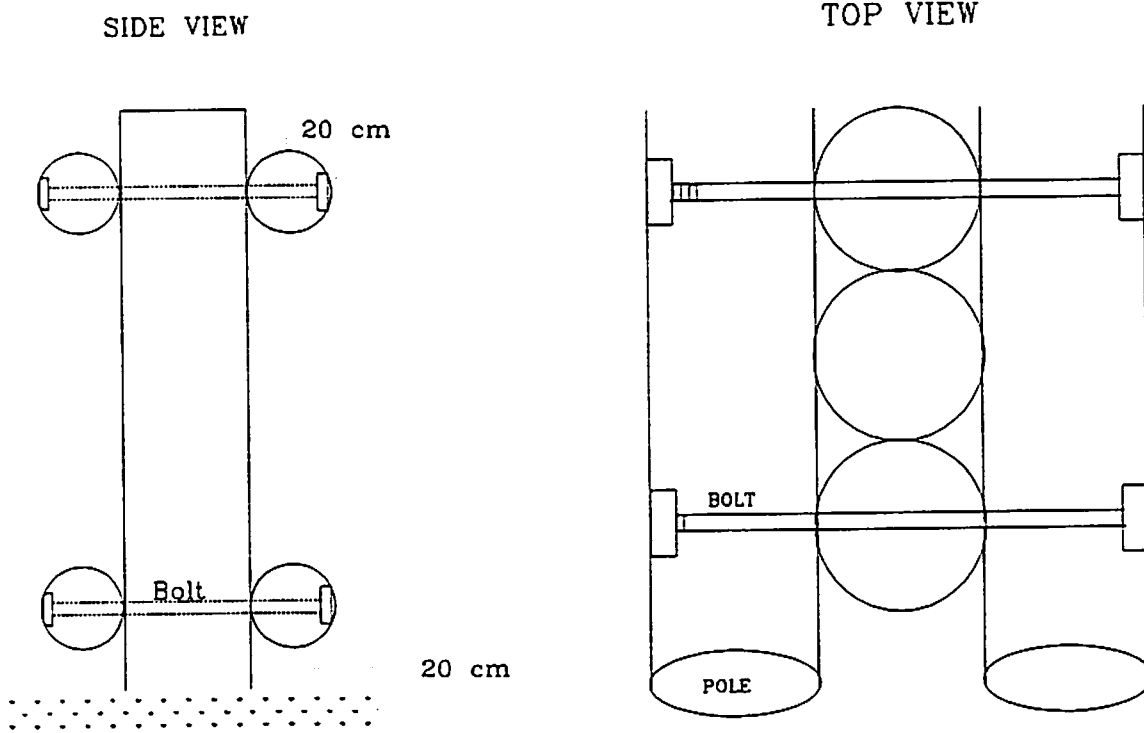


Figure 7 a. Wall construction using poles and bolts as supports.

