SADC Regional Programme for Rhino Conservation

Sustainability Assessment of Capacity Building Tasks of the SADC Regional Programme for Rhino Conservation

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ABOUT the SADC Regional Programme for Rhino Conservation:

The Programme is funded by the Italian Ministry of Foreign Affairs, Directorate General for Development Cooperation (Project AID 5064).

The Programme is contracted to CESVI and implemented through a regional consortium which comprises:

- The Secretariat of the Southern Africa Development Community (SADC)
- IUCN-ROSA (The World Conservation Union - Regional Office for Southern Africa)
- IUCN Species Survival Commission African Rhino Specialist Group
- WWF-SARPO - (World Wide Fund for Nature - Southern Africa Regional Programme Office)
- CESVI (Cooperazione e Sviluppo)

The ***Programme goal*** is to contribute to maintain viable and well distributed metapopulations of Southern African rhino taxa as flagship species for biodiversity conservation within the SADC region.

The ***Programme objective*** is to implement a pragmatic regional rhino strategy within the SADC region following the acquisition of sound information on, firstly, the constraints and opportunities for rhino conservation within each range state and secondly, the constraints and opportunities for rhino metapopulation management at the regional level.

DISCLAIMER

The information, opinions and materials presented herewith do not necessarily reflect the official views of any of the organisations involved, including the Italian Ministry of Foreign Affairs, SADC, CESVI, IUCN-ROSA, WWF-SARPO, AfRSG or governments of SADC member countries.

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Summary

The SADC Regional Rhino Conservation Programme began in September 1999 under a Technical Agreement signed by the Italian Ministry of Foreign Affairs and the five members of the Rhino Programme Consortium. These members were CESVI (*Cooperazione e Sviluppo*), SADC-WSTCU (SADC – Wildlife Sector Technical Coordinating Unit), IUCN-ROSA (The World Conservation Union – Regional Office for Southern Africa), IUCN SSC AfRSG (IUCN Species Survival Commission's African Rhino Specialist Group), and WWF-SARPO (World Wide Fund for Nature – Southern Africa Regional Programme Office).

The overall **objective** of the SADC Regional Programme for Rhino Conservation (SADC-PRC) is to:

M*aintain Southern African rhino taxa in viable and well distributed metapopulations as flagship species for biodiversity conservation within the SADC region*

The immediate **goal** is to: *implement a pragmatic regional rhino conservation strategy within the SADC region*

Training and building capacity for rhino conservation have formed an important component of the SADC-PRC. The ability to continue these capacity building initiatives beyond the life of the programme, and thus help to sustain the region's capacity to conserve rhino, is extremely important. The purpose of this report is to assess the work of a training and capacity building nature that has been carried out by the programme and to "identify institutions, linkages and arrangements that may sustain capacity building and training requirements for rhino conservation in the region".

Review of project capacity building and training activities

Four main areas of capacity and expertise are required to conserve endangered species where the main threat to their survival is their valuable body parts such as ivory and rhino horn. These areas are: (a) field management of populations, (b) Restocking and range expansion, (c) Law enforcement and protection, and (d) Public awareness and political support. These categories encompass some 24 specific activities or discrete areas of expertise. The programme's efforts have focused on developing training materials in the following categories:

- Rhino monitoring and population performance
- Habitat assessment
- Patrolling and surveillance
- Law enforcement and protection
- Public awareness in rural areas surrounding protected areas with rhinos.

Successful training materials and courses for rhino monitoring and law enforcement components were developed and implemented. Rhino habitat assessment protocols have been under continuing development and refinement. Outstanding awareness materials for use in rural schools were developed and tested in two areas. Considerable resources have been invested in developing software packages to assist in the analysis of data from monitoring, surveillance and law enforcement activities. While the development some of these software packages have been successfully completed the uptake in terms of their use by field stations has so far been poor.

Review of training needs assessments.

Four regional wildlife sector training needs assessments conducted between 1978 and 2002 were reviewed together with a recent (2003) detailed review of training needs for rhino conservation in Namibia. An indicative assessment of current training needs was conducted through a questionnaire survey of areas holding significant rhino populations in the sub-region. Returns were received from 16 out of a potential 28 areas.

Although some aspects of training were considered in the initial country assessments carried out by the project the lack of an overall Training Needs Assessment (TNA) for rhino conservation at the onset of this project is a serious omission. The absence (or non-availability) of any recent training needs assessments at both national and regional levels in southern Africa is a serious indictment of the wildlife profession in the region.

The succession of TNAs and their unfulfilled recommendations make sobering reading. The only report on which there was a tangible and direct follow up seems to have been that of Butzler and Kaizer (1990) which resulted in major EU training support over several years and the upgrading of the Tropical Resource Ecology Programme (TREP) at the University of Zimbabwe, and the Mweka College of Wildlife Management as centres of excellence for training in wildlife management. The very positive gains at TREP have since been eroded by the economic decline in Zimbabwe and an associated loss of lecturing staff. The almost complete failure by wildlife agencies and training institutions in the region to follow up on, and make use of, the findings and materials of the PARCS project merits some investigation if only to discover why post project "uptake" and sustainability has failed so completely in the region.

The following general conclusions can be drawn from this review of TNAs:

1. Regional and national level TNAs have mostly been ignored by agencies they were intended to inform and appear to have had little if any impact on the formal training of wildlife managers.

2. The lack of action and follow up is almost certainly a symptom of a deeper malaise within the wildlife sector and perhaps the region as whole. Despite its growing economic importance in the region, the wildlife sector continues to be sidelined in national development programmes.

3. Before undertaking any further training needs *assessments* it would be prudent to explore the root causes of the continuing failure in skills development and the apparent inability of many wildlife departments to establish sustainable systems for in-service training and ongoing staff development.

Results of a questionnaire survey indicate that a very high proportion (63%) of existing field staff involved in rhino conservation are in need of training. The great majority of these are rangers or field scouts where training would best be conducted in the field in their own areas

Training expertise and resources available.

Training expertise was examined in relation to (a) the agencies responsible for managing protected areas, (b) conservation NGOs, (c) wildlife training colleges, and, (d) universities in the region in relation to the key areas of action required to conserve rhinos. The key rhino conservation issues in which expertise is required fall into the following main topics (the number of specific skills/activities within each category is indicated in parenthesis):

1. Field management (8)
2. Reintroduction and range expansion (3)
3. Law enforcement (8)
4. Public awareness (4)
5. In-service training
6. Developing and updating software

The availability of potential trainers for these key activities was examined for protected area agencies, NGOs, wildlife colleges and universities in the region. A questionnaire survey of protected areas holding rhinos indicated that a reasonably high number of potential trainers existed within protected area agencies. The development and facilitation of in-service training programmes offered the best prospects for sustainable capacity building for rhino conservation. Some NGOs are probably well placed to facilitate the development of such in-service training programmes. Wildlife colleges hold little prospect for being able to offer the hands-on, practical field training that is required. Universities in the region are not presently engaged in any rhino specific research or training programmes but could, through the provision of appropriate grants, support post graduate research

and training in rhino conservation. This would provide a pool of ecologists that may be drawn into long term rhino conservation work.

Careers and incentives

While all of the field officers consulted through the questionnaire survey agreed that there was a need for an incentive scheme for field staff engaged in rhino conservation work the means of achieving this were less clear. Of the 16 area representatives that responded only six considered it would be feasible for their agencies to introduce an incentive scheme. A further six gave qualified answers and thought it unlikely that an incentive scheme could be introduced. Within formally structured agencies with a wide range of responsibilities it is not easy to introduce and maintain specific incentives for select groups of employees.

Options and opportunities

The distribution of training materials is discussed and it is suggested that the most cost effective option would be through electronic and web based facilities to field stations where the material could then be printed and distributed as needed.

The magnitude of the training programme needed is outlined and possible agencies institutional arrangements to provide such training are considered. The 25 skills/activities for which training is needed fall are mainly carried out by three or four levels of personnel, namely rangers, wardens, senior warden and ecologists. The 1,200 to 1,500 staff involved are dispersed over about 30 protected areas that hold rhinos and about 500-600 are engaged full-time in rhino conservation work. Some 65% of the existing staff is in need of training. It is estimated that overall approximately 500 people need training each year in one or more skills.

The capacity of existing training institutions in the region to offer specific training in rhino conservation is reviewed and it is concluded that apart from graduate research training the most appropriate option would be to develop in-service training capacity and programmes within the existing conservation agencies responsible for rhino conservation.

A proposal for training trainers that are drawn from each of the rhino conservation areas is outlined. The ranger training programme would involve 2-4 weeks of training for about 30 trainers each year. The training would be arranged through a consortium if conservation agencies and be facilitated by a regional NGO. For wardens and senior wardens distance learning material and annual training seminar involving up to 30 wardens would be held. Training for ecologist would be followed through sponsored post graduate research.

Acknowledgments

Special thanks are due to those (See Appendix 2) who completed and returned the questionnaires that formed a vital component of this work.

Giuseppe Daconto and Richard Emslie critically reviewed final drafts of the report and I thank them for their very helpful and constructive contribution.

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1 Introduction

The SADC Regional Rhino Conservation Programme began in September 1999 under a Technical Agreement signed by the Italian Ministry of Foreign Affairs and the five members of the Rhino Programme Consortium. These members were CESVI (*Cooperazione e Sviluppo*), SADC-WSTCU (SADC – Wildlife Sector Technical Coordinating Unit), IUCN-ROSA (The World Conservation Union – Regional Office for Southern Africa), IUCN SSC AfRSG (IUCN Species Survival Commission's African Rhino Specialist Group), and WWF-SARPO (World Wide Fund for Nature – Southern Africa Regional Programme Office).

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Training and building capacity for rhino conservation have formed an important component of the SADC-PRC. The ability to continue these capacity building initiatives beyond the life of the programme, and thus help to sustain the region's capacity to conserve rhino, is extremely important. The purpose of this report is to assess the work of a training and capacity building nature that has been carried out by the programme and to "identify institutions, linkages and arrangements that may sustain capacity building and training requirements for rhino conservation in the region".

The Logical Framework for the programme contains six outputs. Of these the following three outputs are concerned primarily with tasks of a capacity building and training nature and form a starting point for this assessment.

"Output #4. Enhanced technical capacity for rhino management agencies within SADC for undertaking management, monitoring, and protection of their rhino.

4.1 Training individuals in agencies in specific activities

4.2 Produce specific technical manuals for use by members of wildlife agencies who require guidance on aspects of rhino management, monitoring and protection.

Output #5. Participation and/or enhanced awareness of local communities of rhino conservation in pilot project areas

5.1 Produce appropriate leaflets, posters, audio visual aids etc. for use in community awareness schemes.

5.2 Facilitate informer reward schemes

5.3 Identify and promote options for local communities to derive benefits from rhino populations.

Output #6. Better understanding within the region of technical, economic and socio-political factors that are relevant to rhino conservation.

6.1 Provide expertise to tackle specific rhino conservation problems

6.2 Pilot projects to test high tech options (e.g. radio collars, DNA fingerprinting, dung odour analysis, pregnancy diagnosis, etc.)

6.3 Economic analysis of rhino management and production of policy briefs**."**

The terms of reference for this report called for the following tasks to be completed:

1. Review SADC rhino programme activities of a training or capacity building nature and assess which of these need to be sustained. [How widely applicable are they? How user-friendly are they (e.g. some of the software)? What is the demand for them?]
2. Critically review the relevant available capacity-building assessments that have already been carried out by the SADC Rhino Programme and any other relevant recent reviews of capacity building in the wildlife sector in East and Southern Africa.
3. Compile a list of available training expertise & resources for capacity building on key rhino conservation issues, including government agencies, NGOs and academia.
4. Identify the relevant capacity-building areas and levels required in the rhino conservation institutions of the region (priority countries for country specific assessments: Namibia and Zimbabwe) and the opportunities that may exist, or be created, to link career incentives for rhino conservation staff to professional qualification systems.
5. Through desk assessments, correspondence and direct visits, if and as required, identify options (institutions, linkages and arrangements between them) for sustainable capacity building activities which may include:
    i. Modules developed by the SADC Rhino Programme (and others) in relevant curricula of existing training institutions in the region.
    ii. Means for cost effective dissemination of training reports/modules developed by the SADC PRC.
    iii. Establishment of SADC centres of expertise among government agencies / NGOs and through specific joint ventures between GOs/NGOs which may leverage expertise in a cost effective and sustainable manner.

This report follows the above sequence in reporting on each of the listed tasks.

There is a large set of reports covering the activities and tasks of the SADC PRC and these are listed in **Appendix 3** and referred to by their report numbers in the text.

2 Review of training and capacity building activities

Terms of Reference: *"Review SADC PRC activities of a training or capacity building nature and assess which of these needs to be sustained. [How widely applicable are they? How user-friendly are they (e.g. some of the software)? What is the demand for them?]"*

2.1 Introduction

Before dealing with the specific aspects of capacity building in the SADC PRC it is appropriate to briefly consider in general terms what capacity is required within conservation agencies, and more generally in the region, to conserve an endangered large mammal species that is threatened by virtue of the valuable products, such as rhino horn, that it can yield.

Four main areas of capacity and expertise that are required, namely, (i) the ability to manage the endangered species and species populations in the field, (ii) to provide and maintain habitat in which species populations can recover and expand, (iii) the ability to protect the species from illegal use and to enforce national and international agreements designed to protect the species, and (iv) to raise public awareness and support for the conservation of the species. More specifically these entail the following areas of expertise and capacity, which in turn depend on the ability of the agencies involved to build and maintain the capacity required.

1. **Field management** - monitoring population numbers, performance (e.g. sex ratios, calving intervals) and trends; habitat assessments; provision and maintenance of water supplies and fencing; protection of animals from poaching through appropriate patrolling surveillance and reporting systems; treating and rescuing injured animals, capture and translocation; managing populations for maximum growth rates and genetic health.

2. **Restocking and range expansion** – identifying new areas for restocking and population growth, assessing options and priorities for restocking, and meta-population management at national and regional scales (capture, translocation, post translocation care and management, diseases, etc.).

3. **Law enforcement** – appropriate policies, laws and legal instruments (that have to be drafted and, in the case of laws, gazetted), supporting policies, political support for appropriate deterrent penalties, patrolling and surveillance, crime investigation and arrests, prosecution, intelligence and informer networks, reward systems.

4. **Public awareness, public and political support** – development and dissemination of appropriate information and messages to target audiences, developing education programmes and associated materials, and maintaining the capacity to carry out these functions in response to changing rhino conservation needs and changing public attitudes.

5. **Training capacity –** ongoing capacity to train new staff and to retain, train and retrain existing staff at all levels.

Of course training and skills alone will not necessarily achieve the desired conservation gaols. Attitudes, commitment and appropriate resources on the part of individuals and organisations are equally important. Also important is the ability of more qualified and senior people involved to be

sensitive to, and to be able to address, the broader issues of conservation governance and politics. In the words of Jack Thomas and Hal Salwasser[1]:

> "One last admonition: conservation biology will be, as Shakespeare said ''sound and fury signifying nothing" in terms of conserving biodiversity unless and until the fruits of the labours of conservation biologists goes to work on the ground. Bring your science, your knowledge, your insights to bear so it will have influence on the ground. Do research, theorize, teach, train, synthesize, proselytize, publicize, write, influence, consult, counsel, debate – but do it so that somehow, it ultimately goes to work on the ground."

Since no structured training needs assessment was carried out at the beginning of the SADC Rhino Conservation Programme (See next section – 3. Review of Capacity Building and Training Needs Assessments) training and awareness activities are reviewed against the above requirements.

2.2 Field management training and capacity building undertaken by PRC

The project has provided considerable resources to employ and deploy experts who were able to assist conservation agencies in tackling their rhino conservation problems. In most cases these (few) experienced people worked with staff on the ground and passed on knowledge, expertise and experience. Examples include the assessment of rhino habitat in areas being considered for re-introduction of rhinos, training trackers and field rangers in the Selous Game Reserve. This valuable service and contribution to rhino conservation in the region is noted here but is not examined further in this report.

2.2.1 Rhino monitoring and population performance.

Training in the field has focused very largely on rhino monitoring. Training materials in the form of training manuals for trainers and practitioners were developed. These materials and the training courses in which they were used appear to have been effective and very well received.

