

## Module # 4 – Component # 1



### Game Capture: Part A

#### Objectives

To achieve an understanding of the capture methods and handling techniques involved when capturing wild animals.

#### Expected Outcomes

- ?? To be able to interpret the factors involved in determining which capture method to use.
- ?? To understand the principles for immobilizing herbivores by darting.
- ?? To be able to discuss the problems associated with immobilizing drugs.
- ?? To understand the procedures for the plastic boma capture method.
- ?? To understand the different net capture techniques.
- ?? To be able to compare the advantages and disadvantages of darting and mass capture techniques respectively.
- ?? To be able to discuss the factors involved in planning a capture operation.
- ?? To understand capture myopathy, the symptoms and preventative measures.
- ?? To understand the handling of immobilized carnivores.

#### Pre - Test

- ?? What types of animals are generally immobilized by darting?
- ?? What is capture myopathy?

## Introduction

Game capture requires both **practical and scientific skills, experience** and the **right equipment**. For these reasons, most wildlife managers make use of **professional game capture teams** for this purpose. Successful game capture does not only include the capture of the animals, but also the **effective handling, transport and care in captivity**.

This **facet of wildlife management** has become its **own specialised activity**. There is however, **one topic** that one of the world's most experienced game capture veterinarians, Dr Ebedes, has identified as **the most important and yet almost impossible to teach or convey: compassion**. At all times it's crucial to remember that during game capture and translocation operations you are dealing with live, sentient, cognizant and feeling animals.

At this point it is necessary to break one of the fundamental rules of scientific writing, **anthropomorphism**. Wild animals under capture conditions are afraid, confused, stressed, frequently aggressive and highly agitated. Treat them with compassion.

## Capturing of Herbivores

The following factors should be taken into account when deciding upon the capture method.

### **Cost**

This involves equipment such as:

- ~~///~~ nets
- ~~///~~ vehicles
- ~~///~~ tranquillising equipment
- ~~///~~ drugs
- ~~///~~ feed
- ~~///~~ bomas

The cheapest option is not always the best, though.

### **Type of game**

Certain game species require **specialized capture techniques**. Elephant, rhino, hippopotamus and giraffe are examples of this. Herd animals can be captured effectively in groups using a plastic boma and a helicopter.

### **Area of capture**

The **vegetation** and **habitat** will also determine which vehicles and method can be used.

### **Number of animals**

For capturing large numbers of game **in a single exercise**, a **helicopter** might be needed. This adds to the cost considerably.

## **Planning a Capture Operation**

The following aspects must be considered when planning a capture operation:

- ?? The **physical condition** of the animals, number of **young** and possible advanced **pregnancy**.
- ?? The **sexes** and **ages** of the animals.
- ?? The time of year, specifically relating to **temperature** and **humidity**.
- ?? The safest and **most effective capture method** for the specific type of animal.
- ?? The necessity of using **immobilizing** and **tranquillising** drugs.
- ?? The availability of **vehicles** and single or mass **transport crates**.
- ?? Animal **health requirements** such as the **quarantining** of animals in foot-and-mouth control areas.
- ?? **Nature conservation permits** which may be required for the capture, holding and transport of animals.
- ?? **Import and export permits** between different areas and regions.

## **Principles for Successful Capture**

Wild animals that are captured are **under stress before, during and possibly even after the capture**. Although game capture operations will always contain a measure of stress, **the welfare of the animals involved is always of the utmost importance**. The wildlife manager must therefore ensure that the method chosen also takes this into account, and that everything possible is done to **minimize the stress** on the captured animals.

A basic principle of successful capture is to **eliminate as many factors as possible that cause stress** in the animal. The following should be taken into account:

- ?? The operation should be thoroughly **planned** beforehand.
- ?? Every person involved in the operation should be briefed in detail about their task. **There should not be any unnecessary persons. Observers** are by and large **inexperienced** in game capture and frequently **hinder operations**
- ?? Game capture should take place in the **colder months** of the year, as overheating of the animals can easily occur during capture.
- ?? The condition of animals deteriorates during winter, and the capture should therefore also **not be done too late in the winter**.