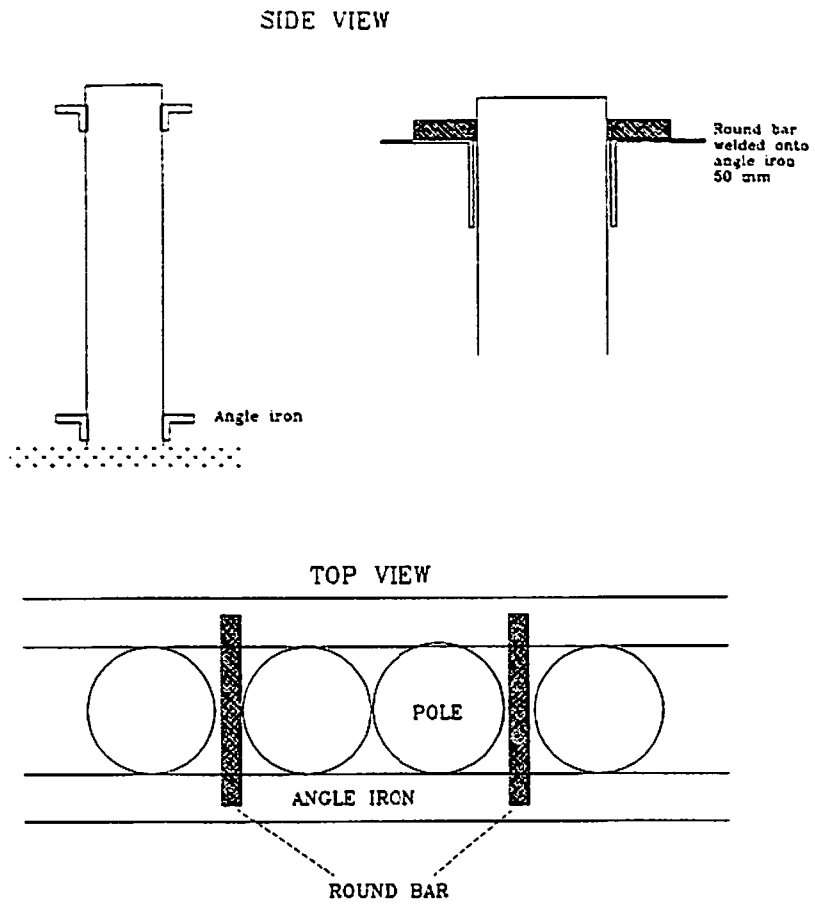


Figure 7 b. Wall construction using angle iron with round bar supports.

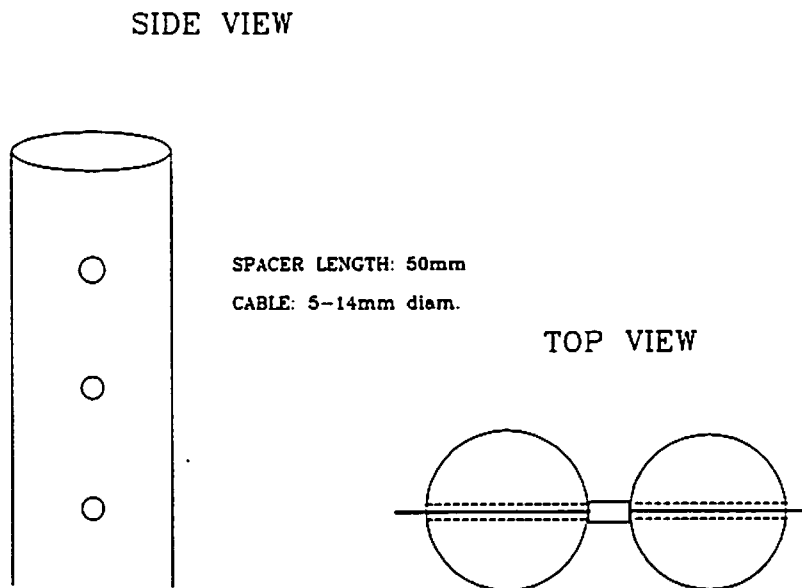


Figure 7 c. Wall construction using cables and spacers.

onto the angle iron to keep upright poles attached (Figure 7b). Uprights could alternatively be tied onto steel cable (5-14mm diameter) with no. 8 wire, provided that all protruding sharp edges are removed. Holes could also be drilled through the poles at the same level and suspended from the cable when strained taught. Three cables at various heights will be necessary for this type of suspension wall if 14mm cable is used, but up to 5 cables for 5mm cable diameter. Spacers of any suitable material could be placed between poles to create gaps not wider than 50mm between uprights (Figure 7c).

BOMA MANAGEMENT

One pen available per animal, and calves should not be kept with any other rhino in the same pen, except under exceptional circumstances. Individuals should preferably be rotated amongst pens to allow them to get used to other rhinos to be released in the same area.

