

Module 8 - Component 1



Large antelope and zebra

Introduction

This Module covers animal behaviour under capture situations to help interpret the behavioural patterns seen and to predict each species' reaction to the techniques described, particularly their vulnerability to capture stress in each situation. Of interest will be behaviour not generally known to wildlife enthusiasts unless they are directly involved in capturing. All the large antelope species and the zebra are discussed here.



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Eland

Demographic	Capture dosages	Tranquillisation dosages
Adult bulls	13 mg of M99 50 mg of Xylazine and 50 mg of Azaperone	18–20 mg of Haloperidol
Adult cows	10–12 mg of M99 50 mg of Xylazine and 50 mg of Azaperone	15–18 mg of Haloperidol
Weaners	8–9 mg of M99 and 50 mg of Azaperone	10–12 mg of Haloperidol



Characteristics

- Body weight:** A large adult bull weighs more than a buffalo bull, weighing in at 900 kg compared with 800 kg for a buffalo bull. Its mass is deceptive owing to its greater length and depth of chest.
- Social behaviour:** In the Highveld, herds number 10–50 animals although, at times, as many as 300 will congregate together in the Lowveld. Often weaners are left in the care of one adult female, the “nursery nanny”. This individual is extremely alert and will try anything not to cooperate on a drive, particularly turning into the wind and thus away from the direction of the boma when attempting to get them in.
- Habitat:** Savannah woodland and grassland. Eland prefer areas that are more arid.
- Mating season:** November–January.
- Calving season:** Eland calves are born in September–October after a gestation period of 270 days.

General remarks relating to capture

Eland are exceptional jumpers and are able to maintain a trot for a considerable distance. They drive well and are generally responsive to a helicopter. Weaners, however, can be especially “stupid” on a drive without direction from the nursery cow. Consideration should be given to following the animals in difficult terrain using horses or a transmitter dart, to prevent the possibility of losing them once darted. Eland require considerably more Etorphine than any other species, size for size – a bull eland as much as an elephant. A combination of Etorphine, Azaperone and Xylazine is used for darting. During the induction phase of the drug, the excitable phase is very marked.

Xylazine is considered necessary as a muscle relaxant to help in the knockdown qualities of the drug to get the animal past the excitable phase as quickly as possible. Care must be taken not to underdose eland for the same reason. Some operators believe that A3080 may be a better choice as the primary narcotic, quickly bringing the animal to a standstill in 2–3 minutes. This reduces the chances of it becoming lost. Eland will quickly challenge plastic sheeting when cornered in the capture system, and eland bulls will soon gore each other when confined. Family groups apart from adult bulls in crates do not horn each other and remain fairly docile even without tranquillisation.



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Large cows and sub-adult bulls may be loaded by lifting them up in the conventional way or using a four-wheel, flatbed tractor trailer as a step up into the crate. Much thought must be given to the loading of large bulls. It is nigh impossible with only staff and a cruiser and requires the use of a sleigh with chains and a Hi-AB crane. In respect to mass capture eland respond well to plastic bomas, provided that the wind is correct, and they go directly through the system into the crush. Where they turn back and balk at going forward, they will quickly challenge and jump at the plastic. The plastic must be set as high as possible beyond the first gate to and including the crush, as for the capture of giraffe. Although the animals do respond well in the crush, not too many should be caught at once. Bulls should preferably be cut out during the drive and caught separately later. Where large groups are to be caught, consideration should be given to separating out suitably sized groups and processing them before catching the next group.

Should a group of bulls be considered, experienced personnel can quickly separate individuals as they enter the crate. Obviously, the crate must be suitably designed to permit this, as there literally are only seconds before the bulls start horning each other. Within the crates, eland are amazingly calm and can be sorted relatively easily, but they should be tranquillised, nevertheless. The capture of weaners can be a problem, as most often the nursery cow is separated out at some stage and the weaners driven on their own seem to be completely clueless as to wind or sight of danger, or to handling obstacles such as fences. Ideally, the nursery cow, if she is to be separated, should be left with the group to the last minute before separating her. Eland bulls, particularly tame ones, are the only animals in the author's experience that will challenge the drop boma when it is dropped on them; they simply walk through.