- ?? In warm climates it is advisable that the capture should start **early morning** and not stretch over the heat of the day.
- ?? Animals must **never be chased over long distances** or for a long period of time. This is not the way animals react in nature, and it could prove fatal. If the capture boma is far away, the **animals should be given time to rest** and be **herded to the boma slowly**.
- ?? The animals should be **handled** and **disturbed as little as possible**.
- ?? If the animals are kept in **temporary captivity** after the capture, steps must be taken to **ensure they do not injure themselves** in the bomas.
- ?? Bomas should be high enough that animals, especially **antelope, cannot jump over the side**.
- ?? **Noise levels** outside the bomas and crates should be kept very low.
- ?? **Aggressive animals** and **mature bulls** should be **separated from each other** to avoid conflict and injury.
- ?? There should be enough **food and water** in the bomas before the animals are brought in.
- ?? Ensure adequate **protection** against sun, cold and rain.

## Capture Methods

### Immobilizing animals by darting

Animals may be captured by being **injected with immobilizing drugs**. This method is used in the capture of **rare and valuable herbivores on an individual basis**. It requires great skill, scientific knowledge and experience to immobilize wild animals. **Drugs are usually injected by firing a dart from a dartgun into the muscle of the animal, but can also be administered manually, for example when animals are caught in a net.**



**Figure # 1 A dart gun used to inject animals with immobilizing drugs during capture.**

An important distinction needs to be made at this point:

~~the~~ **Immobilizing drugs** are used to immobilize the animal completely, with the animal losing consciousness.

~~the~~ **Tranquillising drugs** are used to sedate the animal, while the animal is conscious of its surroundings, it remains in a relaxed state with limited movement.

In Southern Africa the drugs most commonly used are **M-99** and **Fentanyl**. Both of these drugs are **extremely dangerous to humans and are subject to very strict control**. It is advised that the choice and handling of immobilizing drugs for capture operations be left to a **wildlife veterinarian** with experience in this field.

### **The following principles are important in the darting of antelope and other herbivores:**

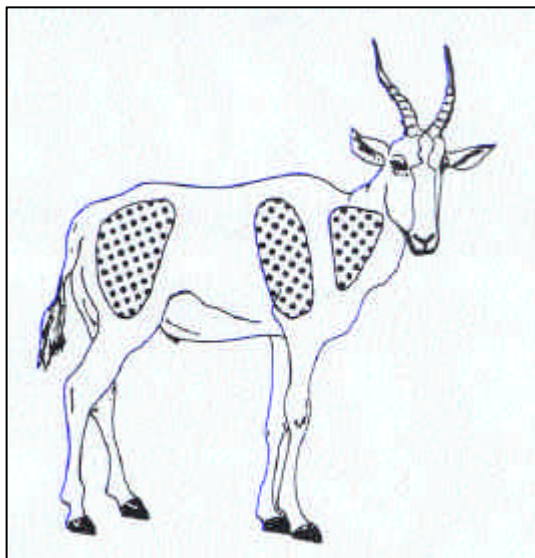
#### ***Selecting equipment***

The distance that the animal can be approached from, thickness of skin, approachability of the terrain and the method of approach being ground or air will determine which strength the dartgun should be.

The **right choice of dart and needle** is also very important, this being influenced by the skin thickness, size of the animal and approach distance.

#### ***Darting from a vehicle***

It is difficult to get the required approach distance from an animal on foot, so **animals must usually be approached in a vehicle**. Animals are often accustomed to certain vehicles, which could be an advantage. **Using roads** to approach the animals is **more successful than driving off road**, which often scares animals. Avoid driving directly at an animal or herd, as this tends to scare them off.



**Figure # 2 Ideal target areas for darting most game species**

**Be patient in selecting the animal to be darted**, and shoot only if the target area (e.g. the hindquarters) is not obscured. **The dart should penetrate at a 90 degree angle**, which reduces chances of the dart bouncing off. Dart sites to use are the rump, hind leg, shoulder and occasionally the neck. The aim here is to have the dart **penetrate into muscle tissue** only. Once the dart is in the animal, **the animal should be kept within sight at all times**, but should not be chased at high speed. If, however, the animal does move out of sight, wait for the appropriate time for the drug to take effect, and then start tracking the animal.

### ***Darting from a helicopter***

Making use of a helicopter for darting is often worthwhile in the capture of **valuable, large or aggressive animals**. An experienced helicopter pilot is of the essence. The **pilot should know the habits and reactions** of different game species, and be **experienced in flying low and turning sharply**. A strong helicopter is necessary to provide a stable platform from which to dart. **Darts should be prepared in advance**, with enough to spare. There should be good communication between the pilot and the ground crew. The best time to fire is **when the animal and the helicopter are moving at the same speed in the same direction**. Once the dart is in the animal, try and herd the animal towards the recovery vehicle. The ground crew must be notified immediately.