Food: Black rhinos should be fed twice per day. At least four species of natural browse must be given supplemented with lucerne. Captive black rhinos require approximately 100kg browse (of which only about half will be consumed) and 10 kg lucerne per 24 hours and feed should be available throughout the day and night. Natural browse species that rhino readily use in bomas in Namibia are *Acacia* species (*ataxacantha*, *hereroensis*, *mellifera*, *nebrownii*, *reficiens*); *Ziziphus mucronata*; *Grewia* spp.; *Catophractes alexandri*; *Rhigozum* spp.; *Monechma* spp. and *Baphia masaiensis*. Wilted browse and mouldy lucerne must be avoided. Feeding could also be supplemented with small amounts of horse cubes. Fresh green grass should ideally be provided to white rhinos immediately after capture. Teff should be added on day four, and mixed into the rest of the grass fodder. The fodder should be provided loose and 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. Lucerne should initially not exceed 10% of the diet and should be reduced if diarrhoea occurs. About 500g of horse cubes can be added to the grass-lucerne meal at each feeding time. Adult white rhinos will consume about 40kg food per 24h.

Panicum spp. and sweetgrass types can be tried instead of teff or green grass. Mouldy grass or lucerne must not be used, and as a general rule nutritional stress and disturbance should be avoided by keeping forage quality as constant as possible. Captive white rhinos are sometimes very reluctant to start feeding, and such individuals should rather be released. A white rhino refusing to feed should not be released later than seven days after capture, but the condition of the individual should be taken into account. Rhinos should ideally be released in good condition or at least during a period of stable or improving body condition.

Hygiene and health: Water troughs should be scrubbed daily and filled with freshwater twice per day. Pens have to be cleaned twice daily. Unused browse, lucerne, horse cubes and dung have to be removed with each cleaning. Flies should be controlled by suspending fly traps at each pen, and keeping soil around pens dry. Dung removed from pens should be spread out to dry. Spades, a rake and wheelbarrow will be needed for cleaning the pens, and a sturdy brush for scrubbing the troughs.

One should not creep up on rhinos in the boma, but rather ensure that they are aware of an approach. It is preferable to expose the animals to the most likely noises that will later be heard on the farm. One should be very patient with rhinos, never excite them, and always remain alert. All rhinos are potentially dangerous.

Even advanced pregnancy might not always be detected during capture, and it is possible that a rhino could give birth in the boma. The provisional recommendation is to release the mother and calf immediately if conditions are otherwise suitable (eg. mother in good condition, near the end of the boma period, veld conditions are ideal i.e. 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. Adults, including mothers, will injure and kill small rhinos in confined spaces such a boma pen. If a rhino gives birth in a boma, advice and assistance should be obtained from MET. One way or the other, an urgent decision will be required.

9. COORDINATING RHINO CONSERVATION AND MANAGEMENT ON PRIVATE LAND - establishing a rhino farmers association

The next decade will probably decide the future of rhinos, and conservation objectives urgently need to be transformed into effective management actions. To achieve this, appropriate and cost-effective management strategies have to be designed and integrated with existing conservation programmes. The support of all Namibians will be crucial.

The dramatic increase in rhino poaching in Zimbabwe in 1993 occurred as the result of inadequate funding of their Department of National Parks and Wildlife Management. Serious financial constraints already affect rhino conservation in Namibia. International donor support has thus far been inadequate and Namibia will have to develop greater self-sufficiency and get more out of the already sizable government

and public investment in rhino conservation. We will therefore have to join forces, and use the respective strengths of the public and private sectors to make the best of the local situation in Namibia, or face disaster.

For this reason an open line of communication between MET, private rhino owners and farmers who will act as custodians for rhino is absolutely essential. MET urge the "rhino farmers" and potential rhino farmers to join together and form a body that can act on behalf of all participants. The intention has never been for the State to provide rhinos to private landowners and then withdraw completely. It was also never the intention to solely promote individual tourism enterprises by providing rhinos, but primarily that safe and rapidly breeding nuclei be established on suitable land. The management strategy most suitable to achieve these goals needs to be reviewed and updated continuously, based on the input of both State and landowner. Much is left to be done regarding the detailed implementation of the custodianship scheme and the exact roles of the State, custodians and owners. Specific issues that need to be addressed are highlighted below, as examples of the types of issues that have not yet been adequately covered by policy or existing mechanisms.