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Kudu

Demographic	Capture dosages	Tranquillisation dosages
Adult bulls	6-7 mg of M99 40 mg of Xylazine and 50 mg of Azaperone	20 mg of Haloperidol + 100 mg of Trilafon
Adult cows	4.5 mg of M99 60 mg of Azaperone	18 mg of Haloperidol + 100 mg of Trilafon
Yearlings	3-4 mg of M99 and 50 mg of Azaperone	12 mg of Haloperidol + 100 mg of Trilafon



Characteristics

- **Body weight:** Bulls weigh 250 kg and cows 180 kg.
- **Social behaviour:** Gregarious herds averaging 3–10 individuals usually consist of cows and their young and may be accompanied by an adult bull. Bulls may be solitary or form temporary bachelor herds.
- **Habitat:** Woodland savannah associations, extending into more arid areas with enough thickets to provide shelter and food.
- **Mating season:** The mating season peaks in autumn.
- **Calving season:** Throughout the year, peaking in the rainy season. The gestation period is 270 days.

General remarks relating to capture

Kudu are excitable, nervous animals that stress very easily. When captured and under pressure, they will quickly challenge the plastic sheeting. Captured animals must be brought under control immediately. Failure to do so quickly results in them running around, leading to capture myopathy. For this reason, kudu should be tranquillised immediately upon capture. Under direction from a helicopter, kudu are not easy to drive, attempting to go from thicket to thicket where they try and hide, particularly when tired. They are therefore best driven slowly from a distance. Kudu behave similarly to waterbuck when driven, as they are not herd orientated like other species. They will split and join with each other during the drive. Moreover, kudu always run in the direction they are facing when suddenly frightened, hence the danger to cars and problems when pushing them through the boma. Obviously, more attention is required for the siting and erection of the plastic boma. It is built in the same format as for eland, with high sides all the way up to the ramp. Crate choice is important and should be closed in, not slatted so that the animals cannot see out.



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Kudu must be loaded directly through the boma on mass capture and not be stopped in the crush. Bulls should never be mixed under any circumstances, as they immediately fight. Kudu should also not be left in crates in the morning, when they will jump for the fanlights as dawn approaches, as will waterbuck. Kudu display a marked excitement phase soon after opioid induction. Heavy doses of M99 with Xylazine and Azaperone are therefore suggested to get them down quickly. Never use a narcotic only; always use with a muscle relaxant for these animals. As with eland, A3080 may come to be the drug of choice. When darting, the difficulties associated with kudu are much the same as for eland, in that the animal is likely to run off with the onset of the excitement phase. It may go down awkwardly and may not be easily found. The use of horses or a transmitter dart to locate the darted animal more easily is therefore advisable.

Kudu are attracted to a game area and most often stock themselves. Game parks, particularly small ones, should be fenced no higher than 2 m to provide an escape valve, so that kudu, particularly bulls, can jump both in and out, depending on the availability of food. Being pure browsers, it is unlikely under Highveld conditions in small game parks that there would be enough food to sustain kudu the whole year round. They need to be able to obtain food elsewhere. Kudu tame well if fed close to the house. Nevertheless, never trust the bulls even though they may be approached normally. To reiterate, kudu are extremely nervous and will quickly succumb to stress if capture is not under control. Provided the capture goes smoothly and the animals proceed directly into the crates, there is no reason for less than 100% success.



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Zebra

Demographic	Capture dosages	Tranquillisation dosages
Adult bulls	6-7 mg of M99 10 mg of Detomidine	30 – 40 mg of Haloperidol
Adult cows	6 mg of M99 10 mg of Detomidine	30 – 40 mg of Haloperidol



Characteristics

- **Body weight:** 290–340 kg.
- **Social behaviour:** Zebra form small family herds consisting of an adult stallion, mares and their offspring, and usually average 4–6 animals. Stallions without breeding units join to form bachelor herds.
- **Habitat:** Open woodland and grassland savannah.
- **Mating season:** Throughout the year. A single foal is born during the rainy season after a gestation period of 360–390 days.
- **Foaling season:** Throughout the year, peaking in October–March.

General remarks relating to capture

Zebra have very strong family ties and will not tolerate intrusions from other individuals. Nevertheless, they are gregarious and will mix with other zebra and other species when not harassed. Stallions and mares look alike and can be difficult to differentiate. The female has a broader bare (black) band at the rear below the vaginal opening, and the males tend to have a thicker neck. What usually becomes apparent is that the male often stands aloof and runs on one side or at the back of the herd. Zebra often appear to be in good condition at a quick glance when, in fact, they are not. Although zebra are inclined to keep to open ground in small groups, they are difficult to spot from the air in poor light on cloudy days. They are particularly conscious of wind direction, more so than most other species. They are cautious when crossing roads recently used, examining scent left behind.

They cross through well-maintained fences only at specific points, which need to be known. Zebra drive well by helicopter, tending to keep to the more open woodland scrub rather than dense thickets if the wind is to advantage. They cross through fences reasonably easily, provided that they do so naturally. The animals test any scent left on any road they may encounter – often coming to a full stop, then running along the scent before finally bolting across. Care must, therefore, be exercised not to overfly them. It is for this reason that the bottom cable at the main gate is not left in place but run separately, as they are intelligent animals that will quickly notice anything different.



