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# Game Ranch Management

A practical guide on all aspects of  
purchasing, planning, development,  
management and utilisation of a modern  
game ranch  
in southern Africa

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# Keeping game in temporary captivity

Some of the most important reasons for keeping game animals under captive conditions are:

- Collecting and keeping the animals prior to translocation.
- Acclimatisation and adaptation of the animals prior to release at new locations.
- For inspection of animals by prospective buyers at sales and auctions.
- Quarantining of animals to comply with veterinary restrictions.
- For the treatment of injured and sick animals.
- For feeding and conditioning starved or undernourished animals.
- For research purposes.

The type of accommodation required for confining the animals will be determined by the reasons necessitating the confinement, the species, the number of animals and the duration of the confinement. The design and construction of temporary accommodation will be relatively simple for most species, especially if the animals are held for a short time only, for example overnight, prior to transportation. Suitable off-loading and loading facilities such as a portable loading ramp will be required.

For game auctions and quarantining of animals, special sturdy holding pens or enclosures and loading ramps will have to be constructed according to regulations laid down by the local nature conservation and veterinary authorities.

Specially designed and constructed holding pens are necessary for the white rhinoceros (Figures 35 and 36) and giraffe (Figures 37 to 39).

When animals have to be kept captive for periods longer than a week, for instance in the case of quarantine, the pens will have to be of more durable construction. Special exercise camps and additional pens will be needed as well to facilitate cleaning (Figure 32).

The following are some aspects that must be considered when dealing with captive animals:

## SAFETY AND ADAPTATION

The natural inclination of recently captured or translocated game will be to attempt escaping. At this stage the animals are experiencing a high degree of stress, fear and anxiety. In their attempts to escape they may try to jump over whatever barriers they find hindering their escape route. In the escape process, they frequently injure themselves and other animals in the enclosure. Injuries to the neck are often immediately fatal and some

animals may have to be destroyed because injuries, such as fractured limbs, cannot be treated. It is therefore essential to ensure the safety of the animals by preventing their attempts to escape.

When captive animals realise that escape is impossible and that constraints exist which limit freedom of movement, most of them will accept their confinement and gradually start to settle down. The rate at which they settle down will be determined by the degree of calm and silence in the vicinity of the holding facility. To obtain this, the holding pens must be situated as far away as possible from the homestead, ranch buildings, cattle corrals, compounds, busy main roads, railway lines and barking dogs. This does not mean that the pens must be too far away because constant supervision by the rancher is essential. The holding pens must not be built near fences so that if and when the animals are released they do not run into or over the fences.

The construction of the pens and the material used for building the holding pens must be strong enough to contain any species of animal that attempts to escape by forcing its way through the walls or jumping them. The height of the walls are especially important and must be taken into account when animals noted for their jumping abilities such as impala, waterbuck, eland and kudu have to be discouraged from jumping over. Kudu, eland and waterbuck are known to be able to clear a 2,5 m (8 ft) fence. Raising the walls to 3,5 m and/or placing netting or wire mesh over the top of the pens will be sufficient to contain most jumpers.

Before any animals are placed in an enclosure, a thorough inspection must be made to ensure that there are no sharp or protruding objects such as pieces of wire and nails that could injure the animals.

If poles or planks are used, care must be taken that the spaces between the poles or planks are narrow enough to prevent an animal from trying to try to force its way through. Some animals may attempt to do this even though it is impossible for even a head to pass through the gap.

During the first ten days of captivity the sides of the pens should be covered to restrict the animals' view. Materials suitable for this purpose are plastic sheeting, thatch grass, reeds, hessian or grain bags.

## VENTILATION

The pens must be built in an area where good ventilation is ensured. It is therefore a good idea to build on high ground as this will often also provide good drainage. The draftsman, in the design and construction of the pens, must allow for a free flow of air through the pens.

Solid sides or walls which will inhibit the free flow of air must not be used. If poles are used, there will always be gaps between the poles which would provide sufficient ventilation. If planks are used, a gap of about 20 mm should be allowed between them. When irregularly-shaped split poles are used, some gaps may be too wide. This problem can be overcome by covering the sides with hessian from 100 mm above ground level

For small antelope the pens can be divided or partitioned. Bales should also be provided as shelter for the animals. The security they derive from a bit of shelter reduces the stress factor.