The AfRSG's comprehensive training course in rhino ID monitoring for instructors and a trainee's guide was extensively revised as part of a joinly funded USFish and Wildlife and SADC RPRC project. The AfRSG revised "Sandwith" monitoring training course manual is now in its 5th edition (Report #49 Instructor's Handbook and #40 for the Trainee's Guide). The course covered the following twelve modules:

1. Conservation background
2. Black rhino biology
3. Patrol and tracking techniques/Approaching rhino on foot
4. Map work and GIS
5. Using binoculars
6. Ageing rhino
7 Sexing rhino
8. Identification features – ears
9. Clean rhino
10. Identification features – Horns
11. Identification features – Body scars, Use of field recording notebooks
12. Rhino conditions assessment

The course thus provides comprehensive and thorough training to field rangers in monitoring individual rhino in the field and a sound basis on which to gather a range of information important to

[1] Thomas, J. W. and H. Salwasser (1989) Bringing conservation biology into a position of influence in natural resource management. *Conservation Biology*, 3: 123-127.

the ongoing monitoring of several key aspects of numbers, distribution and performance of a given rhino population. It also serves the all important function of providing a very sound basis for continuing patrols and protection of the animals.

The storing and further analysis of the data collected in the field is catered for by the Microsoft Access databases developed for this purpose. The following rhino monitoring database and analysis software was developed with support from the SADC PRC:

1. *WILDb* Site database (Report #7, 8, 9)
2. *WILDb* National Database (Report # 30, 31)
3. *WILDxl* Rhino Population Performance Analysis Module (Report # 38)
4. RHINO 2.0 Population Estimation Software (Report #51, 52)

A brief overview of each of these rhino monitoring software packages follows.

WILDb is a comprehensive Microsoft Access database application designed to assist in rhino monitoring in southern Africa. It was developed jointly by WWF (SARPO) and the SADC Regional Rhino Conservation Programme for use in national parks and conservancies. There is a version for use at a local park or conservancy level and a companion version that can be used at a national level to consolidate records for all rhino populations for which the local database version is being used. The database has provision for capturing the full range of data recorded on field patrols (including data on other species) and importantly the facility to import data from cyber tracking devices. The local database covers three main categories of data, namely,

i. **Individuals** - details on identified individuals such as age, sex, individual marks, mother, history, relationship to other animals, identification photographs and statistics such as age at first calf, calving interval, next calf expected;
ii. **Events** – sightings and notes on identified and unidentified individuals and their locations and activities (feeding, resting, drinking, etc.), emigration, immigration, introductions, removal, births and deaths, immobilisation.
iii. **Population summary** – which provides a species based analysis of the population and covers such features as age and sex structure, births, deaths, age at first calving, calving intervals, population growth rates between complete counts of the population or over selected intervals.
iv. **Export** – makes provision for the export of records to the national database.

The N**ational *WILDb* database** is designed to be administered centrally and holds summarised data input from the local databases. It is used for statistical analysis and monitoring at a national (summary) level, for allocating national identification numbers to individual rhinos and tracks the movement of animals between sub-population and includes a parent-offspring register (breeding register) which is important for meta-population management. It can also be used to monitor key features of populations where no local database is in use. However, this feature does not appear to have been implemented.

WILDxl* Rhino Population Performance Analysis Module** is a Microsoft Excel extension to the reporting capabilities of the ***WILDb database application. It extracts data from ***WILDb*** to perform population level statistical calculations on calving rates and intervals, population structure and death rates. The application also provides statistics on population counts, sighting gaps for individuals and summary statistics on 'event' records.

There is only one report on its implementation in Matusadona (Report #9) but it is being used in Save and Malilangwe, and is being adapted for use in Namibia. Only two out of sixteen questionnaire returns indicated that they had received the software package and none indicated that they were using it.

RHINO 2.0 Population Estimation Software is a programme that uses Bayesian approach to estimate the size of a population from sightings of marked and unmarked animals in population. This particular programme is designed to provide estimates of populations where there is an ongoing individual ID based monitoring programme such in the Hluhluwe-iMfolozi Park. Data can be imported into RHINO 2 from common file formats such as Access tables, Excel spreadsheets, or text files. In addition RHINO 2 can import the result of an Access query of the EzemveloKZNWildlife (EKZNW) animal population monitoring database, and in time it is planned that both WILDb and the Kenyan rhino database system, Kifaru, will be able to automatically generate RHINO compatible input files.

RHINO 2.0 is not designed to provide an estimate of population size following short but intensive period(s) of discrete survey monitoring based on the ratio(s) of known marked to unmarked animals and a suitable programme to accomplish this when there are violations to key mark-recapture assumptions is still required.

RHINO 2.0 uses information from sightings of identifiable and unidentifiable animals to provide an increasingly accurate estimate of a regularly monitored population as more sightings are collected. It was the first Bayesian technique to estimate rhino numbers in populations where all rhinos were not identifiable individually by all observers all the time. It has been written to also deal with many of the violations of classical mark recapture assumptions. In this respect it represented a new development in the field of mark-recapture estimation model when it was first released in 1991. RHINO 2.0 represents a major re-write of the software which hadn't been updated since 1993, and it has been converted from a DOS-based to Windows application. RHINO 2 includes a new algorithm for multi-area analysis as well as greatly enhanced simulations options to allow users to determine the likely cost and benefits of collecting more sightings data or ear-notching specific numbers of animals in a population. Response to the new version for the software from old users has been very favourable. The full write up of the mathematical features of the techniques used in RHINO2.0 has recently been completed but its submission to peer review and publication remains to be completed although a number of its algorithms have been presented to statistical conferences. More intensive simulation modelling using features in the new RHINO 2.0 further confirm that to produce unbiased and reasonably precise population estimates requires approximately twice the number of sightings of independent rhino (i.e excluding calves) than there are independent rhino in the population.

There is a vast literature on mark-recapture methods for estimating population sizes, using both standard and Bayesian statistical methods, and a rigorous, documented explanation of the methods used in this software package is included in the technical manual. The success and performance characteristics of RHINO are continuing to be tested using simulations, and estimating rhino numbers in areas where actual numbers are known or estimates from intensive monitoring are likely to be close to true population size on account of very high sightings frequencies.

Other free software packages in addition to RHINO are available for calculating population estimates using mark-recapture data from ongoing ID-based rhino monitoring programmes, but have generally not been used. This could be due to a large number of different reasons:

- RHINO was the first Bayesian mark-recapture package specifically designed to include an estimate of the numbers of "clean" rhinos that could not always reliably be identified by all observers.
- RHINO data input was designed to be as simple as possible and data can be input using familiar spreadsheet or database packages without requiring extensive data pre-processing to generate a complicated text file format.
- RHINO also deals with many real world problems associated with rhino monitoring data.
- It has also been designed to be user friendly, and its familiar Windows feel, the new context sensitive help text and video buttons in RHINO 2, plus the revised illustrated user and

technical manuals further enhance its user friendliness and enhance the ability of users to teach themselves how to use the software.

- Since its launch, Ecoscot Consultancy Servives has also always provided free telephone/e-mail/drop by support to RHINO users and will continue to do so.
- Some other mark-recapture packages and their documentation are also much harder to use, and it should be remembered that many Park scientific staff who are required to produce the population estimates may not be highly numerate trained statisticians. RHINO's manuals are detailed and well illustrated. The new context sensitive help/training videos in particular take the ease of learning a software package to a new level.
- The inbuilt expert system in RHINO also assists users giving them advice on how they can improve estimates; but importantly checks in the background to identify and warn users if abuse of the statistics may have occurred and unreliable estimates may have been produced (which is always a risk with easy to use statistical software).
- RHINO also has a number of database filtering options making it easy for users to analyse a selected subset of their data without having to go to the trouble of preparing a new data input file.
- However apart from the inertia of having been the first clean animal estimator and its ease of use and free support, probably the main reason RHINO has continued to be used is that the estimates it has produced over the years have invariably been reasonably accurate when compared against selected 100% known or very well known populations.

Earlier versions of the RHINO software were DOS-based and there was a need to update some of the analytical and simulation options available. RHINO 2 was re-coded from scratch and now includes a number of new features/options that have been requested by users over the years.

The use of RHINO can also lead to the identification of problems in a monitoring programme or with the monitoring datasets themselves which might not otherwise have been apparent.

RHINO 2 now allows users to produce sub-estimates of average rhino densities for different areas of a larger park taking into account the fact that some rhino may live in more than one area. It also provides enhanced simulation options which now provide users with a tool to examine and quantify the likely cost and benefits to be gained from ear-notching different numbers of animals or instead the return from spending money on monitors to increase sample sizes.

Aerial census of black rhino populations in large areas seems to be a gap in the population monitoring efforts. Apart from some early work by Hillman in the 1980s this aspect does not seem to have been followed up at all for black rhinos. While it is appreciated that aerial counts of black rhino have proved to be problematically variable, improved techniques using more recent developments in aerial survey may be applicable in cross checking ground monitoring efforts in large areas such as Hwange National Park, or estimating numbers in large areas such as Etosha and Kruger. Although expensive, ID based photography of individual rhino from helicopters has been successfully used in some areas.

2.2.2 Habitat assessment

Habitat assessment has focused on further developing the *SADC RMG Black Rhino Carrying Capacity Spreadsheet Model* and developing and testing a field technique for estimating the quality and quantity of browse available for black rhino (Report # 48). The model has been through several iterations and was reviewed by Dunham and du Toit (2003 Report #35). I concur with their major findings, namely, the spread sheets are not easy to use, the use of an average of 4 regressions is to predict carrying capacity is poorly supported, the agreement between the model predictions and expert opinion is very variable and the model is only applicable to a limited range of habitats and for the most part these are in protected areas where it is not needed anyway.

- The attempt to pin down browse carrying capacity in variable habitats where there are several other browsers involved is akin to searching for the Holy Grail (i.e. an unattainable goal). Efforts would be far better directed to working out effective rules of thumb based on how rhinos are responding to their habitat such as fluctuating condition indices of known animals that are being monitored regularly, reproductive performance, responses of other, and possibly more sensitive large herbivore species to fluctuations in the availability of browse, and response of a few key indicator browse species to black rhino and other browsers in the community.

- A closer examination of population response parameters may well (and probably do) provide more sensitive and practicable indicators of carrying capacity for existing populations. Trends in territory size, age at first calving, calving intervals, pregnancy rates, population growth, incidence of intra-specific conflict and mortality, and condition indices of key indicator animals in the population. These are all indices that can be generated through the implementation of the monitoring programme for which the AfRSG's revised Sandwith Training Course was developed.

- For areas where rhino have yet to be introduced broad guidelines for likely carrying capacities can sometimes be derived from densities of previous populations (e.g. the Luangwa Valley where they were exterminated) or by comparing densities in areas with similar soil, habitat and rainfall regimes (e.g. when restocking mopane areas or miombo woodlands).

2.2.3 Water supplies and Fencing

The question of how the spatial distribution of watering points in relation to rhino territories might influence foraging behaviour (e.g. daily ranging distance) and hence the availability of food in relation to distance from water does not appear to have been examined for black or white rhinos.

Guidelines on fencing and the maintenance of fences might usefully be included in training materials.

2.2.4 Law Enforcement Monitoring - Patrolling and surveillance.

Patterns of patrolling and surveillance can be extremely important both in preventing and detecting illegal activity. They are also important in monitoring biological aspects of a population because biases in coverage can distort measures of population numbers and performance. To assist in this effort software has been developed to analyse and map patrolling effort and data recorded on patrols.

Patrol Effort *- Rhino Monitoring and Law Enforcement Database/GIS* is a Microsoft Access database application using the GIS capabilities of Microsoft Excel to display the distribution of rhino sign and illegal activities and indices of these activities in relation to patrol effort. The main body of the application is a Patrol Effort database is based on a Patrol Debriefing Form which captures the duration and route of each antipoaching patrol together with records of sightings and sign encountered on the patrol. This application also prepares data for display in the Excel Workbooks.

The following indices are provided by the programme:

Patrol index - The number of 1km^2 blocks visited within a 5km x 5km block (i.e. 25km^2) over period of time
Rhino index - Number of rhino sign recorded within the 1km2 block visited (and summarised in blocks of 25 km2

Illegal index - Number of illegal activities recorded within 25km2 blocks

Rhino effort - Rhino index/Patrol index
Illegal effort - Illegal index/Pat

There are some difficulties attached to these indices, and with the underlying assumptions that have been made in deriving them, in that a rough measure of geographical area covered (km^2 blocks entered) is equated with intensity of searching or coverage of an area. It is quite possible to walk 10km and pass through only 5 one square kilometre blocks and to cover the same number of blocks by walking 5 km. By drawing simple traverses through a 5 x 5 km grid one can readily demonstrate the extent of ambiguity involved in using blocks covered as opposed to distance covered on a patrol. The index of patrolling effort is therefore ambiguous and needs further examination. Since it should be possible for patrols using GPS instruments (or 1:50,000 base maps) to trace their patrolling route it would be preferable to use distance patrolled as measure of patrolling effort. This can readily be decomposed into distance covered in a particular grid square.

Because the locations at which rhino sign was recorded depends on the path followed by the patrol it means that the "Rhino index" and the "Patrol index" are not independent, and the derived indices of "Rhino effort" and "Illegal Effort" are of questionable value. Concentration of rhinos, rhino signs and illegal activity can only be detected if their frequency differs from the value that would be expected from the patrolling effort in a particular block. This means that some form of statistical analysis (e.g. Chi square: observed – expected/observed) is required to establish where particular types of activity are concentrated in relation to patrolling effort. The null hypothesis in this case is that rhino sign or signs of illegal activity are proportional to patrolling effort.

The set of programme reports and the questionnaire returns suggest that this database has only been applied in Matusadona IPZ so far. A useful addition would the development of a guide or manual on patrolling strategies and on how to ensure adequate cover across all of the area occupied by rhinos.

2.2.5 Capture and translocation

The SADC PRC has facilitated the capture and translocation of rhinos but has not been involved in training or capacity building activities in this field simply because it is well taken care of by wildlife veterinary and capture units in agencies within the region.

2.3 Restocking and range expansion

2.3.1 Range expansion and restocking

The SAD PRC has identified priority areas for restocking and facilitated the movement of black and white rhinos into these areas and provided advice on post translocation care and management. However, no training or reference materials appear to have been developed on the subject. This also applies to such matters as the screening animals for the potential transfer of parasites and diseases. A report providing guidelines for the establishment of new rhino populations has been drafted (Report #17). The report also deals with the related issue of remnant populations. Remnant populations are those where, after past poaching episodes or the expansion of human settlements, a few rhinos survive at numbers and densities that are too low to form viable breeding populations. These animals form part of the overall population of rhino in the region and the optimal strategy is to move them to areas where they can form, or be a part of, a viable breeding unit.

2.3.2 Metapopulation management

With the exception of the widely distributed black rhino biological management workshop proceedings no training or awareness material seems to have been prepared on this important topic. A draft report entitled "Making decisions in the management of rhino populations: A guide for rhino managers in Southern Africa was prepared (Paper by Hill #16) but was not available.

While genetic composition is a major concern and focus in managing metapopulations, the issue of managing for maximum population growth rates is also important and training and awareness material on this topic does not seem to have been developed. There are potentially important trade-offs in both

donor and receiving populations that may result from the disturbance involved in moving animals between populations. The impacts may also extend beyond intra-specific effects to inter-specific effects on other species of browsers and thus far little information appears to be available on these interactions. For example, the release of browsing pressure by the removal of territorial males may be taken up other species instead of by other rhinos that may, contrary to expectations, continue to avoid the previously occupied territories (Norman Owen-Smith, *pers. comm. 2004).*

2.4 Law enforcement

Law enforcement is a vital part of any strategy aimed at protecting endangered species where the main threat to their existence is the illegal trade in valuable products that they can provide. There are several components that contribute to effective law enforcement and these include: appropriate policies, laws and legal instruments (that have to be drafted and, in the case of laws, gazetted); supporting policies; political support for appropriate deterrent penalties; crime investigation and arrests, and prosecution; and intelligence and informer networks and reward systems

2.4.1 Legal frameworks and political support.

Little if any work appears to have carried out on the legal frameworks to support rhino conservation in the region. SADC has developed agreements (SADC Wildlife Policy and the Law enforcement protocol) that call for the harmonisation of wildlife policies and laws across the region. At a regional level the harmonisation of penalties and legal deterrents to the illegal use of rhinos is an important area in which initially some comparative analysis followed by awareness and training workshops may be effective. Although not part of the current project plan it is clear that appropriate training material would need to be developed for such awareness and training workshops.

2.4.2 Crime investigation and prosecution.

The major focus of the SADC PRC has been on scene of crime investigation and reporting and prosecution with some attention to informer networks and reward system. An excellent manual and course on "Rhino Scene of Crime Procedures" has been developed that includes techniques for investigation and follow through on the prosecution process. Seven "Scene of Crime" training courses of 5-6 days each have with SADC RPRC funding been held in Botswana, Namibia, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe. With WWF funding this course has also been presented in Kenya.

Under the auspices of SADC's Rhino and Elephant Security Group and with joint funding from the SADC RPRC and Ezemvelo KZN Wildlife an Access law enforcement database application was developed building upon earlier work funded by WWF in KwaZulu-Natal. The software is called Wildlife Investigator and was developed to store, manage and interrogate both intelligence information and/or other known information. The application was extensively tested by SANParks' Corporate Investigations Service's staff in Kruger NP. As a result of testing a number of changes were made to improve the software.