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Where wind is from the wrong direction, out of the boma even slightly, zebra will pick it up and respond directly downwind, even running down the main gate line. Conditions of no wind are also a problem, as the animals will pick up even faint scent wafting around. Should they be forced into the boma against the wind, problems will be experienced in driving them up to the crush, as they will detect people in front and consistently break back. This will increase their heat and stress levels significantly. Care must be taken during the drive not to mix in other individual males or even another herd that the herded zebra attract on the way to the boma. Once mixed, constant friction will be observed, with the groups constantly splitting and joining as the drive progresses.

If they are not separated and are all driven into the boma, there will be much fighting in the crush and truck. Zebra can sustain several injuries at this point, but as long as no blows are received directly in front of the head above the eyes, where the skin is paper thin, they generally recover. Fools at foot, however, may be lost. Groups that have not been mixed are far quieter once loaded. Despite popular opinion, zebra are susceptible to capture myopathy. If they run up and down the boma a few times, usually due to wind change, they will quickly succumb. Also, note that zebra kick and bite each other and will not hesitate to attack in close confinement.



The skin over the buttocks is thin and tight. Often darts in this area, particularly Palmer® darts, result in over-penetration, with the whole dart disappearing into the muscle. The best place to dart is the neck and shoulder area. Darting with Etorphine is generally stormy, as zebra are prone to waking up prematurely and leaping out of the vehicle when carrying the animal in its anaesthetised state. A powerful sedative such as Detomidine is required to smooth out the anaesthesia.

Zebra show little respect for any drug, particularly Fentanyl and Carfentanil, which have very little effect on them. They are difficult to overdose, even with Etorphine, and require twice the dose of 30–40 mg of Haloperidol to achieve some degree of tranquillisation. They should be reversed intramuscularly and not intravenously, as they come around too quickly and often leap up while their sight is still impaired and may injure themselves. In respect to crates, zebra dislike closed-in units, preferring cattle-type units that are well ventilated. The crate must be strong, as they will test it and kick it to pieces if it is not. Personally, the author is not in favour of tranquillising zebra and has found that, provided they have not been mixed and are in preferred crates, they settle down well during transport. Tranquillised animals will lie down and can be kicked by other animals, causing injuries.



Roan

Demographic	Capture dosages	Tranquillisation dosages
Adult bulls	7-8 mg of M99 50 mg of Azaperone	18 mg of Haloperidol + 100 mg of Trilafon
Adult cows	6-7 mg of M99 50 mg of Azaperone	15 mg of Haloperidol +100 mg of Trilafon
Yearlings	4-5 mg of M99 and 50 mg of Azaperone	



Characteristics

- **Body weight:** 220–300 kg.
- **Social behaviour:** Breeding herds consist of 5–12 animals, with a dominant bull leading the herd. Roan bulls are not territorial and bachelor herds occur in the area as the breeding group.
- **Habitat:** Open woodland with long grass and enough open water.
- **Mating season:** The whole year.
- **Calving season:** It peaks from August until the peak of the rainy season. A single calf is born after a gestation period of 276–290 days.

General remarks relating to capture

Roan antelope are currently the most highly valued plains game animals in southern Africa owing to their decline in numbers over the years. These selective feeders are extremely sensitive to habitat change and disturbances, particularly to new development, which they will move away from. They appear not to calve each year, like sable do, which may be a result of nutritional stress during conception owing to their specific requirements. Roan are the largest antelope in southern Africa after eland. They are extremely aggressive towards one another and must never be confined together, particularly during capture. This behaviour is prevalent amongst all the animals in the herd, even the yearlings to some extent. Capture needs to be arranged to accommodate the problem of aggression. Roan adults should be transported separately even when tame. Bulls frequently separate from the herd, wandering off alone to return to the herd later. On small game farms, it may be necessary to manage sub-adults separately to ensure that they do not become isolated from supplementary feed and other management facilities.

As roan are extremely valuable animals, capture cost is not a major consideration as with other species. Even aerial capture and air lifting of individuals is considered economical. Mass capture combines boma capture with darting. The herd is caught in the conventional way, much like sable, and boxed between the second and third gates. Thereafter, the animals are individually darted and crated separately. The darting operation should be carried out as soon as possible after capture, from the side or from a blind prepared beforehand inside the boma. On difficult terrain, consideration should also be given to darting individual animals from the air and cargo slinging them to a central loading point. Tranquillisers should be kept to a minimum as roan, like sable, are very sensitive to them.