The use of plastic sheeting for constructing the walls is not recommended and may only be used with the approval of the Director of Nature Conservation. If approval for the use of plastic sheeting has been obtained, the pen must be constructed as for one with wooden walls, with the exception that two steel cables of 6 mm diameter replace the two lower crossbeams. The lower cable must be secured about 50 mm above ground level and the other cable midway between the top crossbeam and the lower cable. The plastic sheeting must be attached to the top of the crossbeam and the lower cable with the sheet passing behind the centre cable. Where possible the centre cable should be on the outside of the wall. The plastic material must be stretched as tightly as possible to prevent sagging or flapping. The material must be of a high quality and can be the same as the woven polypropylene material used for game capture. The gates of the pens must be made of wood.

The type of holding pen described above is not suitable for sable antelope and gemsbok or other animals known to be "creepers".

No animal should not be confined to this type of pen for longer than three days because the pens are poorly ventilated.

#### Gates

The frame of the gates must be solidly made and must be covered with the same material (planks and slats) as used for the walls. Gates must be wider than the width of the passage and they must be hung on steel hinges in such a way that they can be used as barriers to animal movement in the passageways.

#### Loading ramp or platform

A loading ramp or platform must be constructed at one end of the passageway. The construction must be sturdy and fully adaptable for loading animals into any suitable type of transport. The floor must be strong enough to carry the weight of the animals being loaded without fear of collapse. The surface of the floor of the mobile ramp must be "slip-free". To ensure this, slats are nailed across the floor. Soil can also be spread across the floor on top of the slats. Provision must be made to prevent the animals' feet from slipping into the space between the vehicle and the ramp floor by placing a thick strip of rubber belting material or a wooden plank between the vehicle and the ramp. To facilitate loading and off-loading of different species of animals, provision must be made to open and close the top of the loading ramp with a tarpaulin.

#### Water provision

Each pen must be provided with a water trough fabricated of material that cannot injure the animals. The trough must be positioned in such a way that it can be cleaned and refilled from outside the pen. Cleaning and replenishing must be done daily.

#### Inspection

A "cat-walk" above ground level for prospective buyers to inspect the animals from above is not recommended for recently captured game because of the disturbance factor to the animals and the danger to viewers. Cat-walks are in order if the animals have been adapted to captivity, however, or if they are tranquillised. Buyers can inspect the animals through openings in the walls or through special observation peep-holes which can be flapped back when not in use. If the pens are constructed of plastic material, covered inspection holes must be provided.

#### Ostriches

Ostriches do not require special pens at the auction as they can be housed comfortably in pens similar to those already described for antelope. The pens must be safe and clean so that the birds cannot injure themselves.

#### White rhinoceroses

Special pens must be built for rhinoceroses at auctions. It is essential that rhinoceroses cannot see each other because they usually fight. The walls must be solidly constructed and 2,5 m high to prevent the animals from escaping. If the walls are not strong enough and the animals attempt to escape, they can seriously injure themselves and cause a lot of damage to their horns. See also "The care of white rhinoceroses in pens" later in this chapter.

#### Tick control

All antelope that are sold at auctions should be sprayed for ticks with a recommended acaricide or tickicide shortly after arrival at the pens. Preparations such as "Bayticol" (Bayer) and "Triatix" (Coopers Animal Health) at the recommended dilutions for cattle have been used in the past with good results. These preparations are recommended because the whole animal does not have to be wetted in order to achieve effective tick control. Wetting the whole animal by spraying is difficult.

If facilities are available, either on the truck or in the passageway, for applying the newer "pour-on" preparations such as "Drastic Deadline"

(Bayer), these may be used as they have been tested on wild animals and appear to be safe.

For zebra and rhinoceroses preparations that are suitable for horses such as "Bacdip" (Bayer), "Curatick" (Agricura) and "Supamix" (Coopers Animal Health) can be used.

The reason for this recommendation is to prevent the introduction of new species of ticks and other insects like lice into areas that may be free of these parasites. Another reason is that buyers at auctions want to see healthy, tick-free animals and know that they are purchasing clean animals. Special care must be taken at all costs to prevent the bont-legged tick, that transmits heartwater, from being introduced, even temporarily, into areas outside its normal distribution range.

### **Holding pens for quarantine**

Notwithstanding any other requirements that may be demanded by the Directorate of Veterinary Services, quarantine holding pens must comply with the following minimum standards:

- The minimum size is 5 m × 5 m.
- At least one half of the pen must be roofed to provide shade and protection against inclement weather. The roof must be tilted to the outside to keep rainwater out of the pen.
- The floor must be of concrete and the surface roughened so that the animals will not slip. The floor must have a slight slope to the outside for drainage and it must be kept clean.
- Spare pens are essential for accommodating the animals while their pens are being cleaned.

The pens illustrated in Figures 30 and 31 could be converted into quarantine pens with the approval of the Directorate of Veterinary Services.

