

plans are of no use if they are not implemented, and action is dependent on the commitment and resources of national rhino management authorities.

### **Discussion**

*(Implementation of strategies and plans)* Mr Theophilus said that stressed that implementation of a plan was dependent on commitment. Mr Sefu encouraged ministers to endorse management plans, and to ensure that there was commitment to government spending on rhino conservation through their treasury. Mr Chafota said that endorsement should be linked to mobilisation of resources, and Dr Kampamba highlighted the need for adequate budgeting.

Mr du Toit added that coordination and commitment were crucial; Zimbabwe had a nice tidy strategy that was not being used, there being no coordination meetings for the last 18 months. He recommended periodic audits by RRG to check on the implementation of member countries' strategies.

Mr Chafota suggested that the ToR for the RRG be adapted from the ToR of the RMG to suit the stage of programme development of RRG countries and a flexible approach. Dr Brooks emphasised that the RMG has no executive powers, and does not lobby or impose pressure on a member country to do A, B or C. Members activities as a catalyst from within the group. Mr Nzima added that an important stimulus for action within the RRG would be the peer pressure from within the group.

*(Strategy development)* Mr Kingengo asked RRG to help Angola with prioritising strategies for rhinos and elephants and the need for ground surveys.

### **2.4 Reintroduction Guidelines: Overview (Raoul du Toit)**

This presentation addressed the strategic requirements for reintroduction of rhinos. In order to achieve a viable breeding effort, biological, genetic and demographic factors need to be considered, as well as management and security, coordination mechanisms and the potential for population expansion. Additional factors to address are:

- External factors, and threats (e.g. civil war, poaching community)
- Sustainability and adequacy of funding
- Appropriate policy framework
- Legal provisions
- Funding: e.g. incentives for private sector involvement
- Man-power - capacity, equipment, motivation of training

### **Broad principles for rhino reintroductions**

#### **(a) Genetic management for rhinos**

- There should be at least 20 founders, unrelated to others, and should be (or become) effective breeders. The number of effective breeders may not necessarily be the same as the total number brought in.
- Areas should have large carrying capacity (over 100 rhinos), or be linked as a metapopulation to other populations - including active management and movement of rhinos between populations - to get over small carrying capacity problems. Such management entails significant financial costs, deployment of scarce expertise and specialized equipment. It is impossible to prevent any risks to rhinos during their intensive management.
- Introduce 1-2 effective breeders every generation (8-15 years)
- Maintain rapid population growth

#### *Issues:*

##### **(i) Gene Pool and Sampling, and Inbreeding**

Genetic drift is the consequence of random sampling of genes into the next generation. This must be compensated for by introduction of unrelated animals. Rapid population growth increases rate of sampling, and makes it less likely that some genetic material will be lost from the gene pool through the deaths of non-breeding or slowly-breeding rhinos. Ideally, founder groups should be drawn from several

sources. Fortunately, the regional rhino population has not been caught in a "genetic bottleneck". In other words, the period of population crash has been relatively short and considerable genetic diversity is still retained in the surviving gene pools.

(ii) Subspecies

*D.b.minor* and *D.b.bicornis* have to be kept separate. Thus parts of South Africa, Angola, and western Botswana, should reintroduce *bicornis*.

**(b) Demographic guidelines**

- 5% is the benchmark for population growth, but it is also necessary to look at inter-calving intervals, age at first calving, etc, as performance indicators, particularly in small populations with variable annual calving output and possible lag effects.
- Introduce a good number of rhinos to a good area of habitat (e.g. 8% growth at Malilangwe was achieved straight from the start)
- Don't manage reactively, or wait until bad indicators are evident - be proactive. Plan for adequate areas of suitable habitat.

**(c) Carrying capacity evaluations**

- Choose an initial 'ball-park' rhino density (e.g. 1/5 km<sup>2</sup> or 1/10 km<sup>2</sup> or 1/15 km<sup>2</sup>) and use monitoring and adaptive management thereafter. Very detailed carrying capacity estimates may not be needed, and new adaptive approaches to management might be necessary.
- Approximate ECCs of 1/10 km<sup>2</sup> or 1/15 km<sup>2</sup> are appropriate in *Acacia*, *Combretum* or Mopane habitats
- Social Carrying Capacity - Do not introduce too many bulls (e.g. not more than 1 bull per 25 km<sup>2</sup>).
- Ideally, ensure there is room for expansion (e.g. 200 km<sup>2</sup> just for founder population, but then at least 50% more (300 km<sup>2</sup>)).
- Water distribution - Uniform distribution of water points might minimise social problems, but a big area with limited number of water points in a concentration within the park would provide a natural focus for the rhino population and could prevent excessive dispersal, so non-uniform distribution of water points is not necessarily a bad thing.
- Disease - Not a big issue, and manageable: Trypanosomiasis/Tsetse can be problem, but there are veterinary/husbandry solutions. Anthrax is manageable (e.g. NLNP has hippos). Babesia/Theileria is the main tick-borne disease, which may be handled by reducing tick densities.
- Zoo-bred rhinos - Issues to consider: dietary problems with iron-overloading and suppression of immune system, and then subclinical infection and carrying of pathogens (e.g. fungal pneumonia from zoos to wild populations). There are reasons to be concerned, and there is need to screen and do a full risk assessment before zoo animals are moved into wild populations.