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Sable Antelope

Demographic	Capture dosages	Tranquillisation dosages
Adult bulls	4 - 5mg of M99 50 mg of Azaperone	18 mg of Haloperidol
Adult cows	3.5 – 4 mg of M99 50 mg of Azaperone	15 mg of Haloperidol



Characteristics

- **Body weight:** 180–270 kg.
- **Social behaviour:** Breeding groups consist of 10–30 animals, with a territorial bull. The bachelor groups move through the area and young bulls will join the herd at the age of about two years.
- **Habitat:** Open savannah with long grass and enough surface water.
- **Mating season:** May–July. A single calf is born after a gestation period of 224–240 days.
- **Calving season:** January–March.

General remarks relating to capture

Sable are selective grazers of grass found in open woodland and do not compete well with other course grazers, such as zebra and wildebeest. Successful sable reproduction from one year to the next requires an accurate management assessment of veld conditions. Where there is an overstocking problem on small game farms resulting in nutritional stress, sable are mostly affected. Cows calving under these conditions are unable to sustain their calves and they mostly die off, with the population remaining static.

Sable, when cornered, by dogs for example, quickly go to bay and defend themselves from this position against almost anything, except a spear. They, therefore, are easily poached in this way. This performance is often repeated in the crush by bulls, which then must be backed up using a push board. Extreme caution must be exercised, as sable are extremely quick and dangerous with their horns at this point. Sable are without question the gentlemen of wildlife species and are the easiest to deal with in all forms of capture, responding well to both mass capture with plastic and net bomas, and to individual darting. There are few mortalities if control is properly maintained. They respond well to being driven by a helicopter and, provided that the wind is correct and the boma reasonably camouflaged, enter with little difficulty. Contrary to popular belief, unlike roan, sable do not horn and attack one another when confined, provided that the herd remains intact without mixing animals. Bulls from the same herd may be safely loaded together. Occasionally one individual, usually a cow, may be a little temperamental. This is easily controlled with tranquillisers if the cow's temperament is determined early enough. If in doubt, tranquillise all the animals. Sable, like roan, are sometimes terrible mothers, quickly abandoning their calves under duress.



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Compared with other species, sable are more sensitive to tranquillisers in general, which should be reduced in the darting cocktail. They generally go down well when darted, remaining in a sternal recumbent position. Often, with the combination of Azaperone in the dart cocktail and Haloperidol given before the animal is reversed, the sable takes longer to stand because of its sensitivity to tranquillisers. Occasionally, when young animals go down quickly, they are deeply under, with a consequent danger of severe respiratory depression indicated by a slow respiration rate. If this is less than six breaths a minute after ten minutes, they should be partially antidoted with Nalorphine or stimulated with Dopram.

Note that the herd bull will attack young bulls as soon as they show signs of immobilisation. Sable crate well together, including calves at foot, and lie down soon after the vehicle starts to move, remaining settled throughout the journey. They become too settled on long journeys, however, and should be encouraged to stand every now and then to improve their circulation. The longer the journey, the more difficult they may be to unload. Sable, like gemsbok, become reluctant to leave the security of the crate. This is probably part of their mechanism to defend from a position of relative security when cornered.



Waterbuck

Demographic	Capture dosages	Tranquillisation dosages
Adult bulls	5-6 mg of M99 50 mg of Azaperone	18 - 20 mg of Haloperidol + 100 mg of Trilafon
Adult cows	4-5 mg of M99 50 mg of Azaperone	15 - 18 mg of Haloperidol +80 mg of Trilafon



Characteristics

- **Body weight:** 250–270 kg.
- **Social behaviour:** Breeding herds consist of 5–10 animals, with a territorial bull. In an optimal habitat, herds can form loose aggregations of up to thirty animals. Bachelor herds of up to 15 individuals occur in the same area as the breeding herd, and sub-adult bulls will join the herd after two years of age.
- **Habitat:** Water-rich areas like riverbeds, reeds and vleis.
- **Mating season:** The whole year.
- **Calving season:** Peaks in October and again in February–March.

General remarks relating to capture

Waterbuck are not cohesive as a herd, tending to come together on occasions and then splitting up again. Waterbuck bulls display no allegiance to the herd they may be in when driven, quickly separating and disappearing into a passing thicket. Young bulls tend to form separate groups, although they, too, are not very cohesive and split up under little pressure.