### **THE CARE OF WHITE RHINOCEROSSES IN PENS**

The design of holding pens for rhinoceroses has been discussed earlier in this book. Before rhinoceroses are released on ranches it has become common practice to confine them for 4 to 8 weeks for an acclimatisation and taming period. If this is not done, they tend to go for a long walk or run away upon release and can then easily "escape" from the ranch. Specialised attention and treatment is required for captive white rhinoceroses that are kept in pens. The following are some important aspects:

#### **Management**

White rhinoceroses tend to be aggressive just after they have been off-loaded and for several days after off-loading. They will attack anything

that moves and will attempt to break out of the pens by using their horns. They may fight through the cables with the rhinoceroses in adjacent pens, damage their horns in the process and may sustain serious cuts and bruises which will be difficult to treat. To prevent fighting, heavy-duty plastic sheeting should be fixed to the fences between the pens.

When the site for the pens is chosen, it should if possible be in a shady area with lots of trees. If this is not possible, adequate artificial shade must be provided for the rhinoceroses.

It is important to build the pens solidly according to the accepted specifications (Figures 35 and 36). It does not do to try and save on construction costs by using inferior or cheap materials. If a rhinoceros detects a weak spot in the pen it will continue to horn it and enlarge it until it breaks out and escapes. An escaped rhinoceros needs a specialised capture team, a special crate and transport vehicle to get it back onto the ranch. This exercise could cost several hundreds of Rand and also a lot of time, organisation and frustration.

Tree stumps and large rocks that are in the intended holding area must be left in the pens so that the rhinoceroses have something to rub against. A mud-bath should be provided as well by excavating a shallow area near one of the fences. The mud-bath must be refilled regularly. This is especially necessary in areas that have a high ambient temperature.

Soothing music can be played with a portable radio to accustom the rhinoceroses to strange sounds.

If the rhinoceroses have settled and are tamed sufficiently after a few weeks, a decision can be taken as to the merits of releasing them individually or first introducing them to one another before release. If introduction seems possible, they can be kept together for a few days to form a social group and then be released together. After release, the gates of the enclosures should be left open because some rhinoceroses may return to the pens to feed and drink. In that case feed can be left for them and the water troughs can be kept filled. As the animals extend their territory and explore the area that they have been released in, they will eventually find the existing waterholes and start using them instead. In times of drought, they may return to the holding pens in search of food and additional feed should then be supplied.

#### **Food and water**

White rhinoceroses are grazers and an adult animal can eat a bale of dry lucerne or teff (25 kg) per day. Lucerne may have a laxative effect on some animals, and should be mixed with telf and veld hay. Provision should be made before the animals arrive for the supply of the best quality fodder. Vegetables such as cubed pumpkin, squashes, carrots, etc. can also be introduced gradually to supplement their diet. Natural grasses growing near the pens can be cut or mowed and offered as well if teff is unobtainable.

The attendants feeding the animals should not be changed if at all possible as the rhinoceroses soon become used to certain individuals and their method of feeding them, and they may become upset if the attendants are changed.

If the animals were received from the Natal Parks Board, they may have been "boma-trained" and there should be no difficulty in getting them to eat.

If the animals are in poor condition, about 3 - 5 kg of a pellet or cube concentrate containing 12 - 14% protein can be fed mixed with the roughage. The cubes should be 9 - 11 mm in diameter. Sometimes the cubes may cause diarrhoea and when this happens the feeding of cubes must be stopped immediately and smaller quantities introduced once more after a break.

Clean water must be supplied daily. The water troughs must be at ground level because rhinoceroses do not like to lift their heads to drink.

### **Cleaning the pens**

Rhinoceroses usually defecate in one or two "dunging areas" and keep returning to these. The dung should be removed every five or six days but a little dung must be left at the "dunging areas". All left-over feed must also be removed regularly.

In order to clean a pen, the rhinoceros should be attracted by means of feed to an adjacent pen. If no provision has been made for an extra pen, cleaning may be attempted while the animal is sleeping during the day.

### **Common ailments of captive rhinoceroses**

Stress and injuries caused by transport and fighting are important causes of death in captive rhinoceroses.

#### **Constipation**

This condition often occurs after a long journey and when there is a sudden change in food from veld grasses to an artificial diet that is strange to the animal. The symptoms are: Loss of appetite; listlessness; a tense abdomen; straining to defecate and only passing a little dry faeces or none at all; rapid respiration.