The software can be customised to suit different organisations and it designed so it can be used in large organisations where there may be a central database that can receive and analyse data received from satellite resereve stations.

The software stores information on and can query links between incidents and activities, court cases, vehicles, firearms, front-businesses, suspects, those convicted/charged with wildlife crimes, the nature of wildlife crimes, details of number species and values of wildlife products involved etc. The software allows court documents and photographs to be automatically linked to suspects and incidents. Menus allow users to produce specific graphs of incidents as well as specific reports. The software makes it easy to keep a track on all the stages of an investigaton or court case.

The software has been distributed free of charge and installed on computers belonging to representatives from 17 different conservation agencies and specialised police units (including Interpol) from seven SADC countries (Botswana, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe). Representatives from all 17 of these agencies/police groups attended a SADC RPRC sponsored training course in its use in April 2005 as part of a SADC Rhino and Elephant Security Group/Interpol meeting.

Like the RHINO software some on-line help/training videos have been developed to go with software and shortly the full suite of context sensitive help videos will be completed. This should hopefully help mitigate against staff turnover resulting in those trained on the course leaving service. For the software to be used into the future it is important that it will be able to be used by new users and it is hoped that the training/help videos will facilitate this without the need for expensive training courses.

2.4.3 Rhino horn stocks

The primary, if not only, reason for the illegal killing of rhinos is for their horn[2]. Horn legally recovered from dead animals, from dehorning operations or from seizures of illegally held horn is held by government agencies. Because horn recovered in the field, or held in stockpiles, can find its way into the illegal trade, the security of recovered horn is a high priority. The SADC PRC has produced a guide on managing stockpiles of rhino horn (Report # 26) and developed, in collaboration with TRAFFIC, three Microsoft Access databases and accompanying instruction and operational guidelines and these are as follows:

i. TRAFFIC Wildlife Stockpile Register Database (WRSD) (Report # 37)
ii. TRAFFIC Rhino horn and product database (RHPD) (Report # 27
iii. TRAFFIC Rhino horn seizure database (RHSD) (Report # 36)

These databases and reports explaining their use are all highly appropriate. The global rhino horn seizure database is managed by TRAFFIC from its Tanzania office. The TRAFFIC Rhino Horn and product database is being used in Botswana, Namibia and Swaziland and in several provinces in South Africa (Mpumalanga, Limpopo, Northwest and Guateng). Zimbabwe is using an adaptation of its ivory stockpile data base.

2.4.4 Intelligence and informer networks and reward systems.

Although mentioned in early plans and in the log frame training materials on the development of informer networks and establishment and management of reward systems for information leading to the apprehension of poaching and persons dealing in illegal traffic of rhino horn does not appear to have been tackled.

2.5 Public awareness

As indicated earlier, developing and disseminating appropriate information and messages, developing education programmes and associated materials, and maintaining the capacity to carry out these functions in response to changing rhino conservation needs and changing public attitudes is an important and necessary component of conserving an endangered species. The SADC PRC has developed excellent educational materials that have been developed and tested in rural schools adjacent to rhino protected areas in Swaziland and Zimbabwe. It is important that this initiative be continued and extended to a wider geographical area.

[2] During the 1950s and 1960s black rhinos were killed for meat in the Binga District of Zimbabwe.

2.6 Training capacity

An important, if not essential, part of any long term endangered species recovery programme is that of ongoing training of new and existing staff involved in the programme and updating of training and awareness materials.

Revised Training material for trainers has been developed for the "AfRSG's revised Sandwith Training Course for Field Rangers' and for the Scene of Crime training course.

The programme, however, does not appear to have tackled the issue of training capacity (training of trainers and the availability/replacement of trainers) before commissioning the current report (See also next section on Training Needs Assessments).

2.7 Applicability, usability and demand for materials produced?

One measure of the applicability and usability of training and capacity building materials is the extent to which they are being used by target groups in the region. A summary (**Table 1**) of the materials developed so far and where they have been used, or where training courses have been run, indicates that thus far there has been rather low uptake and use of the materials. The greatest use appears to have made of the rhino monitoring material (The AfRSG's revised Sandwith Training Course for Field Rangers) and the Scene of Crime training course and materials. Other excellent material such as that being developed for rural schools has not yet reached the stage where its applicability and usability can be adequately gauged in terms of uptake.

Of the four training courses developed, two have been implemented in several areas (**Table 2.3**). The excellent rhino conservation awareness material for rural schools has been used in two countries (Zimbabwe and Swaziland) and it not clear whether any courses have been run on habitat monitoring which still seems to be under development. Some training in the use of the *Wilddb* as carried out in Zimbabwe

Table 2.3 Summary of training courses run and number of areas that they covered.

Course	No. of courses	No. of areas*
Rhino Monitoring	8+	13
Scene of crime reporting	4	5
Awareness in rural schools	2	2
Habitat assessment	?	?
RHINO 2	2 (+3 in Kenya)	8 (excl Kenya)
Wildlife Investigator	1	17 organisations and police units in 7 SADC countries
Browse availability assessment course (not funded by SADC RPRC but using method developed by programme)	1	5

* Number of areas refers to the number of protected areas from which those attending the courses were drawn.

The gaps in planned training courses and training material development were as follows:

- Radio collar design
- Capture and translocation
- Management decisions and strategies
- Meta-population management

- Water resources and dispersion
- Assessing areas for restocking
- Surveys and population estimates (although some RHINO training has taken place with detailed full courses in KwaZulu-Natal and Kenya and a short course in Namibia).

Summary

Four main areas of capacity and expertise are required to conserve endangered species where the main threat to their survival is their valuable body parts such as ivory and rhino horn. These areas are (a) field management of populations, (b) Restocking and range expansion, (c) Law enforcement and protection, and (d) Public awareness and political support. These categories encompass some 24 specific activities or discrete areas of expertise. The programme's efforts have focused on developing training materials in the following categories:

- Rhino monitoring and population performance
- Habitat assessment
- Patrolling and surveillance
- Law enforcement and protection
- Public awareness in rural areas surrounding protected areas with rhinos.

Successful training materials and courses for rhino monitoring and law enforcement components were developed and implemented. Rhino habitat assessment protocols have been under continuing development and refinement and one training course has been held. Training courses were also held in the use of RHINO and Wildlife Investigator software. TRAFFIC have also given some training in using the horn stockpile management database although these have been at the organisational head office level (eg EKZNW). Outstanding awareness materials for use in rural schools were developed and tested in two areas. Considerable resources were invested in developing software packages to assist in the analysis of data from monitoring, surveillance and law enforcement activities. While the development some of these software packages has been successfully completed their use by field stations has been limited.

Table 2.1 Summary of training and capacity building activities in relation to Output #3: Enhance Technical capacity of rhino management agencies.

Country	Park/PA	Questionnaire Completed	Field Management of Rhinos								Law Enforcement						Awareness	
Training modules/materials			Capture/ Transloc.	Radios	Monitoring Course	Wild db. Local	Wild db. National	Population Estimation	Habitat Assessment	CC Model	Scene of Crime TC	Patrol Effort db	Rh. Horn Stocks TC	Rh. Horn Stocks Db	Law Db		Awareness Rural Sch.	
Training materials and/or Software developed			-	-	+	+	+	+	+	+	+	+	+	+	+		+	
Regional				?														
Botswana	National		-				NU				TC							
Malawi	Liwonde		-															
Mozambique	Limpopo		-															
Namibia	National		✓				NU	TC			TC							
	Estoshia	Yes																
	Waterberg	Yes				?	?	?	?	?	App							
	Kunene	Yes				Software tried but not in use					App							
	Hardap	Yes				No software received												
S. Africa	National		✓				NU				TC							
	Hlu/Umf	Yes						In use	TC	App								
	Ndumu	Yes				NR	NR	NR	TC	App		NR						
	Mkuzi	Yes						Used	TC	App								
	Addo									App								
	Kruger																	
	Ithala							Used	TC	App								
	Pilanesburg				TC	In use		Used		App								
	Tembe	Yes				No software being used?				App								
	Vaalbos									App								
Swaziland	National										TC							
	Hlane	Yes	-			In use				App					In use		Trial	
	Mkaya	Yes	-			In use				App					In use			
Tanzania	National										TC							
Grumeti										A+E								
Ikorongo										A+E								
Ngorongoro										A+E								
Serengeti										A+E								
Zambia	National										TC							
	Luangwa N	Yes	-			NU	NU			App								
Zimbabwe	National		✓	WS	TC		NU				TC			In use				
	Hwange	Yes				In use												
	Matusadona					In use						trial						
	Matopos					In use												
	Chipinge																	
	Save	Yes				In use												
	Malilangwe					In use											Trial	
	Bubiana	Yes				In use												

App = Applied by developer; A+E = Applied by developer with E. African model; NR – Not received; NU = Not being used; WS = Workshop; TC = Training course held; Trial = Trial use of educational materials in selected schools;

Table 2.2 Summary of questionnaire returns on the use of software developed by the SADC-RPCR. The total/mean column indicates either the total number out of 16 protected areas that have received or are using the software, or the mean scores for a particular rating of its use.

Software and rating	Etosha	Kunene	Waterberg	Hardap	Imfolosi	Mkuzi	Ndumu	Tembe	Hlane	Mkaya	Addo NP	Vaalbos	Luangwa N.	Hwange	Bubiana	Save Valley	**/ Mean**
1. WILDb Site Version																	
1.1 Copy received	Y	Y	?	N	N	N	N	N	Y	Y	N	N	Y	Y	Y	Y	6
1.2 Package installed	Y	Y							Y	Y			Y	Y	Y	Y	6
1.3 Installation score	5	5							3	3			4	-	1	2	3
1.4 In use or not	?	Y							Y	Y			Y	Y	Y	Y	6
1.5 Use score		0							3	3			3	1	3	3	3
1.6 Ease of use score		5							3	3			4	4	5	4	4
1.7 Meeting needs score		1							4	4			3	4	4	4	4
2. WILDb Nat. Version																	
2.1 Copy Received	Y	N			N	N	N	N	N	Y	N	N	Y			N	2
3. WILDxl Pop. Perform																	
3.1 Copy received	Y	Y	?	N	N	N	N	N	N	N	N	N	N	?	N	N	2
3.2 Package installed	Y	N															1
3.3 Installation score	5																1
3.4 In use or not	?	N															0
4. Patrol Effort																	
4.1 Copy received	N	N	?	N	?	N	N	N	N	N	N	N	N	N	N	N	0
4.2 Package installed																	0
5. Black Rhino CC model																	
5.1 Copy received	N	Y	?	N	N	N	N	N	N	N	N	N	N	N	N	N	1
5.2 Package installed		N															0
6. RHINO 2.0 Pop. Est.																	
6.1 Copy received	Y	N	?	N	Y	Y	N	N	N	N	N	N	N	N	Y	N	4
6.2 Package installed	Y				Y	Y									Y		4
6.3 Installation score	5				4	5									3		4
6.4 In use or not	?				Y	Y									N		2
6.5 Use score					4	3											
6.6 Ease of use score					3	5											
6.7 Meeting needs score					4	4											4
7. Rhino horn database																	
7.1 Copy received	N	N	?	N	N	N	N	N	N	N	N	N	N	N	N	N	0
7.2 Package installed																	0
8. Regional Law Database	N	N			N			N					N	Y	N	N	0

The Wildlife Investigator Software was only completed after questionnaires were sent out. However a training course in its use was held where the software was installed on computers from 17 different conservation agencies/specialized police units from 7 SADC countries..

3 Review of Capacity Building and Training Needs Assessments

Terms of Reference: *Critically review the relevant available capacity-building assessments that have already been carried out by the SADC Rhino Programme and any other relevant recent reviews of capacity building in the wildlife sector in East and Southern Africa.*

3.1 Introduction

The following is a list of capacity building/training needs assessments, and some related documents, that were available for review:

1. Blok, R. (2003) Training needs assessment for the Ministry of Environment and Tourism, Namibia. SADC PRC Report # xxx
2. Bell, R H V. (1995) (Title page missing) ULG Report
3. Child, G. and Sefu, L. D. (1987) Needs and priorities for the training of wildlife protected area managers in the SADCC Region.
4. Munthali, S.M. (2002) Assessment of Selected Wildlife Training Colleges in SADC. RAPID Task Order 1.9 Consultants Report
5. Pitkin, B. (1995) Protected Area Conservation Strategy (*PARCS*): Training needs and opportunities among protected area managers in Easter, Central, and Southern Africa. Biodiversity Support Program, Washington, DC.

The lack of an overall Training Needs Assessment (TNA) for rhino conservation at the onset of this project is a serious omission. However the country reviews undertaken at the commencement of the programme did canvas range state conservation agencies to determine what projects they felt would be important for the programme. The absence (or non-availability) of any recent training needs assessments at both national and regional levels is also a serious indictment of the wildlife profession in the region.

Three of the regional TNAs (Child and Sefu 1987, Pitkin 1995 and Bell 1995) were conducted at country level but were mostly concerned with assessing wildlife and protected area management training needs and the means of meeting these at a regional level. Despite the major onslaught on elephants and rhinos during the 1980s and early 1990s the reports did not deal in any specific way with the issue of training and capacity to protect endangered species. They were also carried out before the effects of HIV/AIDS on the workforce had become generally apparent and so do not address the issue of very high staff losses due to disease.

3.2 Specific training needs assessments

3.2.1 Rhino monitoring in Namibia

A single TNA was carried out under the SADC RCP in 2003 by R Blok in Namibia. This assessment examined the capacity and further training needs of 100 members of the staff of the Ministry of environment and Tourism engaged in rhino conservation and monitoring. It also covered staff engaged by four conservancies holding rhinos. The major focus of the assessment was on the level of staff training and understanding of a range of tasks required in field monitoring of black rhino. The subjects and tasks for which each person was assessed were as follows:

- Rhino conservation background
- Rhino biology and ecology
- Patrol and tracking techniques
- Map work
- Use of binoculars
- Ageing rhino
- Sexing rhino
- Identification features: ears and horns
- Using field note books
- Assessing rhino body condition
- General training assessment (Training courses the member of staff had undertaken, e.g. Driver skills, First aid, Scene of Crime, Criminal Law, etc.)

The report provides a very thorough assessment of the existing capacity and training needs of individual members of staff at three levels within MET in relation to conservation of black rhinos. The four levels considered in relation to rhino monitoring were specialist, advanced, intermediate and basic and the staff ranks examined were Warden, Ranger/Technician, Scout and General Hand levels. The point is made by the author that staff at any level can contribute meaningfully to rhino monitoring and that aptitude and commitment are just as, if not more, important than rank in field monitoring.

Some key aspects of institutional support and incentives are covered briefly, as are the constraints faced by staff in the Ministry of Environment and Tourism compared with those of Save the Rhino Trust, an NGO with a long and successfully history of monitoring rhino in Namibia. A summary table **(Table 3.1)** from the report illustrates well the frustrations faced by field staff operating in many countries within the region where resources and institutional support do not meet their needs or enable them to adequately discharge their responsibilities.

Table 3.1 Comparison of resources, performance and constraints faced by rhino monitoring staff operating under Save the Rhino Trust (SRT) and those within the Ministry of Environment and Tourism (MET). (Source: R Blok, 2003)

	SRT	**MET**
Training	Of high standard. Formal training courses are held as well as continuous on the job training	Basic, informed and irregular. Hosted by SRT.
Budget	External funding by donors sufficient for current scale of operations	State institutional funding wholly inadequate.
Motivation	Highly motivated; keen interest in monitoring process.	Low morale due to poor budget and lack of basic equipment and support.
Incentives	Incentives paid on good quality data returns and law enforcement associated information.	Incentives in the form of S&T for camping out paid but for 4-7 days per month only
Equipment	Well equipped and adequately resourced to perform monitoring duties	Basic equipment lacking. Unable to carry out basic operations.
Monitoring Outputs	High quality, reliable monitoring data	No reliable returns emanating due to constraints discussed above

A clear message from the report, although not necessarily stated in so many words, is that without adequate institutional support and resources, training on its own will not achieve the objective of effective rhino monitoring and protection. This message is widely applicable in the region.

Excellent though this report is it does not cover such important matters as levels of staff turnover within the SRT and MET, causes of declining resources within MET (e.g. Are budgets declining in real terms due to inflation or merely being reallocated to other priorities?, Are there options available for establishing and maintaining training courses in rhino monitoring, and how these might supported?).