A contingency fund for security crises and drought The recurrent costs of continuously maintaining superlative security on a typically large Namibian game farm will be enormous. Yet there is every reason to expect that poaching could increase in Namibia due to the decline of rhinos elsewhere. A way is needed to cope with emergency responses required to protect rhinos on private land. Government is not always able to access additional funds quickly, and a privately held trust fund would be most appropriate in this instance. Where black rhinos as part of the custodianship scheme are involved, a better understanding needs to be reached of the costs of managing such rhinos. A contingency fund might also be needed during serious drought for the supplementary feeding of small rhino populations on farmland.

Management responsibilities on private land Refining the management of small populations will be necessary to achieve sustained optimal growth rates, and the input of landowners will be essential. MET will have to rely on the information gathered by landowners regarding the performance of each population to assess the possible impacts of varying sex ratios, age compositions, carrying capacity, social interactions, calf survival, predators, disease, food quality, the effects of drought, dehorning, inbreeding and ultimately hunting.

Coordinating strategy on the collection and dissemination of information It will be essential to improve and maintain the support of the Namibian public for rhino conservation efforts. The quickest way to lose support is to provide contradictory

and inaccurate information. Some information on rhinos in Namibia is highly sensitive, and all participants have to agree on the distribution of information, and 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 programmes such as dehorning or hunting.

Research priorities need to be established concerning a wide range of aspects of rhino management, meeting both the needs of MET and landowners. Research input can be provided by MET, and can be maximized where landowners actively participate in the design and execution of such research. Local and international academic interest in research on rhinos will continue. If properly screened and coordinated, such research may contribute to our knowledge of the two rhino species, and MET will support such projects where possible. It is imperative, however, that these studies be coordinated and project proposals be evaluated professionally.

Summary

The opportunity is ripe for improving the existing level of cooperation between MET and the private sector. MET sees a significant role for the commercial game farmer as part of the overall protection and breeding programme for rhino and other species in Namibia. The distribution of rhino to private land through the custodianship scheme or by State auction is still in an infant stage, but as it expands, the MET will have to communicate with all its partners through an effective forum. This is where the proposed Association will be extremely valuable for exchanging information and as a breeding ground for new ideas.

A future Namibian Rhino Farmers Association and MET could be a potent team if forces are joined and common goals are supported, i.e. to restore rhinos to their former status in this country and to manage the crisis effectively and orderly. If out of a conservation crisis a lucrative new industry can be born, even better. The opportunities are improving to change the rhino issue from a costly failure to a self-sustaining enterprise. All involved should strive to achieve self-sufficiency, break dependency on external funds, and generate sufficient revenue to meet the actual management costs in the long run. Additionally, numerous other benefits will accrue from closer contact and open consultation amongst all concerned.

-END-

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 RHINOCEROSSES:

Ordinance 4 (1975) (as variously 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; or

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, springtrap, net, birdlime, drug or any other device or means whatsoever or by any method whatsoever;
- (iii) keep game or any other wild animal.

Article 40.(1) (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 Ord. 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. N\$200 000) 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, organization and management requirements: Excerpts from an "Immediate Action Plan" for the lowveld rhino conservancies in Zimbabwe. (Dates and names of localities, some organizations and individuals were 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 rhinos 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-Pol.officer to run training courses for scouts. Arrange his accommodation and transportation.	By
Conservancy chairmen and senior staff Training officer	Involve Pol.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 XXXXXXXXXXXX and XXXXXXXX
Conservancy chairmen	Establish basic radio system XXXXXXXX River
National Parks NGO	Arrange importation of 100 SLRs for Lowveld conservancies	
Ecologist (Rhino Conservancies) Conservancy chairmen and staff	Liaise with XXXXXXXX Military Training Team regarding supply of antipoaching 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 of 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 Pol. 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 Lowveld rhino conservancy.