Treatment: The condition is serious and must be considered to be so. Before the veterinarian is called to immobilise and give the animal an enema, the following can be tried for a few days:

The following amounts of magnesium sulphate (Epsom salts) are mixed with the drinking water:

120 g per 340 kg mass

220 g per 680 kg mass

460 g per 1 360 kg mass

No other water must be given for two to three days. If the rhinoceros refuses to drink this treated water, an enema of soapy water or liquid paraffin can be given by a veterinarian after the animal has been chemically immobilised.

#### **Diarrhoea**

This often occurs as a result of poor management, poor quality feeds and eating strange or unknown food. When this occurs the management and feeding must be investigated and immediately corrected. Cases of diarrhoea have been known to occur when the pens become too wet and muddy. *Salmonella* bacteria are sometimes the cause of the infection.

The symptoms are: A watery, smelly diarrhoea with staining of the hocks and the hindquarters by the faeces; listlessness; straining; loss of appetite.

Treatment: Water-soluble antibiotics can be added to the water. These are available from the veterinarian or on prescription from a chemist. If the animals have to be kept under wet conditions and the pens cannot be drained, the rhinoceroses can be immunised with a *Salmonella* vaccine. Vaccines are not always the answer and the management of the pens must be investigated to correct any faults.

#### **Pneumonia**

This may occur during cold, wet spells and especially when the enclosures are damp. If a number of rhinoceroses are being kept captive and the pens are unsuitable, it may be a wise decision to release the unaffected animals before they become ill as well.

The symptoms are: Listlessness; forced and laboured breathing. Sometimes the animal coughs. There is also a slimy discharge from one or both nostrils.

Treatment: Antibiotics obtainable from a veterinarian or on prescription from a chemist.

#### **Injuries**

These could be the result of fighting amongst each other, or of bruising and cuts sustained during transportation. Superficial cuts and wounds can be treated with antibiotic aerosols or ointments which can be applied when the animals come to feed next to the fence. It is important to gain the animal's confidence in order to apply this treatment.

Most rhinoceroses in South Africa are captured by darting with drugs and it sometimes happens that the dart site becomes infected. Abscesses develop under the skin and start to suppurate. The affected area under the dart wound is usually swollen and pus can often be seen seeping out as the animal walks. The wound will attract a lot of flies. Veterinary treat-

ment is required because the abscess must be opened and the wound irrigated with cleansing agents such as a 10% solution of hydrogen peroxide. The cleaned area must then be impregnated with antibiotic ointments and long-acting antibiotics must be injected.

Horns are often damaged when rhinoceroses fight with each other, or with the cables of the holding pens, or during transportation. Injuries to the horns must always be regarded as serious because the wounds become infected quickly and, once established, the infection is difficult to treat. A major problem is that the wounds attract flies and blowflies which are irritating to the animal and prevent it from feeding. The flies lay eggs which become maggots, and this is an indication of the seriousness of the condition. Treatment may involve immobilising the animal frequently (perhaps every second day) to clean and treat the wound. Specialised veterinary assistance is required to treat this type of injury. Damaged horns may have to be amputated at the base of the horn in order to control the infection.

## Feeding and carrying capacity

### FEEDING IN NATURE

#### Use of the veld

There are various methods to study the way in which animals make use of the veld:

- By comparing enclosure pens where grazing does not take place with adjacent areas which are grazed. The difference indicates the nature of utilisation.
- Enclosure pens can also be used to determine the production rate of grass and the effect grazing has on it, by comparing the pens with adjacent areas which are grazed.
- Through direct observation of game to determine grazing preferences.
- By cutting off plants at the height on which they are grazed by specific animals and then cutting off the remainder after it has been grazed. Selection in respect of chemical and botanical composition and nutritional quality can be deduced by comparing the two sets of information.
- Oesophagus and/or rumen fistulae can be used under specific circumstances to obtain samples of the selected diet for analysis.
- The various plant species in the diet can also be deduced by collecting dung samples and examining the undigested remains under a microscope. Typical characteristics of plants, such as the structure of the epidermis, can be used for this.
- The contents of the rumen or the intestinal tract of animals that were shot can be directly examined.

Irrespective of which method or combination of methods is prescribed by the circumstances, the objective is to determine which food is selected by the animal. Selection is influenced mainly by two factors – palatability and preference. Palatability is a characteristic of the plant, while feeding preference manifests itself in the animal's behaviour. Various factors besides palatability can determine preference for a plant or part of a plant.

#### *Anatomical factors*

With the exception of Burchell's zebra, elephants, rhinoceroses, hippopotamuses, bushpigs and warthogs, the larger South African herbivorous game can be grouped as ruminants. On the basis of anatomical factors and veld usage, ruminants themselves can be divided into three groups,