3.2.2 SADC Region wildlife and protected area managers – Child and Sefu (1987)

The 1987 assessment by Child and Sefu was based on interviews and personally administered questionnaires at directorate level within the government wildlife management agencies in the then SADC region, which did not include South Africa and Namibia. The report first assessed the relative importance which agencies in the 9 SADCC countries attached to a range of 19 responsibilities that generally applied to wildlife and protected area management. Of these responsibilities staff training and development, protected area planning and extension, interpretation, and public education emerged as the highest priority at a regional level. These were followed by law enforcement and research and monitoring. Game ranching/farming, non-hunting safaris/special interest tours, and control of problem animals were ranked the lowest.

The study then assessed the level of skills available and the training needed for some 55 skills required to give effect to the 19 responsibilities. Law enforcement, for example was divided into 14 specific skills, research and monitoring into 3, range management into 2, control of problem animals into 8, and so on. These were ranked for importance within each by the senior staff interviewed in each country and then scored by the authors to express regional training needs. The highest scores were for training and capacity in the following skills:

- Staff training and development at all levels
- Park planning and evaluation of performance
- Extension and interpretation
- Processing of intelligence,
- Marketing wildlife products
- Game water management
- Game capture using drugs and plastic bomas
- Supervising commercial operators, and,
- Planning, implementing and marketing recreational hunting.

The report provides valuable information on staffing levels and budgets in the agencies involved, as well as estimates of staff turnover and regional annual requirements for trained recruits at professional, warden and scout levels. Assuming a 5% annual growth rate in staffing to meet expanding commitments these were 30 professionals (i.e. graduates and postgraduates), 100 warden/technical, and 750 scouts each year. The report covers expressed key training needs in each country and training needs at scout, ranger/warden and professional levels. In contrast to the requirements of rhino monitoring "no country identified direct training at the scout/ranger level as a high priority for possible external assistance through SADCC, although several would welcome help with the creating facilities and the acquisition of equipment for this purpose." Medium level training was seen as a high priority by all countries and five of them were developing their own training centres despite the availability of such training at Mweka College. All countries accepted the value and need for training graduates but specified the need for degrees in wildlife and protected area management.

The courses provided at Mweka were examined and analysed in some detail by Child and Sefu and they recommended a major re-examination of course content and emphasis to meet the needs of the region. The University of Zimbabwe was generally accepted as a suitable centre for graduate and post graduate training and this report perhaps stimulated the later investment in the development of the Tropical Resource Ecology Programme (TREP) as a regional centre for post graduate training with Mweka retaining its role as a regional centre for certificate and diploma level training.

3.2.3 East, central and southern Africa park managers (PARCS) – Pitkin 1995

The PARCS assessment differed in methodology and focal level from the Child and Sefu (1987) study in that it concentrated on a single staffing level in protected areas. It assessed the training priorities of park managers through questionnaires and participatory approaches aimed primarily at those working in the field. The assessment covered East, central and southern Africa (but not South Africa) and involved, to varying degrees, some 13 countries. Phase I of the PARCS Project comprised three main steps, an assessment of training needs, an examination of how those might be met, and a comparison across regions to explore potential synergies and exchanges. Phase II was involved with park management authorities to develop specific training plans and develop and test innovative training techniques.

The PARCS assessment found that park managers were expected to take on the following responsibilities:

- " Ensuring the availability of a competent and well-motivated staff;
- Maintaining the area' s infrastructure within budget;
- Overseeing financial and accounting procedures;
- Developing and implementing tactical plans and budgets and contributing to strategic planning;
- Ensuring that all activities comply with laws and regulations;
- Keeping visitors satisfied;
- Ensuring that required intervention programs are completed according to budget and timetable;
- Promoting harmonious relationships with neighboring communities;
- Being aware of research activities and facilitating research;
- Representing the protected area and its interests in public meetings; and
- Balancing resource conservation and use appropriately."

and in the light of this varied and extensive set of tasks that their training needed to be "revamped to meet current needs".

The ***responsibilities*** that park managers across east central and southern Africa identified as those in which they most needed training were as follows:

- Implementing intervention programs such as controlled burning, wildlife management and control, and vegetation management programs;
- Ensuring visitor satisfaction, including managing and controlling tourist activity and developing sustainable tourism programs with minimal impact on the environment; and
- Promoting conservation in local communities, such as working with local communities to promote sustainable natural resource management practices and resolving conflicts between protected areas and local communities.

The ***skills*** in which that park managers felt they were most in need of training were:

- "Policies and procedures, such as policies and procedures for protected areas and visitor policies and procedures;

- Planning, such as knowing how to develop staff plans and timetables, long-and short-term visitor plans, job plans, and community conservation plans; and
- Finance and accounting, such as bookkeeping, community finance, and fund disbursement."

While the ***mental and social skills*** they most wanted to develop were:

- "Creativity, such as developing options to achieve plans and budgets in light of changing circumstances and designing or adapting interventions to meet specific needs;
- Problem analysis, such as determining the causes of poor staff performance, the failure to achieve goals or keep budgets, or deviation from the intended results of interventions; and
- Evaluation, such as evaluating staff performance and determining why certain initiatives have succeeded or failed."

The report highlighted the tendency by most parks agencies to neglect in-service training of their staff at all levels and to rely on the skills and training staff had at the time of their recruitment and the expectation that they would learn on the job. Most did not ensure that training occurred throughout the careers of their staff with the result that opportunities for low cost training were lost.

Based on their findings the PARCS project made the following corrective suggestions:

- Protected area authorities need to embrace the concept of training as a process that occurs throughout a protected area manager' s professional career;
- Authorities need to develop training plans. These plans should be tied to job descriptions; the authorities should develop job descriptions if they do not already exist;
- Training officers should implement the training plans and maintain training records;
- Authorities should link training plans to an ongoing process of identifying training needs;
- Training officers should develop short, frequently repeated courses tailored to the specific needs of protected area staff;
- Authorities should take advantage of nontraditional training sources; and
- Existing training institutions should update their curricula.

So far as I am aware the only protected area authority in southern Africa that consistently paid attention to in-service training was the Natal Parks Board and their training programme is highlighted in the PARCS report. There is however little evidence to suggest that the excellent suggestions for a focus on continuing career development and in-service training have been adopted by protected area agencies in the region. The PARCS report draws attention to the need to provide incentives and forms of recognition to staff to undertake and participate meaningfully in further training.

A somewhat surprising gap in the PARCS listing of responsibilities and training needs is in the fields of law enforcement and intelligence and any consideration of managing endangered species.

3.2.4 EU Report – Bell et al (1998). (Full title and authorship of the report was missing)

This is a comprehensive report that reviews methodologies for TNAs and covers a wide range of issues against which training needs are assessed. It covers government, non-governmental and private sector requirements. The issues examined include changing regional objectives for wildlife management, downsizing of and privatization of government agencies, devolution of management

authority for wildlife to local government and communities, current levels of skills and attitudes in various sectors. The report also presents information on training providers and their products, careers and progression in relation to certification and an analysis of careers followed by graduates of selected training institutions. The work was part of the mid-term review of the EU funded SADC Wildlife Management Training Project and was completed in 1997.

The countries selected for detailed assessments were Angola, Botswana, Malawi, Mozambique, Tanzania, Zambia and Zimbabwe. The methodology was based primarily on structured interviews with key personnel in various agencies in the countries concerned. Less emphasis was placed on quantifying training needs because of the major changes taking place in the region in terms of structural changes in departments and major macro-economic constraints facing many of the countries concerned. The major requirement was seen as one of training and retraining existing staff.

For government agencies the priority needs, in terms of skills, knowledge and attitudes were found to be:

a) "Modular courses in administration and project/business management, management of contracts, leases and concessions, and ecological monitoring;

b) All aspects of CBNRM;

c) Field skills and micro-administration by junior staff in law enforcement, visitor services, PAC, CBNRM and ecological monitoring."

While addressing the "poor status of technical services, (procurement, construction, operation and maintenance of buildings, roads, vehicles and plant, aviation, water supplies, computers, equipment etc.), in most government wildlife management agencies" was seen as an urgent priority

In the private sector the priority needs identified were:

a) Improving awareness of environmental issues, standards and practices for technical services, wildlife management and commercial operations conducted in environmentally sensitive situations;

b) Training in wildlife management procedures for concessions or private land, (game ranches and conservancies);

c) Training in all aspects of wildlife-based tourism, particularly at middle and senior management levels, and including safari hunting.

The skills and training needs identified above for both government and the private sector were, for the most part, not being provided by the primary wildlife training institutions in the region, namely, TREP at the University of Zimbabwe and the College of Wildlife Management at Mweka. The report strongly recommended the development of short modular courses and workshops as a means to address this problem. It also strongly endorsed the PARCS recommendations (see below) for the development of in-service training programmes. Recommendations of the study were primarily addressed to the SADC Wildlife Management Project and related to support it might continue to provide in the region.

The report discusses several aspects of training and training needs assessments that have a bearing on the SADC RCP training activities and their sustainability. The more important of these are as follows:

1. Training on its own does not necessarily improve performance either of the individual trained or of the organisation. Other factors such as attitudes, the working environment, resources available, and incentives and career structures are often equally, if not more, important.

2. Different types of skills often require different approaches to training and because little attention has been given to this important consideration there is a serious mismatch between training products and the real needs of the wildlife sector in the region.
3. In assessing training needs it is necessary to distinguish between ***knowledge*** (information and understanding required to perform a job), ***skills*** (the practical ability to carry out a task), and ***attitudes*** (the state of mind and behaviour required to fulfil a particular task or job).
4. Detailed analyses of abilities of staff and of training needs should involve (i) detailed descriptions of job requirements in terms of knowledge, skills and attitudes; and (ii) detailed evaluation of at least representative samples of staff in most positions to assess current levels of ability both through self-evaluation by staff and objective evaluation through screening courses.
5. Formal training should be structured to include "training in training" or "training of trainers" so that informal, on the job, training becomes embedded in agencies and provides the basis for the sustainable development of knowledge, skills and attitudes within wildlife agencies.
6. Professional associations should play a greater role in the development of standards and appropriate certification of wildlife practitioners as well as in the development of training courses and materials.

The report provides brief and useful summaries of TNAs that preceded it. Because the Child, G. S. and R. Jingu reports of 1983 and 1986, the Butzler and Kaizer report of 1990, and the full set of PARCS reports were not available for this study summaries of these were extracted and are provided, with some minor reformatting, below:

1. "The assessment of training needs for the wildlife management sector on a regional basis dates from 1982, when the Forestry Department of FAO sponsored an Africa-wide TNA carried out during 1982 and 1983 by Mr. R. Jingu and reported by Child, (G.S.) and Jingu in 1983 and Jingu in 1986.

a) This TNA focused specifically on the government wildlife management agencies and covered a sample of 44 African countries from all regions of the continent.
b) The study placed emphasis on the numerical needs for staff at all levels, concluding that a major increase in staff numbers was needed for adequate management of the continent' s wildlife resources. The estimated total requirement for the SADC region was 29,760, with an active staff in place of about 5,000, giving a balance required of about 25,000.
c) The report concluded that existing training facilities were seriously inadequate to provide for the upgrading and replacement of existing staff and the required expansion of establishments.
d) Recommendations relevant to the SADC Region included:
e) The establishment of bachelors courses relevant to future wildlife managers;
f) The strengthening and expansion of CAWM at Mweka;
g) The establishment of a diploma and certificate level institute, (i.e. CAWM equivalent), for Portuguese-speaking trainees;
h) The strengthening and expansion of existing lower level training institutes".

2. "The Child G. F. T. and L. Sefu report [*which I have reviewed separately above*] was followed by a further training needs assessment for the SADC Region also funded by the EEC and carried out by Butzler and Kaiser in 1990.

a) The 1990 TNA again focused on government wildlife management agencies;

b) The TNA was required to estimate numbers of staff needed to carry out effective wildlife management in the region. The consultants made an estimate of 19,284 as the total requirement with 7,743 active in place leaving a balance required of 11,541.

c) The consultants concluded that training capacity failed to meet the requirement by a wide margin at all levels both for staff in place and for the increment required.

d) The recommendations included the following components of support by the EC to wildlife management training in the region:

e) Support to wildlife management training should focus on the Masters course in Tropical Resource Ecology at the University of Zimbabwe and the College of African Wildlife Management at Mweka for senior and middle managers respectively.

f) Support should be in the form of buildings, equipment, vehicles, staff development and scholarships for SADC nationals to the two institutions.

g) Provision of a SADC Regional Wildlife Training Coordinator to be based in the office of the SADC Forestry, Fisheries and Wildlife Sector Coordinator, in Lilongwe, Malawi.

h) Provision of regional workshops and seminars for middle level and senior wildlife management personnel.

i) Provision of outreach programs related to wildlife management in the region."

"The development of the EC-supported SADC Wildlife Management Training Project, based on the Butzler and Kaiser recommendations, continued through the signature of the Financing Proposal in December 1993 to the signature of the Financing Agreement in May 1994.

4. The main report from PARCS project was reviewed above. Phase II of the PARCS project was reported on as follows by Bell et al 1997.

a) "Phase II of the project ran from 1994 to end-1996. In this phase, five countries were selected, including Tanzania and Malawi, for assistance in setting up in-service training programs. CAWM at Mweka was sub-contracted by AWF to implement the Tanzania component of the project, while a unit was set up within the DNPW in Malawi. The principal products of the project were as follows:

b) The intention to leave in place in the target countries a functioning programme of in-service training for protected area managers. In the two SADC countries, little appears to have survived beyond the close of the project. (Surprisingly few of the products of the PARCS programme appear to have been assimilated by the EC WMTP).

c) A manual entitled: "What' s Your Role"; this is a hands-on manual on the procedures for setting up and running an in-service training programme.

d) Course materials for modules for in-service training on community conservation for Wildlife Rangers; these materials were intended for use at Pasiansi Wildlife Training Centre in Tanzania, but have not yet been used. (These materials were produced in collaboration with the Tanzania Wildlife Division, TANAPA and AWF).

e) The PARCS project closed at about the same time that the TA component of the SADC WMTP was initiated. There appears to have been relatively little interaction between the two projects."

"In September - October 1996, almost simultaneously with the closure of the PARCS project in Malawi and the opening of the SADC WMTP co-ordinator's office in the same location, the Malawi Department of National Parks and Wildlife contracted a separate training needs assessment and design of a training plan, which was carried out by an independent consultant, Dr. Malte Sommerlatte. No follow-up seems to have been made on this consultancy."

Sommerlatte's report was not located for this study.

3.2.5 Assessment of Selected Wildlife Training Colleges in SADC – Munthali (2002)

The primary objective of the assessment was to determine the capabilities and performance of selected wildlife training colleges with a view to recommending a suite of interventions that could be supported by the USAID Regional Center for Southern Africa who commissioned the study. The colleges involved were the Botswana Wildlife Training Institute (BWTI), in Botswana, the Southern African Wildlife College (SAWC) in South Africa, the Malawi College of Forestry and Wildlife (MCFW) in Malawi, the Community Based Natural Resources College (ZCBNRMC) in Zambia and the College of African Wildlife Management (CAWM) in Tanzania.

Colleges were evaluated on the basis of their capacity (availability of equipment, infrastructure, student staff ratio, and trainer and trainee records), capability (development, design and updating of courses, monitoring and evaluation systems, qualifications of teaching staff, etc.) organisation and governance (legal status, vision and mission, regulations, financial management, staff development policies, etc.), and sustainability (demand for services, financial status, means of support, business plans, etc.). A lengthy questionnaire was also used in the assessment

A synopsis of the training programme for each college is provided and the key strengths of each collage are indicated and this is followed by reports on the evaluations of each of the criteria in indicated above for each college.

Main conclusions of the assessment were as follows:

1. Accreditation standards and systems adopted by the colleges were uneven.
2. Programme design and curriculum development were weak and affected the quality of qualifications.
3. Budgets for recurrent and capital expenditure were critically low in some of the colleges.
4. Business plans for sustainability were generally absent.
5. Curricula and approaches to wildlife management training were poorly coordinated or harmomised across the region.
6. Findings and recommendations of externally funded training needs assessments carried out in the region had generally been ignored, or not fully implemented.

The major recommendations of the assessment were that the SADC Council of Ministers should approve wildlife training policies and standards and that SADC should establish a wildlife training regulatory authority. The regulatory authority could work with colleges to establish a system of course accreditation, set course quality standards and minimum qualifications for lecturers at colleges. The report also recommended the establishment of Wildlife Training Boards to review curricula and business plans.

These recommendations do not seem to have been followed through or implemented.

3.2.6 Extent of Training Needed for Rhino Conservation in the Sub-region

The questionnaire returns obtained during the present study provided a useful indication of the extent of training required by differing groups of staff involved in the field in the conservation of rhinos. The returns received from 14 protected areas provided an estimate of the numbers of staff in different categories engaged in rhino conservation work as well the numbers of staff that required further training **(Table 3.2)**. It is clear that a high proportion of staff in each category were considered to be in need of further training with the greatest need, in terms of numbers, at the field ranger level. About 35% of those members of staff that were involved in rhino conservation were rated as not trained. Although a high proportion staff was able to offer in-service training this was qualified by the finding that most were able to do so for only one or two of the skills for which training was needed for short periods of the year.