Waterbuck, in contrast to sable, are far more nervous and independent animal and therefore much more difficult to capture. They will take readily to water when threatened and are good swimmers. They are also extreme jumpers, out-jumping anything, including eland and kudu. It is important, therefore, that the boma be designed and managed with this in mind. As the drive towards the boma progresses, the animals will attempt to hide in thickets they pass. This worsens as they become accustomed to the helicopter, eventually proceeding from thicket to thicket.



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Waterbuck show a marked excitement phase response to Etorphine, particularly the bulls. They will make off 1–2 minutes after darting and can be lost before they finally go down. Cows, depending on the disturbance, sometimes will stay with the herd. Waterbuck generally do not go down well under Etorphine and when darted, often end up on their sides or even on their backs. Most often they die if not found in time. Consider using transmitter darts and trackers on horseback to follow the darted animal. Waterbuck are extremely sensitive to capture disturbance and will quickly hide a few days into the capture operation. They should be captured early in the programme.

Upon entry to the boma, it is important that the animals be encouraged to go directly through. If they stop anywhere, they will quickly challenge the boma and crush walls. Having entered the mass crate, however, they settle immediately, provided the crate is of a closed-in design. They should always be tranquillised. Adult bulls must be separated; however, young yearling bulls may be crated together. In summary, waterbuck are difficult animals to capture and manage in bomas. Often, they are also unresponsive to feed in the early stages of penning. They must remain tranquillised in the pens. It is essential that the walls be a minimum of 3,5 m high, preferably 4 m, to discourage them from jumping.



Blue Wildebeest

Demographic	Capture dosages	Tranquillisation dosages
Adult bulls	4-5 mg of M99 50 mg of Azaperone	18 mg of Haloperidol + 100 mg of Trilafon
Adult cows	3.5-4 mg of M99 50 mg of Azaperone	15 mg of Haloperidol +80 mg of Trilafon



Characteristics

- **Body weight:** Bulls 250 kg and cows 180 kg.
- **Social behaviour:** The breeding herd consists of 15–30 animals. Depending on the time of year, they can form aggregations of thousands of animals in larger conservation areas. Batchelor herds occur in the same area, and territorial bulls will mate with cows in oestrus if they move through this area.
- **Habitat:** Open savannah woodland.
- **Mating season:** March–May.
- **Calving season:** November–December.

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General remarks relating to capture

Wildebeest prefer to remain on open ground, relying on sight, speed and agility to confuse predators. They are extremely tough and less likely to succumb to physical stress than most other species. They simply stop and ignore the pressure when they finally become too tired to continue. Even wildebeest calves of only a few days old are able to keep up with the herd. Blue wildebeest are undoubtedly the “clown” species during capture, in that they rely on speed and on weaving about on open ground, with no apparent direction, to confuse their pursuers. Occasionally, depending on past history and the pressure placed on them, they can be extremely frustrating to capture. Wildebeest mass capture is a matter of all or nothing, as everything happens quickly, ending either in complete success or a total failure.

Wildebeest seldom move in the desired direction when being driven by a helicopter. Patience is required to let them have their way, so long as progress towards the boma is being made. They do not respond well to pressure and the more pressure is placed on them, the more determined they become to run in the wrong direction. One should never try and cut off the leading animals by flying in close to them, as this only spurs them on to a point when they suddenly swerve, usually 180 degrees in the opposite direction, placing the helicopter out of position. It is better to allow them to come to a standstill and slowly approach them to get them in the desired position.



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Bomas for the capture of wildebeest must be designed with as wide a main gate as possible, even incorporating several gates if necessary, to maintain control of the animals. Wildebeest are herd orientated and the rear animals will always follow regardless, even if the gates of the boma are closing on them. The author has personally seen them from the air, running around a large thicket where the rear animal could be seen by the front animal. They ran around and round the thicket for quite some time, presumably all convinced that the ones in front knew the way of escape!

However, although wildebeest may appear to be confused, they are alert and extremely wary of anything new. Watch out for visible plastic, wind direction and, particularly, top cable shine. Behaviour in the boma is also classic, in that as soon as the animals running in front detect the narrowing of the boma, they start turning in an arc back towards the entrance, which hopefully is shut by the time they get to it. They then usually complete a few more circuits before taking off through to the crush. Note that both bulls and cows horn each other and particularly target young animals as soon as the herd becomes confined.



The capture of wildebeest requires a wide boma mouth and driving from as great a distance as possible to prevent uncontrolled “panic” runs. In the bomas, it is usually unnecessary to drive them forward as they will proceed forward to the crush in their own time. They should be stopped in the crush and not loaded immediately but allowed to cool down before tranquillisation and loading. It is important that they not be disturbed during this time. Use only one qualified person to tranquillise the animals, with a few helpers to identify animals not yet done. Once all the animals have been tranquillised, wait ten minutes before loading. Any problem animals thereafter must be separated out, even unloading all of them back in the crush should this prove necessary to resettle them. Wildebeest prefer more open transport, such as closed-in cattle units, rather than the completely closed-in crates preferred by waterbuck and impala. They must be tranquillised before transportation.