RESPONSIBILITY	ACTIVITY	DEADLINE
Conservancy committees and senior staff National Parks	Formulate and test plans for joint reaction by conservancy staff, Pol., National Parks and possibly Def. 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 publicize 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)	Publicize 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; publicize dehorning; publicize 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 XXXX Valley and XXXXXXX	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 fenced-off completely with a game-proof fence.
 - 1.3 The farm must be able to support a minimum population of 10 rhino.
 - 1.4 A farm will not be taken into consideration if the financial position of applicant is 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. Cut-off points indicate individual critical limitations that are sufficient to disqualify the application:

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, as larger populations will require less intensive management, lesser unit costs, and be at lesser risk of inbreeding depression.

For every five rhinos that can be accommodated in addition to the minimum population size, an extra point is awarded up to a maximum of eight 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
- Status of preferred browse species
- Adequate variation and diversity of browse spp.
- Condition of *Acacia* spp. (signs of past die-offs).
- 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, i.e. salinity, fluoride, hygiene 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 regarding the outcome of initial translocations, ongoing monitoring and responses to crises.

Factors to be considered:

- Personal knowledge, skills and adaptability.
- Does the applicant have experience with game, rare species, and past introductions?
- Is there a record of management continuity on the farm involved?
- 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 and employee manager.

Score out of 10. Cut-off point 6½.

2.5 White rhino and other specially protected species:

The presence and performance of white rhino in particular, or other specially protected species on the farm may be a useful indicator for the potential success of

black rhino introduction.

Points to consider:

- If specially protected species were supplied by MET, what were the circumstances at the time and how has management practises changes since that time.
- Record and outcome of past introductions of rare species
- Has there been any poaching of especially white rhino? If so, what was the response from the landowner?
- How are reintroduced species presently managed and monitored?

Score out of 10. No cut-off point. (An applicant with no specially protected species cannot be penalized, but credit must be given where such species have been introduced successfully. Because of this, point 2.5 was not included with Management (2.4). If, however, the information used in 2.5 reflects on the quality of management and should also be reflected the score for 2.4).

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, equivalent to Waterberg P.P. fence.
- 2 points if solid, well constructed, extra wires and very well maintained.
- 3 points as for above but prepared to add cable or electric fencing.

2.6.2 Security risks

Points to consider:

- proximity to public roads/road camps.
- proximity to densely populated areas eg. towns, mines etc.
- proximity to national borders.
- proximity to areas with a history of poaching problems.
- conditions on surrounding farms and the management style and attitude of neighbours.

Score out of 10. Cut-off point 6

2.6.3 Anti-poaching

Factors to consider:

- current standard of monitoring farm boundaries and waterholes etc. for sign of poachers.
- current standard of patrolling of farm by armed guards.
- use of pickets or guards.
- current standard of gate control.
- access to helicopter, aircraft, microlight etc.

Score out of 10. Cut-off point 5.

2.7 Freedom from disturbance

- frequency of hunting.
- frequency of game capture operations.
- presence of domestic stock or internal fences.
- presence of gravel pits, blasting, scrap lying around.
- proximity to roads and roads.

Score out of 10. Cut-off point 6.

2.8 Disease

- past incidence of anthrax.
- past incidence of rabies.
- other diseases?

Score out of 10. Cut-off point 5.

3. Scoring

- A farm inspection group must consist of at least 4 people.
- At least two of the people in the group should have prior experience in similar inspections and evaluations.
- Inspections of different farms should preferably be done within the shortest time possible.
- It is recommended that the farm scoring guide be read through before inspecting a farm, as eg. 2.5 can have a bearing on 2.4.
- All scoring (except 2.1 and 2.6.1) is done out of a possible 10. The cut-off point must be met. If so, the score is corrected by multiplying with the correction figure. This correction figure is used to give the different considerations their relative importance. The value obtained is the final score.
- 2.1 and 2.6.1 remain uncorrected and are added to the final scores to give a grand total.

- Because of the subjective nature of this farm scoring it is not recommended that the actual scoring be discussed with the 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 a wrong 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

½ points can be given.