Table 3.2 Number of staff in different grades engaged in rhino conservation in 14 protected in southern Africa and proportion of each grade considered to be in need of further training

Category of staff	No.	% of staff	% in Need of Training
Ranger	566	86.5	63
Warden	51	7.8	68
Senior Warden	24	3.7	83
Ecologist	13	2	38
Total	654	100	63.5

3.2.7 Concluding Comments

The succession of TNAs and their unfulfilled recommendations make sobering reading. The only report on which there was a tangible and direct follow up seems to have been that of Butzler and Kaizer (1990) which resulted in major EU training support over several years and the upgrading of TREP and Mweka as centres of excellence for training in wildlife management. The very positive gains at TREP have since been eroded by the economic decline in Zimbabwe and an associated loss of lecturing staff. The almost complete failure by wildlife agencies and training institutions in the region to follow up on, and make use of, the findings and materials of the PARCS project merits some investigation if only to discover why post project "uptake" and sustainability has failed so completely in the region.

The following general conclusions can be drawn from this review:

1. Regional and national level TNAs have mostly been ignored by agencies they were intended to inform and appear to have had little if any impact on the formal training of wildlife managers.

2. The lack of action and follow up is almost certainly a symptom of a deeper malaise within the wildlife sector and perhaps the region as whole. Despite its growing economic importance in the region, the wildlife sector continues to be sidelined in national development programmes.

3. Before undertaking any further training needs *assessments* it would be prudent to explore the root causes of the continuing failure in skills development and the apparent inability of many wildlife departments to establish sustainable systems for in-service training and ongoing staff development.

Results of a questionnaire survey indicate that a very high proportion of existing field staff involved in rhino conservation are in need of training. The great majority of these are rangers or field scouts where training would best be carried in the field in their own areas.

4 Training expertise and resources available for key rhino conservation issues

Terms of reference: *Compile a list of available training expertise & resources for capacity building on key rhino conservation issues, including government agencies, NGOs and academia.*

The Terms of Reference assume that "key rhino conservation issues" are known or are agreed. The generalised scheme of requirements for the conservation of an endangered species that were outlined earlier (page 3) provide a useful overall guide to the areas in which expertise for training and capacity building is required. For convenience these are repeated here and are as follows:

1. **Field management** - monitoring population numbers, performance (e.g. sex ratios, calving intervals) and trends; habitat assessments; provision and maintenance of water supplies and fencing; protection of animals from poaching through appropriate patrolling surveillance and reporting systems; treating and rescuing injured animals, capture and translocation; managing populations for maximum growth rates and genetic health.
2. **Restocking and range expansion** – identifying new areas for restocking and population growth, assessing options and priorities for restocking, and meta-population management at national and regional scales (capture, translocation, post translocation care and management, diseases, etc.).
3. **Law enforcement** – appropriate policies, laws and legal instruments (that have to be drafted and, in the case of laws, gazetted), supporting policies, political support for appropriate deterrent penalties, patrolling and surveillance, crime investigation and arrests, prosecution, intelligence and informer networks, reward systems.
4. **Public awareness, public and political support** – development and dissemination of appropriate information and messages to target audiences, developing education programmes and associated materials, and maintaining the capacity to carry out these functions in response to changing rhino conservation needs and changing public attitudes.
5. **Training capacity –** ongoing capacity to train new staff and to retain, train and retrain existing staff at all levels.

Emslie and Brooks (1999) in the "African rhino: status survey and conservation action plan." outline the African Rhino Specialist Group strategies for successful rhino conservation. The major components of the strategy include:

- Surveys and ongoing monitoring of rhino populations (numbers and trends, age and sex ratios and population growth rates and mortality).
- Biological management (estimation of ecological carrying capacity, managing populations for maximum productivity, establishing new population and maintaining genetic diversity).
- Field protection of rhino populations (concentration of effort, consolidating vulnerable populations in safer areas, fencing sanctuaries and dehorning).
- Law enforcement strategies (Intelligence networks, provision and deployment of adequate resources, monitoring law enforcement, securing rhino horn stockpiles, fingerprinting rhino horns).
- Criminal justice system (ensuring deterrent penalties, appropriate investigation and prosecution of rhino related crimes).
- Active involvement of local communities in rhino conservation.
- Exploring sustainable use options
- Applied research
- Captive breeding

- Developing national rhino conservation plans and strategies

There is a large measure of congruence between the generalised scheme I have outlined for the conservation of an endangered species and the African Rhino Conservation Action Plan, although the action plan is rather silent on capacity building and training.

This section examines available training expertise within (a) the agencies responsible for managing protected areas, (b) conservation NGOs, (c) wildlife training colleges, and, (d) universities in the region in relation to the key areas of action required to conserve rhinos. The key rhino conservation issues in which expertise is required fall into the following main topics:

1. Field management
2. Reintroduction and range expansion
3. Law enforcement
4. Public awareness
5. In-service training

Because of the emphasis given in the SADC PRC to developing suitable electronic databases and related software for data analysis it is appropriate to add a sixth topic, namely, developing and updating software for rhino conservation work.

The levels of available expertise and resources in these fields of conservation activity in relation to the different organisations involved are examined below.

4.1 Availability of training expertise within Protected Areas staff.

The most appropriate people to provide training and advice on capacity building in the various field management skills required in rhino conservation are experienced practitioners engaged directly in rhino conservation in the field. These practitioners range from highly capable, often illiterate, trackers to trained scientists with years of field experience in rhino conservation. Not all of them will have the time or the aptitude to engage in training staff or running training courses. However, they represent a very important pool of expertise that can assist in the development of training materials and advise on training and capacity building matters.

A questionnaire survey instrument (See Appendix 1) circulated through rhino coordinators in South Africa, Swaziland and Zimbabwe, and to North Luangwa National Park in Zambia was used to gain current information on the levels of training and the training expertise available in areas holding key black rhino populations in Southern Africa. Sixteen questionnaires were returned from a potential pool of 28 protected areas containing significant numbers of black rhino in southern Africa. Returns were received from Kwazulu-Natal (4 areas), SANParks (2 areas), Swaziland (2 areas), Namibia (4 areas), Zambia (1 area) and Zimbabwe (3 areas).

The number of field staff (rangers, wardens, senior wardens and ecologists) employed in the areas from which returns were received was approximately 650. Of these 35% were working full time on rhino conservation and 46% part-time. About 46% of the total staff had more than 2 years experience in some aspect of rhino conservation field work and 64% were considered to be in need of further training. About 20% of the staff employed (i.e. about 138) was considered sufficiently experienced or skilled to train new recruits or inexperienced staff in one or more skills or activities. For the most part expertise is available to train new recruits and inexperienced staff on site. Some protected areas have staff that could train at national and regional levels but their availability to take on wider responsibilities is necessarily limited. Nevertheless, an indication of the availability of training

resources is provided by a summary analysis (**Table 4.1**) of the returned questionnaires for 15 protected areas from which returns were received.

Table 4.1 Summary of questionnaire returns showing estimates of numbers of staff within protected areas available to conduct local (L) on site training, training at national level (N), and training within the region (R) for Namibia, Kwazulu-Natal (KZN), Swaziland, Zambia, and Zimbabwe. Note that these figures are derived from those protected areas that submitted returns.

Area of Training Skills/Expertise	Namibia			KZN			Swaziland			Zambia			Zimbabwe			Totals		
	L	N	R	L	N	R	L	N	R	L	N	R	L	N	R	L	N	R
1. Field Management																		
1.1 Rhino monitoring	22	2	0	8			1	1	0	1	0	0	8	6	1	40	9	1
1.2 Tracking	14	2	0	6			2	2	0	0	0	0	12	8	7	32	11	7
1.3 Population performance	1	2	0	4			1	1	0	1	0	0	1	1	1	8	1	1
1.4 Habitat assessment	1	2	0	5			1	1	0	1	0	0	0	0	0	7	0	0
1.5 Water and fencing	9	0	0	4			2	2	0	4	0	0	3	1	0	22	3	0
1.6 Capture and translocation	1	2	0	4			1	1	0	1	0	0	3	2	2	12	5	2
1.7 Surveys & population estimates	1	2	0	5			1	1	0	2	0	0	0	0	0	9	3	0
1.8 Monitoring database use	1	2	0	?			1	1	0	2	0	0	2	2	0	6	5	0
2. Reintroduction & range expansion																		
2.1 Assessing areas for restocking	3	4	0	2			0	0	0	2	0	0	0	0	0	7	4	0
2.2 Metapopulation management	2	3	0	2			1	1	0	2	0	0	1	1	0	8	4	0
2.3 Rhino conservation strategies	3	4	0	3			1	1	0	0	0	0	1	1	0	8	6	0
3. Law enforcement																		
3.1 Legislation and polices	5	3	0	4			1	1	0	0	0	0	2	2	0	11	6	0
3.2 Lobbying political support	3	0	0	1			0	0	0	1	1	1	0	0	0	5	1	1
3.3 Patrolling strategies & tactics	3	0	0	4			2	2	0	3	0	0	4	3	0	16	5	0
3.4 Scene of crime investigations	2	0	0	6			2	2	0	3	0	1	1	1	0	14	3	0
3.5 Prosecution	2	0	0	6			2	2	0	0	0	0	0	0	0	10	2	0
3.6 Intelligence systems	1	0	0	5			0	0	0	0	0	0	1	0	0	7	0	0
3.7 Managing reward systems	1	0	0	4			0	0	0	1	0	0	3	0	0	9	0	0
3.8 Rhino horn stocks & databases	0	1	0	2			1	1	0	0	0	0	1	0	0	3	2	0
4. Public Awareness																		
4.1 Developing awareness material	2	2		1			1	1	0	1	0	0	1	1	1	6	4	1
4.2 Dissemination of messages	2	2		4			3	3	0	0	0	0	4	2	2	11	7	2
4.3 Developing education pgms.	2	2		1			1	1	0	1	0	0	1	1	1	6	4	1
5. In-service training (IST)																		
5.1 Developing IST programs	2	2		1			0	3	0	3	0	0	2	2	2	8	7	2

4.2 Field management

Of the eight main activities falling under the "Field Management" of rhinos (Table 4.1) the greatest numbers of potential trainers are to be found in monitoring an and tracking. The lowest numbers are in the use of monitoring databases and assessing population performance and habitats since fewer and generally more senior staff are involved in these activities. Most staff were available to train locally in the area in which they worked, much fewer were available to train at national level and very few were considered to be available for regional training (Table 4.1).

At the level of particular areas (as opposed to the country level reflected in Table 4.1) it is important to note that some areas indicated that they had little if any capacity for training and it is these "gaps" that will require particular attention in developing capacity building programmes.

4.2.1 Reintroductions and range expansion

The three activities contributing to this aspect of rhino conservation are generally tackled by more senior staff and ecologists and, as would be expected, the numbers of potential trainers are low (Table 4.1). Nevertheless, there is clearly capacity within existing agencies to maintain skills in these areas through in-service training. There are however notable gaps in potential capacity for training in habitat assessment at the regional level and capacity was limited to single individuals in Swaziland and Zimbabwe.

4.2.2 Law enforcement

Amongst the eight law enforcement related activities reasonable strength in potential trainers is evident in patrolling strategies and tactics, scene of crime investigation, legislation and policies, and prosecution. Most field stations or protected areas don't deal with rhino horn stocks and associated data, which accounts for the gaps in this activity (Table 4.1). Similar considerations would apply to lobbying for political support. The lack of regional level trainers from this sample of protected areas is partly because legislative matters and law enforcement are nationally based rather than regional. Much of the strength in law enforcement training potential was reflected in Kwazulu-Natal. There were notable gaps or low training capacity (e.g. intelligence, prosecution, reward systems) in other countries.

4.2.3 Public awareness

Training capacity in the field of public awareness was probably low because it is usually considered a headquarters function. From the perspective of effective protection of an endangered species the immediate neighbours surrounding a protected area are arguably the most important members of the public and building a constituency of support amongst them should be a priority. Such awareness building is best done by staff of the protected area in question.

4.2.4 In-service training

While there is a clear potential training capacity, in terms of experience and skilled staff, to undertake in-service training in nearly all skills within protected areas, but such training activities do not appear to be regular or formalised in any way. The PARCS study (see previous chapter) drew attention to the great importance and potential of in-service training and the importance of maintaining staff training records for every member of staff. With the possible exception of Kwazulu-Natal, formalised in-service training programmes and schedules appear to be absent or only weakly implemented by protected area agencies with the region. It is therefore not surprising that the lack of a "training culture" within agencies is reflected in lukewarm responses to training and recognition of the special skills required in rhino conservation.

> **The apparent lack of effective in-service training schemes and capacity to develop and implement these would appear to be a key opportunity for intervention by the SADC Rhino Conservation Programme.**

Linked to the issue of in-service training is the importance of establishing uniform standards of competence in practitioners and trainers within countries and across the region. This issue is dealt with in the following chapter.

4.2 Availability of training expertise for rhino conservation in conservation NGOs

Expertise in a wider range of rhino conservation matters presently resides in a few NGOs in the region of which only two are local, as opposed to international, NGOs. CESVI have provided major support to SADC for rhino conservation through the Region Rhino Conservation Programme but do not directly employ rhino conservation specialists other than on short term contracts for specific aspects of the SADC RRCP. Of the three international organisations, besides CESVI, providing support to rhino conservation, WWF-SARPO has four members of staff working full time on rhino conservation

issues and three of these are regularly directly engaged in field work. The IUCN/SSC African Rhino Specialist Group is able to call on the expertise of members but only one person with direct field experience in rhino conservation is employed part-time by the group. The Frankfurt Zoological Society is supporting the development of Luangwa North National Park in Zambia and has an experienced warden able to impart a wide range of skills to staff engaged in conserving newly introduced black rhinos. Local or nationally based NGOs involved in rhino conservation include Save the Rhino Trust (SRT) in Namibia and the Zambezi Society in Zimbabwe. The SRT have been directly involved in implementing and supporting the conservation of black rhino in north western Namibia since the early 1980s with a small core staff that is dependent on donor funding. The Zambezi Society have provided ongoing support to the Matusadonna IPZ in air coverage and monitoring.

While these NGOs hold an invaluable pool of expertise and provide major services to rhino conservation in the region they are entirely dependent on donor funding for the ongoing support for projects within their organisations. Despite the fact some have been supporting rhino conservation work and maintained a continuity of staff over a periods approaching or exceeding twenty years, the question of sustainability is a constant concern. A concern heightened by the fluctuating fortunes of national conservation agencies in the region over the last three decades and during which black rhino populations declined precipitously with recovery occurring during the last decade.

4.3 Availability of training expertise for rhino conservation in wildlife training colleges

There are several wildlife training colleges in the SADC region but few, if any, staff and instructors in the existing training colleges are directly involved in rhino conservation efforts and none offer specialist courses in this area. The general ability of the wildlife training colleges in the region to provide adequate, practical training for rangers was questioned by the recent review of their capacity and resources (Munthali and see previous Chapter). Earlier TNAs were generally critical of the curricula and relevance of the training being provided by colleges.

The Botswana Wildlife Training Institute (BWTI) offers a variety of courses at several levels from ten day courses in problem animal control, to 10-week induction courses for new recruits to the Botswana National Parks & Wildlife Department to a two year certificate in wildlife management and conservation. Similarly the Southern African Wildlife College (SAWC) in South Africa situated in a wildlife area adjacent to Kruger National Park offers a wide range of training course and the facility to mount specialist courses. The Mushandike Training College in Zimbabwe, which used to offer a national certificate in wildlife management, has recently re-opened and is planning to focus on in-service training for exiting staff of the NPWMA. The College of African Wildlife Management at Mweka near Moshi in Tanzania offers the following main courses which, according to Munthali (2002) are more theoretically than practically focused:

(i) One year Certificate course
(ii) Two years Diploma Course
(iii) One year Advanced Diploma Course
(iv) One year Postgraduate Diploma Course

4.3 Availability of expertise in rhino conservation within universities.

Most universities in the region offer undergraduate training in the biological sciences. Several offer graduate and post graduate training in conservation biology, mammalogy and wildlife management but none offer any specialist training in rhino conservation. Universities offering post graduate training in conservation biology that could include aspects of rhino conservation research through theses, include the following:

- **University of Pretoria** – the Mammal Research Institute offer a one year M.Sc. by course work and minor thesis in mammalogy, and M.Sc. and Ph.D. degrees by thesis. The Department of Wildlife Management[3] offers both undergraduate (B.Sc.) and post graduate training in wildlife management and the University's Faculty of Veterinary Science provides a wide range of training in veterinary sciences.
- **University of Cape Town** – the Percy Fitzpatrick Institute of African Ornithology offers a taught one year masters in conservation biology during which students would be able to tackle a mini-research project on rhino conservation. The Institute is part of the Departments of Botany and Zoology and masters by thesis and doctorates in rhino conservation would also be possible avenues of training.
- **University of the Witwatersrand –** the School of Animal Plant and Environmental Sciences offers a variety of masters courses in Resource Conservation Ecology.
- **University of Zimbabwe –** the Tropical Resource Ecology Programme (TREP) offers a one year taught masters (7 months course work 5 months research). TREP together with Mweka College of Wildlife Management were selected as SADC centres of excellence for training wildlife conservation and management.