Apart from the difficulty to approach, darting procedure for wildebeest is standard. A long-range projector capable of darting up to 80 m is required. Darted animals often show displacement behaviour, either standing or lying sternal, nibbling grass immediately in front of them oblivious to people around them. Provided that they are not overdosed, they tend to go down well in sternal recumbency.



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Tsessebe

Demographic	Capture dosages	Tranquillisation dosages
Adult bulls	3-4 mg of M99 50 mg of Azaperone	18-20 mg of Haloperidol + 100 mg of Trilafon
Adult cows	3 mg of M99 50 mg of Azaperone	15 mg of Haloperidol +80 mg of Trilafon



Characteristics

- **Body weight:** Bulls 140 kg and cows 126 kg.
- **Social behaviour:** Breeding herds consist of 5–9 animals with an adult bull. Bachelor herds occur in the same areas as the breeding herds.
- **Habitat:** Open savannah woodland.
- **Mating season:** January–April.
- **Calving season:** October–November.

General remarks relating to capture

Tsessebe are free-ranging animals relying on sight and speed in open country to outrun predators. They are the fastest runners of the plains game species, similar in many respects to black wildebeest, in that they dislike any form of confinement and will attack each other when under stress. This is the main problem to be addressed to provide for their successful capture. Family groups occupy specific but generally small territories close to one another. When groups are removed, the vacated territory is not quickly filled. On large game farms, bulls form bull herds numbering up to thirty individuals. They occupy specific areas, which the young bulls join when they are forced from the herd. On small game farms, these bull herds do not exist. The young bulls have nowhere to go and are often either chased off the farm or killed. Often amongst these bull herds are a few cows, possibly non-breeding queens, resulting in confusion as to whether or not the group is a breeding herd. If the group is larger than 12 individuals without obvious young of the year, it is probably a herd of bulls that is being observed. Moreover, on small game farms tsessebe occasionally cross with blesbok to produce a presumably mute “tsessebok” showing characteristics of both.

Boma siting can be a problem, as tsessebe dislike entering heavily wooded areas. They prefer more open, broken country with dispersed thickets they can see through. The animals are cautious, easily spotting the top cable of a boma set across an opening. It must, therefore, be hidden in some scrub or trees. The most effective boma site often appears the worst when built hidden in scant vegetation. Tsessebe generally do not respond to supplementary food, probably as there is no opportunity to train them in the boma beforehand owing to their aggressive nature towards one another. Consequently, they are not attracted for capture using drop bomas.

The capture method of choice for tsessebe is the net boma method, as the animals are individually caught, blindfolded, tranquillised and held for ten minutes before loading. Net bomas are relatively quick to set up, within 1,5 hours. Ideally, the target herd is sighted, the boma set up and the animals captured all within the space of three hours. Plastic bomas can also be used for capture, as long as the animals are quickly grabbed individually in the crush, where they are blindfolded and tranquillised before loading. It is imperative that before tsessebe are confined, they must be heavily tranquillised. This necessitates restraining each one individually until the tranquilliser takes effect. Tsessebe should not be placed together in a release boma, where they will horn each other. Rather, they can either be placed in individual pens or split in small groups in small pens under Trilafon. Preferably though, they should be free-released. The animals are individually carried and loaded in compartments separating bulls from cows from calves and set in their natural sternal lying position. The blindfolds are gently removed, and the attendants move slowly out, leaving the animals in position. Should the animals still be restless, staff re-enter the crates and stabilise the situation. The animals generally remain in this position until they reach their destination. Often, they have to be removed physically and placed outside, facing away from the truck, and then encouraged to run off together. With regard to darting, tsessebe often display “displacement behaviour” after darting. After a short run, they stop and appear to be eating before dropping down, apparently continuing to nibble at grass in a sternal position.

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Lichtenstein's Hartebeest

Demographic	Capture dosages	Tranquillisation dosages
Adult bulls	<ul style="list-style-type: none"> ➤ 4-5mg of M99 ➤ 50 mg of Azaperone 	18-20 mg of Haloperidol + 100 mg of Trilafon
Adult cows	<ul style="list-style-type: none"> • 3-4mg of M99 • 50 mg of Azaperone 	15 mg of Haloperidol +80 mg of Trilafon



Characteristics

- **Body weight:** Bulls 170 kg and cows 165 kg.
- **Social behaviour:** Breeding groups are small, consisting of up to ten animals, and are joined by a territorial bull.
- **Habitat:** Open savannah woodland adjoining marshy areas and floodplains.
- **Mating season:** November–January.
- **Calving season:** September.