	Score	C.O.P	Correction factor	Final score
2.1 Potential population		-	-	
2.2 Habitat		6	1.0	
2.3 Waters		6	0.3	
2.4 Management		6½	1.0	
2.5 White rhino etc.		0	0.3	
2.6 Security				
2.6.1 Fence		-	-	
2.6.2 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

Annex 4 **Contract for the placement of black rhinoceros on private land.**
(sample)

THE DIRECTORATE OF RESOURCE MANAGEMENT (hereafter to be referred to as the Directorate)

will place

BLACK RHINOCEROS (hereafter to be referred to as rhino)

on your property on your acceptance of the following conditions:

1. OWNERSHIP

1.1 The rhino and their progeny shall at all times remain the property of the State. Your position will be that of custodian.

2. CARE

2.1 It is your responsibility to ensure that the rhinos are properly cared for at all times. This includes the provision of water, sufficient browse (or supplementary feed in a drought situation), secure fences, security from poaching and freedom from excessive disturbance.

MONITORING

2.2 Part of the care that is expected is that the rhino are regularly tracked and observed. This is especially important in the post-release period.

3. DELIVERY

3.1 The rhino shall be delivered to you at a prearranged date. The number, sex, age and condition of the animals will be determined by the Directorate. You are expected to examine the rhino you receive and to write a report on the condition of the animals plus any problems or defects that you observe. A copy of this report must be sent to the Directorate.

4. REGULAR REPORTS

- 4.1 You shall submit a written report every three months on the condition of the animals. This report must be in a form and to a standard required by the Directorate.

5. INJURY TO/DEATH OF ANY ONE OF THE ANIMALS

- 5.1 You shall notify the Directorate within 24 hours of you becoming aware of any injury to or death of one of the rhino.
- 5.2 You shall submit a comprehensive report covering all aspects relating to the injury or death of the rhino to the Directorate. This report must be submitted within 14 days of you becoming aware of the injury or death.

6. ESCAPE FROM PROPERTY/FAILURE TO LOCATE

- 6.1 If you have reason to believe that any one of the rhino has escaped from your property, the Directorate must be contacted within 24 hours of your noticing such an escape.
- 6.2 If, after attempting to locate a rhino, the animal cannot be located after a period of 72 hours then the Directorate must be contacted immediately.
 - 6.2.1 A comprehensive report must be submitted to the Directorate within 14 days of failure to locate any of the animals giving details of when and where the animal was last seen and any other necessary information.

7. INSPECTION / INFORMATION

- 7.1 The Directorate shall have the right to inspect the animals at any time and to request any information about the rhino.

8. SALE OR TRANSFER OF PROPERTY

- 8.1 Should you under any circumstances and for any reason whatsoever part with or intend to part with the possession and/or ownership of or hypothecate the land on which the animals are placed, such land being your property (the Estate), the Directorate shall be at liberty forthwith to recapture and remove the animals from the property.

9. RIGHT TO CAPTURE AND RELOCATE

9.1 The Directorate reserves, at all times, the right to capture and relocate any or all of the rhino. This may be necessary because of drought, poaching etc. Obviously the Directorate will try and give adequate warning of such a planned move.

10. MANAGEMENT

The rhino must at all times be managed according to the National Rhino Strategy. This includes the protection of genetic integrity.

11. INDEMNITY FROM CIVIL LIABILITY

The custodian of the rhino indemnifies the Directorate against any claim arising out of injury or death of any person on your property and loss or, or damage to, your property as a result of or in a manner connected with possession of the animals.

12. ALTERED CONTRACT

This is a temporary contract. You are expected to sign the altered contract when it is presented to you. Failing to do this the Directorate has the right to capture and remove the animals.

I _____ the lawful owner/authorized agent
of the farm/farms _____
understand the above contract and will abide by the provisions set out in it if the
Directorate of Resource Management place black rhinoceros on the above named farms.

Signed at _____
on the _____ day of _____

SIGNATURE OF LANDOWNER
(or authorized agent of landowner)

SIGNATURE OF WITNESS

SIGNATURE OF DIRECTOR OF RESOURCE MANAGEMENT
(or his authorized agent)