Currently none of these universities, or their departments, appears to be engaged in specific research on rhinos or rhino conservation. While academic research on black rhinos may not be seen as priority the training young scientists, offering research grants specifically for research on rhinos may serve to attract young scientists into the field and provide a way of building future capacity for rhino conservation.

Summary

Key conservation issues and activities and related areas of expertise required for successful rhino conservation are identified and described. The availability of potential trainers for these key activities was examined for protected area agencies, NGOs, wildlife colleges and universities in the region. A questionnaire survey of protected areas holding rhinos indicated that a reasonable number of potential trainers existed within protected area agencies. It is suggested that the development and facilitation of in-service training programmes offers the best prospects for sustainable capacity building for rhino conservation in the region. Some NGOs are probably well placed to facilitate the development of such in-service training programmes. Wildlife colleges hold little prospect for being able to offer the hands-on, practical training in the field that is required. Universities in the region are not presently engaged in any rhino specific research or training programmes but could, through the provision of appropriate grants, support post graduate research and training in rhino conservation. This would provide a pool of graduates that may be drawn into long term rhino conservation work.

[3] The Chair for this department has recently retired and will not be replaced at that level which means the department may not be able to continue to offer its former level of training in wildlife management.

5 Capacity in Rhino Conservation Agencies and Career Incentives

Terms of reference: *Identify the relevant capacity-building areas and levels required in the rhino conservation institutions of the region (priority countries for country specific assessments: Namibia and Zimbabwe) and the opportunities that may exist, or be created, to link career incentives for rhino conservation staff to professional qualification systems.*

The capacity building areas required were identified in the introduction to this report (page 3) and are listed fully in the questionnaire survey and in Table 4.1 on page 25 an in th questionnaire survey instrument in Appendix 1.

It is clear from the questionnaire returns that capacity building and ongoing training are required in all of the 23 skills/activities (Table 41.) that are necessary for fully effective rhino conservation programmes at area, national and regional levels. While the highest numbers of staff considered to be in need of further training were at the ranger level the *proportion* of staff requiring further training was higher at the warden and senior warden levels suggesting an awareness of a lack of knowledge and experience in a variety of specialist fields associated specifically with rhino conservation. These "higher level", often more strategic activities included habitat assessment, surveys and population estimates, reintroductions and range expansion, legislation and policies, and intelligence systems. Since many of these more strategic skills are those required for the conservation of most endangered species it is apparent that general courses and training in these areas should be more readily available for senior conservation staff in all protected area agencies.

Despite the great need for training of protected area staff the primary pool of potential trainers in rhino conservation is situated within these agencies (Table 4.1) with a few highly experienced and skilled staff within some NGOs.

The "frontline" for black rhino conservation is field monitoring, surveillance and law enforcement. In some protected areas this work will be arduous and may involve contact and even fire-fights with armed poachers. While all are agreed that incentives will help morale and performance their implementation is less straightforward. Of the 16 questionnaires responses on this subject only six considered that their agencies could implement such schemes, a further six gave qualified answers and three thought that they were unlikely to be introduced. Only two out of 16 areas had incentive schemes for those involved in rhino conservation and both were in the private sector. Performance based incentives are used and work in Kunene where community monitors take on an additional role. However, incentives schemes based on continuing donations from NGOs are unlikely to be sustainable in the long term.

Within formally structured organisations (Government agencies, parastatals, companies) the issue of providing specific incentives to a select group of employees is fraught with difficulties both in terms of bureaucratic acceptance, administration, and in terms of social dynamics within the agency. The result is that they have very seldom been adopted other than occasionally as "danger" or hardship allowances in some circumstances.

More general incentive schemes that have worked within structured agencies include the establishment of "through grades" where promotion depends on merit and not on positions falling vacant in the hierarchy. In these schemes annual increments and advancement from say ranger to senior ranger depend on merit and scoring by supervisors using a transparent scoring system. Where such schemes already exist, or can be introduced, specific points systems for those engaged in rhino conservation work could be introduced as part of an overall incentives / advancement scheme. The Department of National Parks & Wild Life Management in Zimbabwe, for example, operated such

schemes for the advancement of ranger to senior ranger, for grades of technicians and for ecologist through senior ecologist to principal ecologist.

6 Options and Opportunities for Sustainable Capacity Building Activities for Rhino Conservation

Terms of Reference: *Through desk assessments, correspondence and direct visits, if and as required, identify options (institutions, linkages and arrangements between them) for sustainable capacity building activities which may include:*

i. Modules developed by the SADC Rhino Programme (and others) in relevant curricula of existing training institutions in the region.

ii. Means for cost effective dissemination of training reports/modules developed by the SADC PRC.

iii. Establishment of SADC centres of expertise among government agencies / NGOs and through specific joint ventures between GOs/NGOs which may leverage expertise in a cost effective and sustainable manner.

6.1 Introduction

The continuing use of training materials developed by the SADC RPRC is part of a larger training and capacity building problem facing conservation agencies and the wildlife sector in the region. The major issues surrounding training needs and the general absence of a training culture emerged in Chapter 3. It was suggested in Chapter 4 (page 26) that these shortcomings may provide a key opportunity and challenge to for intervention by the SADC RPRC. A suitably designed training and capacity building intervention for rhino conservation could be promoted as a model for developing effective rehabilitation and protection of a range of endangered species in Africa. Such a model may have wide applicability for endangered populations besides rhino elsewhere on the continent. Furthermore it could provide the stimulation to develop more broadly based and applicable in-service training and capacity building programmes that are so patently lacking in the wildlife sector.

The question then is how might these objectives be achieved? This final chapter attempts to explore the options by first outlining and defining the magnitude of the problem with respect to rhino conservation before going on to examine the potential institutional arrangements and consortia that might be formed to tackle the problem and in so doing extend the use of training materials developed so far in the programme. It concludes by indicating the resources that might be needed to implement the options outlined.

6.2 Cost effective dissemination of training materials

The most cost effective means of disseminating the existing training materials would be through the production of CDs and an open website. Departments and their field stations would then be able to print out training material as needed or install software they needed with updates being downloaded from a website. The alternative would be more costly printing and distribution of hard copies of all training materials. Clearly the material required for schools would have be centrally printed and distributed in hard copies. However the key issue is not that of dissemination but of *uptake* and greater attention needs to be given assessing demand and use of the training materials developed before investing in further development and distribution.

The development of software is fraught with updating and servicing problems and it is not clear how or who will take on the responsibility for the updating and maintenance (dealing with bugs, etc.) of software that has already been developed. Without such maintenance software rapidly becomes redundant and its use falls away. One route may be make the code readily available and create "open source" programmes that enthusiastic programmers can maintain and develop further. However, even this option will need a dedicated person to maintain the momentum of updating software and acting as an interface between programmers and end users.

6.3 Magnitude of the training problem

The scope of training and range of skills required to conserve rhinos and endangered species in general have been outlined in previous chapters. In summary these comprise six areas of expertise and a total of about 25 skills are specific areas of expertise. They cover three to four levels of personnel from often illiterate field rangers to wardens, senior wardens and ecologists. Within southern Africa it would involve some 28 to 30 protected areas holding significant rhino populations and in the region of 1,200 to 1,500 members of staff that are involved with the conservation of rhinos. Of this number about 550 would be engaged full time on rhino conservation. The results of the questionnaire survey conducted during this study indicate that about 35% of staff involved have received no training in rhino conservation matters and that about 65% of all staff require further training. In the more senior levels the requirements for further training were higher than this.

Added to the figures outlined above is the compounding factor of high staff turnover both through promotions and transfers within agencies and as result of attrition due to the HIV-AIDS pandemic. Staff turnover thus probably results in the continuing need to train in the region of 25-30% of new recruits each year. In terms of actual numbers for 30 protected areas holding rhinos this would amount to training about 400 new recruits each year, and providing additional training and retraining for about 900 existing members of staff each year – or about half this number if the focus is on those engaged full time in rhino conservation. For some staff training might be extended to a 2-year cycle of training / retraining. In any event the training required covers in region of at least 500 people a year.

Given that most agencies have very little slack in terms of the number of people they employ it is clear that the bulk of such training will have to occur on site and on-the-job because levels of absenteeism on training carried out elsewhere would be prohibitive.

In terms of training days per year and the number of trainers involved these above figures translate into some 500-600 training days per year and might involve between 30 to 50 trainers or, on average 12 to 20 days of training days per trainer. The greatest requirements in terms of numbers of staff, number of courses and training days would be for rhino monitoring, tracking and law enforcement aspects.

There is an additional consideration, namely that of building resilience into the agencies involved by broadening the training that each person receives. This would provide a safety net against continuing staff turnover and also increase the facility for the transfer of skills between members within each unit, or area, i.e. increase the opportunities for on the job transfer of skills.

6.4 Institutional options for training

The three main avenues through which training for rhino conservation could be sustained in southern Africa are as follows:

- Developing and using in-service training capacity within existing conservation agencies
- Existing training colleges provide a range of field training courses required for rangers and wardens

- University departments provide appropriate courses at undergraduate and graduate level in the more strategic skills required in rhino conservation and in research on the species.

These avenues are of course not mutually exclusive and can cater for differing needs and levels of capacity building for rhino conservation.

In-service training

On the basis of the major requirements for training outlined above and on the basis of responses from staff in the field it is clear that the development of in-service training offers the most feasible and cost effective option. The more explicit reasons for this conclusion are as follows:

- The core expertise and conservation activities required to conserve rhinos are field based activities and skills such as monitoring, protection and law enforcement.
- The key potential trainers are experienced personnel working in the field
- The best place to train field staff engaged in rhino conservation in the field skills they require is in their home areas.

There are several ways in which in-service training could be strengthened but the most cost effective route might be through the training of trainers from each of the protected areas holding rhino. If two rangers and warden from each area were trained to train this would involve training about 90 people who could then effectively conduct a large part of the training required on their stations or in their respective areas. The training task could be accomplished by hiring a group of competent trainers-of-trainers for three to four months. An important part of such training would be the establishment of appropriate training systems and training records as outlined in the PARCS project in Chapter 3 above.

Wildlife Colleges

The reviews of wildlife training colleges, and their products, by the authors of several TNAs suggests that they are unlikely to provide cost effective specialist training of the type required for rhino conservation. The Wildlife Training Unit at Gorongosa National Park provides 6-week training courses for field rangers and may provide a useful model for the development of intensive courses in rhino conservation techniques. The re-opening of the Mushandike Wildlife College in Zimbabwe may also provide an opportunity to develop specific courses and expertise in training for specific rhino conservation modules – particularly in the area of law enforcement. The college is likely to focus on in-service training and the modules developed by the SADC RPRC might be usefully taken up by the college.

Universities

The areas of work initiated by the SADC RPRC that might be taken up and further developed by universities include the work on population estimates, habitat assessments, meta-population dynamics and genetics, disease issues, and alternative conservation strategies. However these are only likely to be taken up if grant funds are available for staff and students to get involved in research and development work on these topics. As indicated earlier the provision of post graduate research grants to appropriate university departments is an effective way of attracting ecologists into the field of rhino conservation.

6.5 Discussion – learning institutions and conservation practice

As noted earlier the track record for in-service training in the conservation agencies of the region was poor and the culture of learning as within agencies appears to be poorly developed. The question arises as to whether this is a characteristic of conservation agencies or is amore deeply embedded structural problem in government agencies and more generally of governance and public administration within the region. Many public agencies and businesses follow a typical cycle of

growth and development during which openness to new ideas and learning are strongly developed only to give way to increasing control, resistance to new ideas and learning, and bureaucracy. In the industrial and commercial world such developments are normally followed by collapse and renewal. In public agencies they may persist for long periods.

Within southern Africa there have been clear examples of strong learning institutions with well developed in-service training programmes. In Zimbabwe the department of Conservation and Extension was an excellent example of the continuing education of Extension Officer through in service training courses backed by ongoing research in the sister department of Research and Specialist Services. The Public Services in Zimbabwe maintain training courses and in-service training for Civil Servants in a wide range of administrative matters. The former Natal Parks Board had a strong in-service training unit. The motivating force was almost certainly the desire to provide good in not outstanding service to their clients and to link training to advancement and promotion within the agencies concerned. The question that needs to be answered, as noted in the conclusion to Chapter 3, is: "What are the constraints to establishing and maintaining a learning culture in conservation agencies within southern Africa?"

The problem is not confined to southern Africa and prompted Holling and Meffe to publish a paper[4] entitled "Command and control and the pathology of natural resource management" based largely on their experience in North America.

6.6 Implementation

The crucial issue is how might a sustainable training initiative for rhino conservation be developed in the region? Given the existing pool of expertise and potential trainers within the protected area agencies in the region and the expertise within NGOs, the most promising avenue would be to facilitate the establishment of a regional partnerships or a consortium of training units embedded within the regions wildlife agencies. A forum for broaching and further developing such an idea already exists in the form of the African Wildlife Consultative Forum (AWCF) – an annual meeting of the directors of wildlife agencies in the SADC region. IUCN-ROSA, WWF-SARPO and ART have been involved in convening and facilitating these meetings, the most recent of which met to develop an elephant management strategy for southern Africa. The existing Rhino Management Group would also fit within such a framework and could contribute to the development of an appropriate alliance to sustain training and capacity building in rhino conservation. The development of a strategy by the AWCF could be followed by the inclusion of national training colleges (at Maun in Botswana, Mushandike in Zimbabwe, Gorongosa in Mozambique and the SAWC in South Africa) in the further development of appropriate training programmes.

The following strategic approach for the further development of training in rhino conservation for field rangers, wardens/senior wardens, and ecologists is suggested:

1. Field Rangers.

The major requirement in terms of the demand and numbers of staff involved is for training at the field ranger level in rhino monitoring and law enforcement. A preliminary estimate suggests that approximately 500 staff need training or retraining each year. Cost effective training at this scale can only be carried out through in-service training programmes – preferably on site. Given these parameters the focus needs to be on training trainers for the 30 key areas in southern Africa holding rhinos. At two trainers per area and a 2-year training/retraining cycle about 30 members of staff need 2-4 weeks training per year. A consortium of protected area agencies (EKZNW, SANParks, Zimbabwe NPWLMA and Namibia's MET), with co-ordination and facilitation support from NGOs such as CESVI, WWF-SARPO, IUCN SSC AfRSG, SADC RMG and SADC RESG could carry out

[4] Holling C. S. and Meffe, G. K. (1995). Command and control and the pathology of natural resource management. *Conservation Biology,* **10**: 328-337.

this training through one or more of the existing training colleges or in the field in one or more of the protected areas. Key 'trainers of trainers" would need to be hired (or made available from their agencies) for up to a month each year.

2. Wardens/Senior Wardens

Many of the tasks in which wardens and senior wardens need training are of a more strategic nature where exposure to ideas and appropriate literature are needed and distance learning materials would go a long way to meeting their needs. An annual training seminar of 6-10 days with appropriate instructors and lecturers could reinforce the distance learning and provide opportunities to exchange ideas, experience and lessons learned as well as reinforcing standards through appropriate tests or examinations.

3. Ecologists and researchers

While there is a need for existing ecologists to be trained they should be able to further their expertise through appropriate study and post graduate research programmes that support in service research. There is nevertheless a need to attract new recruits and to maintain a pool of expertise in rhino conservation and research. Tertiary training in the specifics of rhino conservation is not available and unlikely to be. However, an effective means to attract graduates to the cause of rhino conservation while at the same time building up expertise within the region would be to provide post graduate research grants specifically for work on rhinos. There are several universities or research groups within the region that could provide appropriate supervision of such graduate students at masters of doctoral levels. Such institutions would include the Mammal Research Institute and the Conservation Ecology Research Unit, both at the University of Pretoria, the Centre of African Ecology at the University of the Witwatersrand, the Terrestrial Ecology Research Unit at the Nelson Mandela Metropolitan University in Port Elizabeth and the Tropical Resource Ecology Programme at the University of Zimbabwe. The costs of placing a graduate research worker in the field are in the region of USD 35,000 a year to cover stipend and research costs. For those already employed but conducting supervised research as part of their work the costs would be much lower.