### ***Signs that the drug is taking effect***

Some or all of the following symptoms may be seen:

- ?? An ataxic, staggering gait.
- ?? A high-stepping knee action
- ?? The head held high and far back, or the animal may nibble at vegetation
- ?? Impaired vision – the animal may collide with objects
- ?? Loss of sense of fear of people and strange objects
- ?? The animal reacts to noise
- ?? The ears may droop
- ?? Some animals stay on their feet, and others may collapse

### ***Advantages of immobilizing through darting***

- ?? The most effective and safest method to capture rare and valuable animals
- ?? It is more economical than other methods when only single animals have to be caught
- ?? Large and aggressive animals are manageable and can be loaded and transported while immobilized

### **Disadvantages**

- ?? Approach distance to dart an animal is often not adequate.
- ?? Ruminants that collapse on their side can bloat or choke when rumen content is vomited.
- ?? If the drug is not injected into the right muscle, or the dart does not discharge properly, the animal will not be immobilized effectively. The animal could run too far and overheat or collapse from exhaustion.
- ?? The tracking of animals in dense vegetation or rocky areas can be difficult, and animals may not be reached in time.
- ?? Use of a helicopter can be costly.
- ?? Animals can injure themselves if they collide with a tree or fence.
- ?? Over dosage could be fatal if an antidote is not administered in time.



**Figure # 3 An immobilized elephant is kept cool by an assistant spraying it with water. The elephants ear is folded forward to protect its eye from the sun. (Photo: Reuters)**



**Figure # 4 An elephant is loaded into a recovery vehicle with the use of a crane. Once inside the recovery vehicle an antidote is administered to revive the animal.**

## **Capturing Of Carnivores**

### **Capture methods**

The capture of carnivores can be done by using **cage traps** or **camp traps that lure the animal with bait**. These are best constructed and operated by professional capture teams with experience in this field. It is recommended that **carnivores be tranquillised during transport**, to facilitate handling and loading, and reduce stress during transport.

It is imperative that an experienced person, preferably a **wildlife veterinarian**, take **full responsibility for the immobilized animal**, as any carnivore is capable of inflicting serious injury to handlers.

### **Handling of immobilized carnivores**

An immobilized carnivore could collapse in an unnatural and inappropriate position, which could result in injury. The **animal should be placed on its side, with its head extended**. The **tongue should be kept wet** during immobilization. **Regurgitation during immobilization is life-threatening to a carnivore**. Pieces of meat that are regurgitated should be removed from the mouth as soon as possible to avoid suffocation.

The immobilized animal **should be turned from side to side every 20 minutes**. To **prevent overheating** the animal should be cooled down after capture and should never be left in the sun. Direct sunlight can also cause damage to the eye, and the

**eyes should be protected by a blindfold.** An **immobilized animal** is still able to **perceive loud noises**, so every effort should be made to reduce the noise level around the animal.

The **vital signs** – respiration rate, pulse rate, blood pressure and temperature - should be checked continually.

All carnivores can be lifted by 1 – 4 persons, depending on the species and the equipment available. A **good stretcher** will be sufficient for loading and off-loading all the larger species, while smaller species can be lifted by hand. All carnivores should be fully immobilized when loading and off-loading. Animals should be loaded as soon as possible after capture.

## **Elephant Capture – a Pictorial Essay**

By

**Kathy Whittaker**

The final section of this Component has been provided by **WildlifeCampus** graduate **Dr. Kathy Whittaker (MD)**.

Dr. Whittaker was fortunate enough to attend an **elephant translocation** operation, in the **Madikwe Game Reserve**, and kindly supplied the text and imagery describing this event.

On the 10th of October 2001, I was privileged to be able to watch the capture of a breeding herd of **elephant** for translocation.

**Madikwe Game Reserve** has an abundance of elephant at the moment. The Parks Board is selling off elephant to new reserves that require them. Whole breeding herds are taken in one go, with a couple of bulls captured at a different time to constitute a complete breeding unit. A new reserve in the **Eastern Cape** required a herd, so here we were, ready to catch them and put them on the trucks for **transportation**.