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General remarks relating to capture

Lichtenstein's hartebeest are similar in behaviour to the red hartebeest, being slightly larger and having the characteristic hartebeest horns set lower on the head. Their skin colour is much lighter compared with the dark red of the red hartebeest. Lichtenstein's hartebeest occur more towards the north of Central Africa, while red hartebeest are found in southern Africa. Much of what has been said regarding the capture of tsessebe applies to hartebeest, except that they may be loaded directly into mass crates. Here they are quickly separated and tranquillised before they can begin horning each other. Hartebeest respond well to tranquillisation at the same level as tsessebe. They may be penned together, but only while covered by the tranquilliser Trilafon. This will require repeating if the boma period extends over seven days.

The author's choice of capture method is the net boma, although these animals are larger than tsessebe and require experienced staff to handle them. The procedure is the same as for all the larger animals caught in a net boma. In respect to darting, hartebeest are difficult to approach, thus requiring an accurate long-range delivery system such as Pneu-dart®. As they are valuable animals, consideration should be given to darting them from a helicopter.



Red Hartebeest

Demographic	Capture dosages	Tranquillisation dosages
Adult bulls	4-5mg of M99 50 mg of Azaperone	18-20 mg of Haloperidol + 100 mg of Trilafon
Adult cows	3-4mg of M99 50 mg of Azaperone	15 mg of Haloperidol +80 mg of Trilafon



Characteristics

- **Body weight:** 160 kg.
- **Social behaviour:** Breeding groups are small and consist of 8–10 animals that will be joined by a territorial bull.
- **Habitat:** Open savannah woodland adjoining marshy areas, grassland and semi-desert, as long as open water is available.
- **Mating season:** November–January.
- **Calving season:** September–October.

General remarks relating to capture

Red hartebeest are not easily approached close enough in the wild to dart from the ground. Darting is probably more cost-effective from the air, using the same dosage rates as for Lichtenstein's hartebeest. The choice of capture method is the net boma system, as it is easier to site in open scrub. There must, however, be suitably qualified staff to handle the animals.

Operating with a plastic boma, the animals must be tranquillised as quickly as possible. It is imperative to ensure that there are adequate staff in the net boma to overpower the animals swiftly. The boma should also be adequately designed to prevent animals from piling into one another, resulting in broken limbs and most of them escaping. Like gemsbok, they will horn each other when confined under stress conditions. They are best caught in a net boma where they can be tranquillised with Haloperidol and Trilafon and calmed before loading. Hartebeest horns are difficult to pipe, although the animals may be tranquillised quickly in a crate while confused. No more than 15 should be caught at any one time. Thin strips of inner tube rubber would be a better option. Care must be taken when moving red hartebeest and gemsbok from one country where they are accustomed to the tick-borne diseases and have some degree of immunity, to another country.



Large antelope and zebra

Nyala

Demographic	Capture dosages	Tranquillisation dosages
Adult bulls	3-4 mg of M99 50 mg of Azaperone	15-18 mg of Haloperidol + 100 mg of Trilafon
Adult ewes	2-3 mg of M99 50 mg of Azaperone	10-12 mg of Haloperidol +80 mg of Trilafon



Characteristics

- **Body weight:** Bulls 108 kg and ewes 62 kg.
- **Social behaviour:** The breeding herd size varies from 5–10 animals. Bulls occur in small groups and are not territorial.
- **Habitat:** Thick savannah woodland.
- **Mating season:** The whole year.
- **Calving season:** It peaks in August–December.

General remarks relating to capture

Nyala are secretive animals, occurring in small numbers. They occupy dense bush along river lines and at the base of hills. For taxonomic purposes, nyala fall in between kudu and bushbuck and display the same secretive, independent nature of both. Nyala sightings are almost dependent upon general disturbance to an area, to which they respond quickly. Where they are harassed, they are seldom seen during the day and, conversely, where they are totally protected, they become tame and are easily approached. Nyala seem to form loose associations with each other, splitting off into splinter groups, then coming together at other times, similar in behaviour to waterbuck. This poses a problem when darting from a group, for as soon as one of them is darted, they all scatter into different directions, making it impossible to determine which set of tracks belongs to the targeted animal.