APPENDICES

Appendix 1. Questionnaire

SADC Regional Rhino Conservation Programme

Survey of levels of training and training capacity for rhino conservation in southern Africa, August, 2004

Sustaining a core of appropriately trained personnel is probably the most vital component in any attempt to conserve an endangered species. An important part of the SADC Regional Programme for Rhino Conservation (SADC PRC) is assisting in the development of key skills and capacity building resources for conserving rhinos in southern Africa. This survey is a part of that programme and it aims to provide baseline information on the current staffing levels assigned to rhino conservation, their levels of training and the capacity within the region to maintain or improve those levels. In the light of this objective it is appropriate to briefly consider what capacity is required within conservation agencies, and more generally within the region, to conserve an endangered large mammal species that is threatened by virtue of the valuable products (e.g. rhino horn) that it carries.

The conservation of an endangered species requires four main areas of capacity and expertise, namely, (i) ability to manage the species and existing species populations in the field, (ii) ability to protect the species from illegal use and to implement national and international policies and agreements designed to protect the species, (iii) public awareness and support for the conservation of the species, and (iv) to provide and maintain habitat in which species populations can recover and expand. More specifically these entail the following skills and areas of expertise and capacity:

Field management - monitoring population numbers, performance (e.g. sex ratios, calving intervals) and trends; habitat assessments; provision and maintenance of water supplies and fencing; protection of animals from poaching through appropriate patrolling surveillance and reporting systems; treating and rescuing injured animals, capture and translocation; managing populations for maximum growth rates and genetic health.

Restocking and range expansion – identifying new areas for restocking and population growth, assessing options and priorities for restocking, and meta-population management at national and regional scales (capture, translocation, post translocation care and management, diseases, etc.).

Law enforcement – appropriate policies, laws and legal instruments (that have to be drafted and, in the case of laws, gazetted), supporting policies, political support for appropriate deterrent penalties, patrolling and surveillance, crime investigation and arrests, prosecution, intelligence and informer networks, reward systems.

Public awareness, public and political support – development and dissemination of appropriate information and messages to target audiences, developing education programmes and associated materials, and maintaining the capacity to carry out these functions in response to changing rhino conservation needs and changing public attitudes.

Training capacity – ongoing capacity to train new staff and to retain, train and retrain existing staff at all levels.

The following set of three questionnaires attempts to capture information on the current levels of capacity, training needs and the availability of training expertise for those areas in the region carrying rhinos in as simple and painless a manner as possible. Your cooperation in completing the forms below would be greatly appreciated and will be fully acknowledged in the ensuing report which is being prepared on behalf of the SADC PRC.

David Cumming,

Chief Technical Advisor and Consultant, CESVI - 9th August, 2004.

Please return completed questionnaires to< cumming@icon.co.zw>

SECTION 1: Rhino Conservation capacity and levels of training

Note: To be completed by officer in charge of the park or the officer responsible for rhino conservation activities in the park (e.g. an IPZ)

Park/Protected Area:		**Agency:**
Size of Area (km^2):	**No. Rhino:**	**Area occupied by Rhino: (km^2)**
Completed by:	**Rank:**	**Date:**

A. Game Guards/Scouts/ Rangers

Expected tasks and areas of competence: *Rhino monitoring, scene of crime reporting, patrolling and patrol reports(map reading, GPS use), tracking, antipoaching patrols (including contact with armed gangs).*

A1. No of staff employed at this level	**No. Staff**	**Comments**
How many are employed in the park or in the conservation area that is occupied by rhino?		
How many are working part-time on rhino conservation?		
How many are working full-time on rhino conservation?		

A2: Levels of Competence	Number of staff					
Tasks	Untrained & inexperienced	Experienced		Trained (i.e. passed course)	Need further training	Can train new recruits and less experienced staff
		Less than 2 years	More than 2 years			
Rhino monitoring						
Tracking rhinos						
Patrolling and reporting						
Armed anti-poaching patrols						
Scene of crime reporting						
Comments:						

A3: What areas of further training are required for staff engaged in rhino conservation?

B. Senior Rangers/Wardens (*Note*: May involve only one to three staff members)

Expected tasks and areas of competence: *Able to carry out tasks done by Scouts and Rangers [i.e. rhino monitoring, scene of crime reporting, patrolling and patrol reports (map reading, GPS use), tracking, antipoaching patrols (including contact with armed gangs)] and deal with intelligence, data entry and analysis of records, assist in prosecution of cases, supervising patrolling systems, surveys, radio tracking, water supplies and fencing.*

B1. No of staff employed at this level	**No. Staff**	**Comments**
How many are employed in the park or in the conservation area that is occupied by rhino?		
How many are working part-time on rhino conservation?		
How many are working full-time on rhino conservation?		

B2: Levels of Competence	Number of staff					
Tasks	Untrained & inexperienced	Experienced		Trained (i.e. passed course)	Need further training	Competent to train new recruits and less experienced staff
		Less than 2 years	More than 2 years			
Rhino monitoring						
Tracking rhinos						
Patrolling and reporting						
Armed anti-poaching patrols						
Scene of crime reporting						
Intelligence systems						
Data entry and analysis						
Prosecution						
Censuses and surveys						
Radio tracking						
Water supplies and fencing						
Comments:						

B3: What areas of further training are required for staff engaged in rhino conservation?

C. Senior Warden/Officer in Charge

Expected tasks and areas of competence: *Able to carry out tasks done by Scouts, Rangers and Wardens **plus** population performance analysis, intelligence and rewards systems, legislation and policies, aspects of capture and translocation and database management*

C1. No of staff employed at this level	**No. Staff**	**Comments**
How many are employed in the park or in the conservation area that is occupied by rhino?		
How many are working part-time on rhino conservation?		
How many are working full-time on rhino conservation?		

C2: Levels of Competence	Number of staff					
Tasks	Untrained & inexperienced	Experienced		Trained (i.e. passed course)	Need further training	Competent to train new recruits and less experienced staff
		Less than 2 years	More than 2 years			
Rhino monitoring						
Tracking rhinos						
Patrolling and reporting						
Armed anti-poaching patrols						
Scene of crime reporting						
Intelligence databse						
Data entry and analysis						
Prosecution						
Censuses and surveys						
Radio tracking						
Water supplies and fencing						
Population performance						
Intelligence & reward syst.						
Legislation and policies						
Capture & Translocation						
Database management						
Comments:						

C3: What areas of further training are required for staff engaged in rhino conservation?

D. Ecologist/Research Officer

Expected tasks and areas of competence: *Include: Rhino monitoring, population performance analysis, habitat assessments, meta-population management, assessing areas for re-introductions, radio tracking, censuses, surveys and mark-recapture population estimation database management*

D1. No of staff employed at this level	**No. Staff**	**Comments**
How many are employed in the park or in the conservation area that is occupied by rhino?		
How many are working part-time on rhino conservation?		
How many are working full-time on rhino conservation?		

D2: Levels of Competence	Number of staff					
Tasks	Untrained & inexperienced	Experienced		Trained (i.e. passed course)	Need further training	Competent to train new recruits and less experienced staff
		Less than 2 years	More than 2 years			
Rhino monitoring						
Data entry and analysis						
Censuses and surveys						
Habitat assessments						
Meta-population mgmt.						
Assessing re-introductions						
Radio tracking						
Mark-recapture estimation						
Population performance						
Capture & Translocation						
Database management						
Comments:						

D3: What areas of further training are required for staff engaged in rhino conservation?

E. General Issues and Questions:
1. Are there any specific incentives or career paths for staff engaged in rhino conservation in your organization?
2. Would it help conservation if there were specific incentives and/or career paths for specialist staff engaged in rhino conservation work?
3. If specific career paths and/or incentives would help could they realistically be implemented in your agency?
4. Can your training needs be met in the park or be provided within your agency?
5. If your training needs can not be met within your agency what are the main constraints?
6. If your training needs cannot be met within your agency where could they be met?
7. Are resources (vehicles, equipment, salaries, and allowances) generally available for staff engaged in rhino conservation to work effectively?
8. Do you have any additional comments or suggestions on how your park or agency can better meet capacity needs and training in rhino conservation if these are not already adequate?
9. Are there any other issues relating to capacity and training that you believe need to be tackled in this survey?

SECTION 2: Expertise and Resources Available in your area for Training in Rhino Conservation

** More explicit notes on some of the topics listed are provided on the following page (Page 8)*

Area of Training Expertise or Skill in rhino conservation	**No. of staff qualified to train others**	**No. of staff *available* to conduct training courses at local (in park level), national or regional levels**			**Duration for which staff are available to train/ year (e.g. 1 week, 2 weeks, a month? and how frequently in a year)**	
		Local	**National**	**Regional**	**Duration**	**Frequency**
1. Field management						
1.1 Rhino Monitoring *						
1.2 Tracking						
1.3 Population performance						
1.4 Habitat assessment						
1.5 Water and fencing						
1.6 Capture & Translocation						
1.7 Surveys & Pop. estimates						
1.8 Use of *Wildb* database						
2. Re-introduction options and range expansion						
2.1 Assessing areas for restocking						
2.2 Meta-population Mgmt.						
2.3 Rhino conservation strategies						
3. Law enforcement						
3.1 Legislation and policies						
3.2 Lobbying for political support						
3.3 Patrolling strategies						
3.4 Scene of crime investigations						
3.5 Prosecution						
3.6 Intelligence systems						
3.7 Managing reward systems						
3.8 Rhino horn stocks & databases						
4. Public Awareness						
4.1 Developing awareness material						
4.2 Dissemination of messages						
4.3 Developing education programs						
5. In-service training						
5.1 Developing in-service training programs						
Notes and comments:						

The following notes expand on some of the subjects listed in the Section 2 table above.

1. **Rhino monitoring**: refers to staff able to run training courses using the Sandwith Rhino Monitoring Course.
2. **Tracking**: Refers to expert trackers who can train others.
3. **Population performance**: The analysis of population data from monitoring results used to assess the performance of the population, and individuals within it, in terms of such parameters as calving intervals, population estimates and growth rates, population condition, etc.
3. **Habitat assessment:** Assessing the suitability and condition of habitat for rhinos
4. **Surveys and population estimates**: Refers to conducting aerial or ground censuses or surveys to estimate rhino populations in areas where there is no ongoing monitoring programme.
5. **Use of Wild database**: The installation and use of the *Wildb* database for rhino monitoring developed by the SADC RCP and WWF-SARPO.
6. **Assessing areas for restocking**: Assessing habitats, carrying capacity and suitability of areas that have potential for the re-introduction of rhinos.
7. **Meta-population management**: Familiar with the theory and practice of met-population management and able to make recommendations on the movement of particular animals between sub-populations.
8. **Rhino conservation strategies**: Familiar with, and able to contribute to the further development of, local, national, and regional rhino conservation strategies.
9. **Legislation and polices**: Fully familiar with local and national legislation and policies on rhino protection and conservation and able to ue this information effectively in court and in informing and training other staff.
10. **Developing awareness material**: Refers to the preparation of material for educational or public use on the conservation of rhinos and involves mainly the preparation of written and graphic material.
11. **Press releases**: Refers to the preparation and dissemination of releases of reports or information on the conservation of rhino to news media.

SECTION 3: Use and suitability of Software packages developed under the SADC-PRC in conjunction with the African Rhino Specialist Group and WWF-SARPO.

	1	2	3	4	5	6	7	8	9	10
Questions on use of the listed Software. (Where scores or ratings are requested please use a scale of 1 to 5 with 1 very low and 5 very high.)	**WILDb Site Version**	**WILDb National Version**	**WILD xl Pop. Peformance Module**	**Patrol Effort**	**Black Rhino Carrying Capacity Model**	**RHINO 2.0 Pop. Estimation software**	**Rhino horn & Product database**	**Rhino horn Seizure Database**	**Wildlife Stockpile Register**	**Regional Law Database**
1. Have you received a copy of the software? (Yes/No)										
2a. Have you installed it?										
2b. If installed was this process difficult (1) or very easy (5)?										
3a. Is it in use? (Yes/No)										
3b. If in use is it being used very seldom (1), almost daily (5)										
4. Is it difficult to use (1) or is it very user friendly (5)										
5. How well does it meet your requirements? Hardly at all (1), Very well (5).										

Supplementary Comments on Software: Please add any observations (critical or otherwise) that you feel might assist in the further development and improvement of the software developed so far

1. *WILD*b Site Database:
2. *WILD*b National Database:
3. *WILDxl* Rhino Population Performance Analysis Module:
4. *Patrol Effort* Rhino Monitoring and Law enforcement Database/GIS :
5. SADC RMG Black Rhino Carrying capacity Model:
6. RHINO 2.0 Population Estimation Software:
7. TRAFFIC Rhino Horn and Product Database:

8. TRAFFIC Rhino Horn Seizures Database:
9. TRAFFIC Wildlife Stockpile Register Database:
10: Regional Law Database:
11. Are you using software other than that listed above? If so please indicate what it is (e.g. your own spreadsheet database) and if it is meeting your needs.
12. Do you require any further software development? If so please briefly outline requirements :

Appendix 2. Respondents to questionnaire survey

1. Adendorf, J., Conservation Manager, Addo Elephant National Park. SANParks, South Africa
2. Anderson, N., WWF Rhino Monitoring Coordinator, Bubiana Conservancy, Zimbabwe
3. Connear, G., Consevator, Save Valley Conservancy, Zimbabwe
4. English, N., Senior Warden, Sinamatella IPZ, Hwange National Park, National Parks & Wildlife Management Authority, Zimbabwe
5. Erckie, J. B., Warden, Waterberg Plateau National Park, Ministry of Environment & Tourism, Namibia
6. Hearn, M., Director of Research, Kunene Region, Save the Rhino Trust/Dice, Namibia
7. Joubert, D., Park Manager, Vaalbos National Park, SANParks, South Africa
8. Lane, P., Chief Control Warden, Hardap National Park, Ministry of Environment and Tourism, Namibia
9. Mostert, S., Conservation Manager, Tembe Elephant Park, KZN Wildlife, South Africa.
10. Mthembu, H. Conservation Manager, iMkhuze Game Reserve, KZN Wildlife, South Africa
11. Reid, C. A., Conservation Manager, iMfolosi Game Reserve, KZN Wildlife, South Africa
12. Reilly, M., Head of Conservation and Security, Hlane and Mkaya, Big Game Reserves of Swaziland, Swaziland
13. Ruinard, P. Conservation Manager, Ndumo Game Reserve, KZN Wildlife, South Africa
14. Sibalatani, M., Chief Control Warden, Etosha National Park, Ministry of Environment and Tourism, Namibia
15. Van der Westhiuzen, H., Chief Technical Advisor, North Luangwa Conservation Project, Zambia Wildlife Authority, Zambia.