Over the previous few days, the ecologist in conjunction with Park staff had been travelling around the park looking for **breeding herds** of the right size, and particularly of the right temperament. A breeding herd of **6 adult females with five juveniles and one baby** was identified and followed over the day. When he was happy that this was a good group to translocate, a day was set for the capture.

At 6.30 the next morning we were at the appointed meeting place, waiting for the teams to arrive. The early start was necessary as the ambient temperatures were up

to 30 °C [**86 °F**] by the **middle of the day**. The plan was to have the elephants waving goodbye by mid morning. These creatures had a 30 hour, 1000 km drive ahead of them!

First the vet arrived. He started loading up his dart guns. He used **M99** (etorphine) at an estimated dose for each elephant based on **body size**. Each dart that he prepared was labelled i.e. adult 1, adult 2, calf 1 etc. These darts were very interesting to see. Each dart has a **propellant chamber** containing **acetic acid** in one end and **bicarbonate of soda** in the other. A metal plate with an eccentric weight separates these. When the dart gun is fired, it causes the **metal plate** to move forward. Because the weight is unevenly distributed, it rotates slightly and allows the **two chemicals to mix**. **Carbon Dioxide** is produced which then shoots the actual dart needle with the **etorphine** into the animal's hide. He also made ready all his **antidotes** to the M99 i.e. **M50/50** plus tranquillisers and other medications needed. His plan was to fly above the herd in a helicopter, with an extremely skilled pilot. The helicopter would "herd" the elephants into a reasonably **open area**, then he would dart them from a height of about 10 to 15 metres above each elephant.

The area aimed for would be **high on the buttocks**, to enable ease of recovery of the dart, and prevent the elephant from lying on it while unconscious.

Then arrived the vehicles – and impressive they were too! Some of these vehicles were equipped with impressive cranes and winches.

The vet then took off in the helicopter, and the long train of vehicles followed down the road. Within a few short minutes, the herd had been gently encouraged to move into a fairly open area close to the road, and with some skilful low flying, the elephants had all been darted, and were gently collapsing onto the ground.

Then came the action! The team split up and two at a time, rushed to each elephant. Immediately, their **eyes were covered** by their ears, and a stick used to keep their **trunks** from collapsing closed.

Each elephant's **pair of legs** were bound together with strong strapping.

One of the ecologists then took a **tissue sample** from the ear of each elephant for genetic studies.

The dart was **recovered** from each elephant, as these can be reused.

Each elephant was marked with a **spray painted number** with a corresponding number for her calf, to enable mother and calf to be loaded together.

Then each elephant was **hoisted** with the cranes onto the **flatbed recovery vehicles**, to be taken off to the main loading and transport vehicles.

The matriarch was fitted with a **radio collar**, to enable future tracking in her new home. She was too heavy to be lifted using the cranes, so was winched up onto a **special trailer** to be taken to the transport vehicles.

By now, the first of the elephants were being loaded into the transport vehicles, mother and calves together.

You will have noticed in earlier pictures of the vehicles, that there was one large **transport truck**, and a smaller "**crate**" that could open both sides. This enabled elephants to be loaded into the transport truck at the **same time** as elephants loaded into the crate.

Once the elephants in the loading truck were moved backwards to the front of the truck, then the loading truck reversed up to the crate, and the elephant there was encouraged to move into the loading truck. This speeded up the process immeasurably, basically being able to **load two elephants** at a time.

Once each elephant was in the truck, the vet administered an **antidote** to the immobilization drug, and the doors were hastily shut. Within a few minutes, the elephant was up on her feet.

Using a **compartmentalized** sliding door system, she was encouraged to move to the front of the truck, the sliding door was closed and the back compartment was then opened to start with the next elephant unloading. Systematically, each elephant was loaded and moved. Last to go in was the female with the smallest calf. It was so gratifying to see the baby suckling within about ten minutes of being loaded.

All the elephants were **hosed down** in the truck, and **tranquillisers** administered by injection through small openings on the side of the truck.

Within **two and a half hours** from the time the vet took off in the helicopter, the elephants were ready to undertake their journey to their new home. The speed and efficiency of this game capture team was incredible and extremely impressive.

My sincere thanks go to the vet and ecologist plus the capture team for allowing me to witness this amazing event.

We hope you have enjoyed this component. Should you wish to test your understanding of the material, simply click the "**Take the Test**" link located in the **top right hand corner** of the **online** page version of this component. If you are not yet registered as a student, you will be asked to do so before you can access the test.

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