**(d) Management and Protection**

Manpower levels need to be based on effective manpower, with staff equipped, trained and coordinated. Minimum criteria for effective scout numbers and density are needed. These will vary from place to place, depending on poaching risk (e.g. modern firearms or traditional methods). Challenge and geographical factors (e.g. remoteness) need to be considered.

- Staff densities - initial benchmark with an IPZ approach is at least 1 scout per 20 km<sup>2</sup> for the protected area as a whole.
- Informer systems should be set up in advance, so that there are already eyes and ears out before rhinos are introduced, and hints of interest in killing rhinos are detected.
- Monitoring of animals - it is unrealistic to expect every one of the game scouts to be fully trained and capable of identifying individual animals. Select a couple of scouts with in-depth training in rhino monitoring, including bush craft, tracking, and wildlife skills, and then maintain monitoring effort, using these dedicated monitors.
- Fencing - a crucial factor. For a big area fencing may be neither desirable nor necessary. Rhinos tend to form social groups in an area. A certain amount of fencing may be needed for a phased approach to reintroduction. There are significant costs and risks attached to fencing constituent areas.

### **(e) Coordination Framework**

- Linkages with NGOs are very important, particularly with limited Government resources. Pet projects of NGOs should be avoided, since they can create management obligations for range states. A national view to restocking is needed, that is not donor-driven.
- Long-term commitment from donors should be ensured - Malawi and Zambia are currently getting this from FZS.
- Botswana has a highly promising participation of the private sector, with the state agency retaining control, and equipment and resources provided by private sector. Long-term concessions provide the return for the concessionaire. A clear vision is needed for mutual advantages for the government and private sector.
- A clear strategic approach is needed, including policy framework and legal basis - coordination and communication, action planning and decision-making, and attention to monitoring of performance, and ownership issues.
- In a review of major requirements of rhino reintroduction by RRG countries, a step-wise approach should be adopted.

### **Discussion**

*(Provision of reintroduction guidelines)* Dr Kampamba asked when the guidelines would be available. For Zambia, Mr du Toit endorsed the approach of the evaluation of North Luangwa NP, where a checklist and framework were followed. Detail could be filled in through interaction with RRG countries. The guidelines could not cover the full range of situations. The experience with the NLNP reintroduction could be used towards planning the next area.

*(Funding of founders)* Mr Chafota raised the issue of funding, specifically the high cost of buying 20 founders. He added that the RRG programme must touch on funding issues for reintroduction projects. Mr du Toit said that government commitments could be topped up from outside. Funding to acquire or manage rhinos once brought in could be developed through other options (e.g. Botswana swapping rhinos for other game).

*(Sex ratio and new blood)* Mr Tjibae asked about the recommended sex ratio for 20 founders, and the need for new blood. Mr du Toit said that a 1:1 sex ratio maximised sampling, but more rapid breeding could result from a sex ratio skewed towards females. It was important not to compromise source populations though skewing the sex ratio of animals provided (e.g. example of surplus males). Dr Brooks added that more females than males were usually found in very small populations only. Mr du Toit said that no matter how big the population, it was prudent to introduce 1-2 unrelated animals every generation. The problem was how to achieve it, particularly because of possible fighting mortalities. This emphasised the need for low-density situations, for introducing new animals successfully as well as maintaining habitat.

*(Zoo animals)* Mr Maige cautioned members over the acceptance of rhinos from zoos, adding that ages of zoo animals were also a problem, with mostly subadults used to zoo diets being available. Dr Brooks echoed this point, and highlighted the need for guidelines to include situations of moving animals from one habitat type to another, and the periods needed for 'weaning' animals onto new habitats.

*(Introductions)* Mr du Toit advised that introducing single young males was not a good idea, although routine horn removal or tipping could reduce mortality or serious injury. Dr Brooks recommended that all founder animals should be moved in together to reduce risk. He added that genetic management should not be an immediate concern of the RRG.