Appendix 3. List of SADC PRC Reports. (Those consulted in relation to training and capacity building are indicated by an asterisk)

6.7		6.8 STATUS	6.9 Date complete	6.10 SENT TO DGCS	6.11 eb Site	6.12 ile	6.13 ize MB	
6.13.1	**PROGRAMME DOCUMENTS AND REPORTS**							
1.	* Technical Framework for the SADC Regional Programme for Rhino Conservation	COMPLETED	Sep 1999	✓		.pdf	0.05	
2.	Protocol on Administrative Procedures version 1.3	COMPLETED	Apr 2000	✓		.pdf	2.23	
3.	* Technical Report Semester 1, Workplan and Budget Semester 2, Indicative Budget Semesters 3-6	COMPLETED	Apr 2000	24.07.00		.pdf	1.99	
4.	Stakeholders Planning Workshop 6-7 March 2000 Proceedings (du Toit, R, Chafota, J, & Wright, A, eds)	COMPLETED	Apr 2000	24.01.01		.pdf	0.49	
5.	Technical Report Semester 2, Workplan and Budget Semester 3, Indicative Budget Semesters 4-6	COMPLETED	Oct 2000	24.01.01		.pdf	2.27	
6.	Technical Report Semester 3, Workplan and Budget Semester 4, Indicative Budget Semesters 5-6	COMPLETED	Apr 2001	6.08.01		.pdf	2.93	
7.	Meeting of SADC Rhino Range States and Consortium 6-8 March 2001 Proceedings (Brett, R A, ed)	COMPLETED	Apr 2001	6.08.01		.pdf	1.21	
8.	Technical Report Semester 4, Workplan and Budget Semester 5, Indicative Budget Semesters 6-7a	COMPLETED	Oct 2001	24.01.02		.pdf	2.13	
9.	Technical Report Semester 5, Workplan and Budget Semester 6, Indicative Budget Semester 7a	COMPLETED	Apr 2002	25.07.02		.pdf	2.11	
10.	Meeting of SADC Rhino Recovery Group 24-25 May 2002 Proceedings (Brett, R A, ed)	COMPLETED	June 2002	27.01.03		.pdf	0.57	
11.	Technical Report Semester 6, Workplan and Budget Semester 7, Indicative Budget Semester 8-9	COMPLETED	Oct 2002	27.01.03		.pdf	2.12	
12.	Technical Report Semester 7, Workplan and Budget Semester 8, Indicative Budget Semesters 9-10	COMPLETED	Apr 2003	05.06.03		.pdf	3.12	
13.	Meeting of SADC Rhino Range States and Consortium 12-13 March 2003 Proceedings (Brett, R A, ed)	COMPLETED	Apr 2003	18.08.03		.pdf	2.74	
14.	Meeting of the SADC Rhino Recovery Group 11 March 2003 Proceedings (Brett, R A, ed)	COMPLETED	Apr 2003	18.08.03		.pdf	2.25	
15.	* Technical Report Semester 8, Workplan and Budget Semester 9, Indicative Budget Semesters 10-11a	COMPLETED	Oct 2003	19.12.03		.pdf	6.49	
16.	* Technical Report Semester 9, Workplan and Budget Semester 10, Indicative Budget Semesters 11-12a	COMPLETED	May 2004					
TASK REPORTS								
1.	Detailed Country Reviews Report (task 1.2-1: Brett, R A, ed). Part I – Summary & Part II – Reviews	COMPLETED	Dec 2000	24.01.01		.pdf	2.57	

6.7		6.8 STATUS	6.9 Date complete	6.10 SENT TO DGCS	6.11 eb Site	6.12 ile	6.13 ize MB
2.	Detailed Country Reviews Report (task 1.2-1: Brett, R A, ed). Part III – Annexes	COMPLETED	Dec 2000	24.01.01		.doc	0.70
3.	Ecological Survey to develop a management plan for the black rhino in Liwonde National Park, Malawi (task 1.2-4.1: Chafota, J): Progress Report	COMPLETED	Jun 2001	24.01.02		.doc	-
4.	Options for the future management of the black rhinos in Liwonde National Park, Malawi (task 1.2-4.1: Labuschagne, R).	COMPLETED	Aug 2001	24.01.02		.pdf	1.98
5.	Revised Black Rhino Conservation Plan for Namibia (task 1.2-5.1: Brett, R A, ed): 3rd Draft of January 2002, Draft submitted to MET Namibia.	COMPLETED (not circulated)	Jan 2002			.doc	1.26
6.	* Conservation and Management Strategy for the White Rhinoceros (Ceratotherium simum) and the Black Rhinoceros (Diceros bicornis) in Botswana (task 1.3-1.2: Brett, R A, ed): Final Draft of February 2001 submitted to DWNP	COMPLETED (not circulated)	Oct 2002			.doc	0.26
7.	* *WILDb* version Site Database: 'Getting Started' Manual (task 2.2-2.1: Springett, C & Marshall, W)	COMPLETED	Oct 2002	24.01.02	✓	.pdf	2.04
8.	* *WILDb* version Site Database: Reference Manual (task 2.2-2.1: Springett, C & Marshall, W)	COMPLETED	Jan 2003	24.01.02	✓	.pdf	2.86
9.	* Implementation of the *WILDb* Site Database & Review of Black Rhino Records at Matusadona National Park (task 2.2-2.2: Matipano, G & Woodfine, T)	COMPLETED	Aug 2001	24.01.02		.pdf	1.93
10.	Rhino and Elephant Security Group of Southern Africa: Terms of Reference of June 2001 (task 2.2-4.1)	COMPLETED	Jun 2002	12.08.02		.pdf	1.85
11.	Rhino reintroductions to Mombo Medium-Density Tourism Zone, Chief's Island, Moremi Game Reserve, Botswana (task 3.1-1.1: du Toit, R F & Brett, R A)	COMPLETED	Sep 2001	24.01.02		.pdf	1.90
12.	Future options for rhino management and reserve expansion at Khama Rhino Sanctuary, Serowe, Botswana (task 3.1-1.1: Brett, R A & du Toit, R F)	COMPLETED	Jan 2002	12.08.02		.pdf	2.20
13.	Reintroduction of black rhino in the Luangwa Valley, Zambia (task 3.1-4.1: Dunham, K)	COMPLETED	Aug 2001	24.01.02		.pdf	3.92
14.	Management of the white rhinoceros in Mosi-oa-Tunya National Park, Zambia (task 3.1-4.1: Dunham, K)	COMPLETED	Aug 2001	24.01.02		.pdf	2.69
15.	* Monitoring African Rhino: an AfRSG update of 'Sandwith's' Training Course for Field Rangers. Instructors Handbook (3rd Edition) (task 4.1-1.1: Emslie, R & Adcock, K, eds)	COMPLETED	Mar 2001	24.01.02	✓	.pdf	3.36

6.7		6.8 STATUS	6.9 Date complete	6.10 SENT TO DGCS	6.11 eb Site	6.12 ile	6.13 ize MB
16.	Making Decisions in the Management of Rhino Populations: A Guide for Rhino Managers in Southern Africa (task 4.2-1.1: Hill, R) (Was not available)	DRAFT				.doc	0.11
17.	Principles and Guidelines for the establishment of new rhino populations or for the consolidation of remnant populations (task 4.2-4: du Toit, R F) (Was not available)	DRAFT				.doc	0.05
18.	RMG Black rhino Carrying Capacity Model version 1.01: User's Guide (task 4.2-2.1: Adcock, K). (Also available in HTML format on CD-ROM)	COMPLETED	Apr 2001	24.01.02		.pdf .html	4.10 1.14
19.	* Radio-tracking Coordination: (task 6.1-1.1, 6.1-1.2: Part I – Workshop Report (Malilangwe February 2001: du Toit, R, ed); Park II – Radio-collar research and development (Mackie, C)	COMPLETED	Oct 2001	24.01.02		.pdf	1.92
20.	* Monitoring African Rhino: an AfRSG update of 'Sandwith's' Training Course for Field Rangers. Trainee's Workbook (3rd Edition) (task 4.1-1.1: Emslie, R H & Adcock, K, eds)	COMPLETED	Mar 2001	24.01.02	✓	.pdf	3.33
21.	Ecological Evaluation of Liwonde NP, Malawi, with respect to the development and management of a viable population of black rhino (Diceros bicornis) (task 1.2-4.1: Dudley, C)	COMPLETED	Aug 2001	24.01.02		.pdf	2.08
22.	Ecological and Institutional evaluation, and development of guidelines for future management of black rhinos in Liwonde NP, Malawi (task 1.2-4.1: Chafota, J, Dudley, C & Labuschagne, R): Consolidated final report.	COMPLETED	Feb 2002	12.08.02		.pdf	12.15
23.	Proceedings of a SADC Rhino Management Group (RMG) workshop on biological management to meet continental and national black rhino conservation goals (task 2.4-1: Emslie, R H, ed)	COMPLETED	Jul 2001	27.01.03	✓	.pdf	3.25
24.	Investigation of black rhino mortalities at Ngorongoro Crater, Tanzania: black rhino habitat and ecological requirements (task 1.3-1.3: Brett, R A).	COMPLETED	Aug 2001	12.08.02		.pdf	1.91
25.	* Technical Assistance and Training for rhino surveys in Selous GR, Tanzania (task 2.1-1.1: English, N)	COMPLETED	Aug 2001	24.01.02		.pdf	1.85
26.	* Rhino Horn Stockpile Management (task 3.1-1.1: Milledge, S)	COMPLETED	Jun 2002	12.08.02	✓	.pdf	2.18
27.	* TRAFFIC Rhino Horn and Product Database (RHPD): Operational Guidelines (task 3.1-1.1: Milledge, S)	COMPLETED	Jun 2002	12.08.02		.pdf	2.24
28.	Feasibility Study for the Establishment of a Rhino Sanctuary for Black and White Rhinos at Ziwa Ranch, Buruuli, Uganda (task 1.3-1.4: Brett, R A)	COMPLETED	Jun 2002	12.08.02		.pdf	1.91

6.7		6.8 STATUS	6.9 Date complete	6.10 SENT TO DGCS	6.11 eb Site	6.12 ile	6.13 ize MB
29.	Assessment of black rhino carrying capacity of Mkhaya Nature reserve and Hlane Royal National park, Swaziland (task 2.4-1.1: Adcock, K)	COMPLETED	Jul 2002	18.08.03		.pdf	2.88
30.	* *WILDb* National Database: 'Getting Started' Manual (task 2.2-2.2: Springett, C & Marshall, W)	COMPLETED	Mar 2003	18.08.03	✓	.pdf	2.12
31.	* *WILDb* National Database: Reference Manual (task 2.2-2.2: Springett, C & Marshall, W)	COMPLETED	Mar 2003	18.08.03	✓	.pdf	2.79
32.	* Scene of Crime Procedures: Training course manual on crime scene procedures and techniques for investigation and successful prosecution in rhinoceros related crimes in SADC range states (task 4.1-2.1: Potter, R)	COMPLETED	Sep 2002	18.08.03		.pdf	2.06
33.	Assessment of Biological and Human Factors limiting the West Kunene rhino population (task 5.3.-1.1: Hearn, M)	COMPLETED	Oct 2003			.pdf	2.25
34.	* Training Needs Assessment of rhino monitoring staff in Namibia. (task 4.1-3.1: Blok, R)	COMPLETED	Feb 2003	18.08.03		.pdf	5.40
35.	* Review of the RMG Black Rhino Carrying Capacity Model Version 1.0 (task 4.2-2.2: Dunham, K M & du Toit R F)	COMPLETED	Apr 2003	18.08.03		.pdf	2.07
36.	* TRAFFIC Rhino Horn Seizure Database (RHSD) Instruction Manual (task 3.1-1.2: Milledge, S)	COMPLETED	May 2003	18.08.03		.pdf	3.26
37.	* TRAFFIC Wildlife Stockpile Register Database (RSRD) - Rhino Horn Stockpiles: User's Manual (task 3.1-1.2: Milledge, S)	COMPLETED	Jun 2003	18.08.03		.pdf	5.33
38.	* *WILDxl* Rhino Population Performance Analysis Module: User's Manual (task 2.2-2.3: Springett, C).	COMPLETED	Jun 2003	18.08.03		.pdf	2.19
39.	* *Patrol Effort* Rhino Monitoring and Law Enforcement database/GIS: User's Manual (task 2.2-3.2: Purchase, D N A)	COMPLETED	Jan 2003			.pdf	3.52
40.	* Monitoring African Rhino: IUCN SSC AfRSG update of 'Sandwith's' Training Course for Field Rangers (5th Edition): Trainee's Guide (task 4.1-1.3: Emslie, R H & Adcock, K)	COMPLETED	Jun 2003	19.12.03		.pdf	4.27
41.	Review of Rhino Reintroductions to Mombo Medium-Density Tourist Zone, Chief's Island, Moremi GR, Botswana (task 3.1-1.2: du Toit, R F & Brightman, M)	COMPLETED	Sep 2003	19.12.03		.pdf	2.07
42.	* The Rhino Cards: Class Set (Creating awareness of rhino conservation in rural schools - task 5.1-1.2: Anderson, N)	COMPLETED	Sep 2003	19.12.03		.pdf	0.76
43.	* The Rhino Cards: Teachers Pages (Creating awareness of rhino conservation in rural schools - task 5.1-1.2: Anderson, N)	COMPLETED	Sep 2003	19.12.03		.pdf	0.81

6.7		6.8 STATUS	6.9 Date complete	6.10 SENT TO DGCS	6.11 eb Site	6.12 ile	6.13 ize MB
44.	* Creating awareness of rhino conservation in rural primary schools in Zimbabwe: Report and Educational Materials (task 5.1-1.2: Anderson, N)	COMPLETED	Sep 2003	19.12.03		.pdf	3.36
45.	* Training in Scene of Crime Investigation – Course Report: Namibia. Training course manual on crime scene procedures and techniques for investigation and successful prosecution in rhinoceros related crimes in SADC range states (task 4.1-2.2: Potter, R)	COMPLETED	June 2003	19.12.03		.pdf	2.43
46.	* Training in Scene of Crime Investigation – Course Report: Zimbabwe. Training course manual on crime scene procedures and techniques for investigation and successful prosecution in rhinoceros related crimes in SADC range states (task 4.1-2.3: Potter, R)	COMPLETED	Sep 2003	19.12.03		.pdf	2.41
47.	* Training in Rhino Monitoring Techniques – Course Report: Zimbabwe. Training in rhino monitoring techniques: course for Zimbabwe scouts (task 4.1-1.4: Blok, R)	COMPLETED	Nov 2003	19.12.03		.pdf	2.71
48.	* Visual Assessment of Black Rhino Browse Availability. Improving and standardising models for black rhino carrying capacity assessment III: browse assessment (task 4.2-2.3: Adcock, K)	COMPLETED	Nov 2003			.pdf	7.50
49.	* Monitoring African Rhino: IUCN SSC AfRSG update of 'Sandwith's' Training Course for Field Rangers (5th Edition): Instructor's Handbook (task 4.1-1.3: Emslie, R H & Adcock, K)	COMPLETED	Dec 2003			.pdf	37.49
50.	* Training in Scene of Crime Investigation – Course Report: Swaziland. Training course manual on crime scene procedures and techniques for investigation and successful prosecution in rhinoceros related crimes in SADC range states (task 4.1-2.4: Potter, R)	COMPLETED	April 2004			.pdf	0.30
51.	* RHINO 2.0 Population Estimation Software: Manual (task 6.1-2.1: Emslie, R H)	COMPLETED	April 2004			.pdf	9.40
52.	* RHINO 2.0 Population Estimation Software: Simulation Run Report (task 6.1-2.1: Emslie, R H)	COMPLETED	April 2004			.pdf	0.47
53.	* Creating awareness of rhino conservation in rural primary schools III: Swaziland - Report (task 5.1-1.3: Anderson, N)	COMPLETED	April 2004			.pdf	0.30
54.	Stakeholder workshop on biological management goals for black rhino in North West Namibia: Proceedings (task 5.3-1.2: Hearn, M & Kruger, B)	COMPLETED	April 2004			.pdf	2.21
55.	Appraisal of the potential for rhino conservation in Mozambique (task 1.2-8.1: Dunham, K)	COMPLETED	April 2004			.pdf	1.22

6.7		6.8 STATUS	6.9 Date complete	6.10 SENT TO DGCS	6.11 eb Site	6.12 ile	6.13 ize MB
56.	* Training in Scene of Crime Investigation – Course Report: Botswana. Training course manual on crime scene procedures and techniques for investigation and successful prosecution in rhinoceros related crimes in SADC range states (task 4.1-2.5: Potter, R)	COMPLETED	April 2004			.pdf	030
6.13.2	**SOFTWARE**						
1.	* *WILDb* Site Database (task 2.2-2.1: Springett, C & Marshall, W). CD-ROM (Issued to Zimbabwe (Matusadona IPZ, Sinamatella IPZ, Matobo IPZ, Save Valley Conservancy, Midlands Conservancy, Bubiana Conservancy), Botswana (Moremi GR IPZ, Khama RS, Mokolodi NR), South Africa (NWPTB, SANP, Kruger NP: evaluation, Phinda PGR (ConsCorp)), Tanzania (Selous GR; Ngorongoro Crater AA), Namibia (MET: evaluation)), Zambia (North Luangwa NP) and Swaziland (Big Game Parks)	version 1.41		24.01.02	✓ iucn ftp		
2.	* SADC RMG Black Rhino Carrying Capacity Model Evaluation Draft (task 4.2-2.1: Adcock, K). CD-ROM	version 1.01		24.01.02			
3.	* TRAFFIC Rhino Horn and Product Database (*RHPD*) (task 3.1-1.1: Milledge, S). CD-ROM	version 1.2		27.01.03			
4.	* *WILDb* National Database version (task 2.2-2.2: Springett, C & Marshall, W). CD-ROM	version 1.02		18.08.03	✓ iucn ftp		
5.	* *WILDxl* Rhino Population Performance Analysis Module (task 2.2-2.3: Springett, C). CD-ROM.	version 1.01		18.08.03			
6.	* TRAFFIC Rhino Horn Seizure Database (*RHSD*) (task 3.1-1.2: Milledge, S). CD-ROM	version 1.0		18.08.03			
7.	* TRAFFIC Wildlife Stockpile Register Database (*RSRD*): Rhino Horns (task 3.1-1.2: Milledge, S). CD-ROM	version 1.0		12.08.02			
8.	* *Patrol Effort* Rhino Monitoring and Law Enforcement Database/GIS (task 2.2-3.2: Purchase, D N A). CD-ROM	version 1.0					
9.	* Regional Law Database (completed and adapted version of KZNW Law enforcement/intelligence database - task 2.2-4.1: Hamilton, R). CD-ROM	version 2.00.01					
10.	* *RHINO* 2.0 population estimation software (task 6.1-2.1: Emslie, R H). CD-ROM	version 2.0		19.12.03			