Nyala do not respond to a helicopter, preferring to hide rather than moving on. Although the targeted animal may be seen, branches and twigs often obscure the dart path. It is important to maintain visual contact with the darted animal and to locate it once down. The animal most often goes down poorly positioned in lateral recumbence. Captured animals must be tranquillised. Nyala cannot be captured in conventional plastic bomas, as they cannot be herded as a group. They are best caught using drop nets set across thickets they are known to frequent and chased in using beaters. Alternatively, where they are feeding regularly, they may be caught with a drop boma.



Large antelope and zebra

Once caught, the procedure for loading the animals once the loading crush has been set up, is first to dart out the bulls. As they go down, the females and young are loaded into a crate where they can be tranquillised. Depending on the circumstances, the young bulls may be released back into the group of ewes, but the adult bulls should be transported and penned separately. Where nyala are introduced, they respond well to feeding and may be caught thereafter using the boma system of capture. Darting is a problem and should only be done using transmitter darts in the company of competent trackers. As long as the darted animals can be found quickly, they respond to drugs reasonably well. Nyala may be kept in small release bomas with suitable bush in which to take cover. They should be kept under Trilafon for the first ten days.



Large antelope and zebra

Black Wildebeest

Demographic	Capture dosages	Tranquillisation dosages
Adult bulls	3-4mg of M99 50 mg of Azaperone	18-20 mg of Haloperidol + 100 mg of Trilafon
Adult cows	3 mg of M99 50 mg of Azaperone	15 mg of Haloperidol +100 mg of Trilafon



Characteristics

- 🐾 **Body weight:** 100–180 kg.
- 🐾 **Social behaviour:** The breeding herd size varies from 8–15 animals and includes territorial bulls and bachelor groups.
- 🐾 **Habitat:** Open grassland in arid areas.
- 🐾 **Mating season:** March–April.
- 🐾 **Calving season:** November–January.

General remarks relating to capture

Black wildebeest are considerably smaller than the blue wildebeest, despite appearances. They usually occupy flat, treeless plains with small scrub, making it difficult to hide a boma. These animals generally occupy open areas from which they are reluctant to move. Under pressure, however, they will eventually vacate the area for another open spot and can be caught on the way. Black wildebeest are best caught using a net boma or by darting from the air. Bomas may be sited along paths they often frequent. Heat permitting, capture should take place immediately once the boma has been completed. Strips of red and white road tape twisted to improve visibility may be used to assist guiding the herd in, where necessary. The animals will take off immediately they are disturbed and may become difficult to maintain in a given direction. The animals are extremely aggressive, even in a net boma, but are relatively easy to handle, provided not too many are caught at any one time. Once caught, they should be handled and loaded in the same way as other larger antelope caught in net bomas. They are blindfolded and tranquillised.



Large antelope and zebra

Gemsbok

Demographic	Capture dosages	Tranquillisation dosages
Adult bulls	4-5 mg of M99 50- 60 mg of Azaperone	18-20 mg of Haloperidol + 100 mg of Trilafon
Adult cows	3-4 mg of M99 50-60 mg of Azaperone	15-18 mg of Haloperidol +100 mg of Trilafon



Characteristics

- **Body weight:** Bulls 240 kg and cows 210 kg.
- **Social behaviour:** Breeding herds are small, from ten animals to loose aggregations of up to thirty animals.
- **Habitat:** Open arid woodland to desert conditions.
- **Mating season:** The whole year.
- **Calving season:** August–September.

General remarks relating to capture

Gemsbok respond well to a helicopter, provided they are driven gently. Occasionally, animals may split off during the drive, especially bulls. Gemsbok are strongly herd orientated and can be aggressive when cornered, often backing into a bush and defending themselves from that position. Gemsbok are best captured using a plastic boma. One or two individuals can be caught in a net boma if the situation presents itself and the crew is competent. However, it can be extremely dangerous, as the animals are large and will quickly confront rather than going into the net. Gemsbok are not easily approached by vehicles for darting and are best darted from the air, using an Etorphine/Azaperone cocktail. Gemsbok are perhaps more aggressive towards one another once they become cramped.

They must be piped and tranquillised on capture, unlike sable that do not horn each other provided they belong to the same herd. These pipes must be removed when the animals are finally released into the veld. Captured gemsbok should be crated directly from the crush, partitioned and piped. There is a small window of opportunity while the animals are still confused to pipe the horns, while simultaneously tranquillising them with Haloperidol before they begin to horn one another. Trilafon, where required, can be given later after the Haloperidol has taken effect. Release pens should be as large as possible to prevent chronic stress over long periods. Like sable, gemsbok can also be difficult to unload from a bulk crate, particularly when transported over a long distance. They may be reluctant to the comparative safety of the crate.



Large antelope and zebra