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## Leopard Collaring & Monitoring

### INTRODUCTION

The main objectives of the leopard research in Central Mozambique is to determine leopard home range sizes and prey selection. To achieve this six leopards needed to be captured and collared. Capturing leopards without injuries is a challenge, expensive and requires many man hours. While cage trapping is the most common method used in leopard capture, capture injuries to leopards, and other non-target animals, are very common. Therefore, alternative methods that are potentially less damaging to the leopards, and other carnivores, and possibly more cost effective are being investigated.

### DIFFERENT CAPTURE METHODS

*There are generally three different methods used to capture leopards, these include **free darting, cage trapping and foot snares**. Each has its own advantages and disadvantages that will be discussed below.*

#### 1. Free Darting

*Free darting is where a leopard is darted from a vehicle, hide or opportunistically. Normally a bait is set and monitored until a leopard starts feeding on the bait. The bait is then approached by the capture person and the leopard is darted from a vehicle or from a hide.*

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>Selective, only leopards will be darted;</li> </ul>	<ul style="list-style-type: none"> <li>Dangerous to the animals, a darted animal may fall from the tree and injure itself. This can be reduced by using drugs to calm the leopard while feeding on the bait;</li> <li>Dangerous to capture team, a darted animal may run off, particularly if the tranquillizer is only partially injected. This increases the risk of injury to the capture team as the leopards needs to be tracked and located (normally at night). The partially injected drug may also increase the vulnerability of the leopard to attack from other animals;</li> <li>Good marksmen, the leopard will normally be darted from about 30 m at night;</li> <li>Leopards must be accustomed to vehicles and humans, this is rarely the case;</li> <li>Time consuming because darting can only start when the leopard starts to feed on bait.</li> <li>In summary, although this method may initially sound great there are several serious associated risk factors. The most important being that a leopard may be partially anesthetized which may cause them to flee resulting in the necessity of searching for it. Given the reputation of leopards this is not something one wants to do at night. A charge by one of these animals would most probably result in a dead or very sore leopard or trapper.</li> </ul>

## 2. Cage Trapping

*This method is the oldest and most common method used to capture leopards. A metal cage with a sliding door set on a trigger mechanism that is triggered either using a bait or a foot plate, which results in the trap door falling closed.*

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• Easy and can be set up by anyone;</li> <li>• By-catch can be released without anesthesia;</li> <li>• Non target species can be avoided by setting cage in trees, or increasing foot plate strength or using large chunks of bait;</li> <li>• Require only simple darting equipment (blow pipe, jab stick, hand injection).</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Tooth damage to captured carnivores can be expected, especially if cages are not checked frequently;</i></li> <li>• <i>Cages are big, intrusive structures and leopards can be wary of this, especially if they are persecuted by people;</i></li> <li>• <i>Takes a lot of man power to set up each cage therefore can only be set up next to roads and are not easily moved;</i></li> <li>• <i>Non selective in most cases;</i></li> <li>• <i>Expensive to build proper cages;</i></li> <li>• <i>Not very effective and requires many trapping days.</i></li> </ul>



Cage set in tree to avoid hyenas and lions, this however, can be even more intrusive for leopards and they don't enter the cages, making it not very effective.

Leopard cages are big and heavy, it is therefore quite difficult to set up and move around the reserve



Trapped carnivores scratch at the floor of cage traps in their attempts to escape, frequently resulting in damaged foot pads and claws. Leopards, lions and hyenas in particular bite the cage and are likely to break some teeth. Releasing a carnivore with damaged teeth obviously puts the animal at a disadvantage possibly reducing its hunting success. Therefore all effort must be put in place to prevent these injuries happening to all captured carnivores.



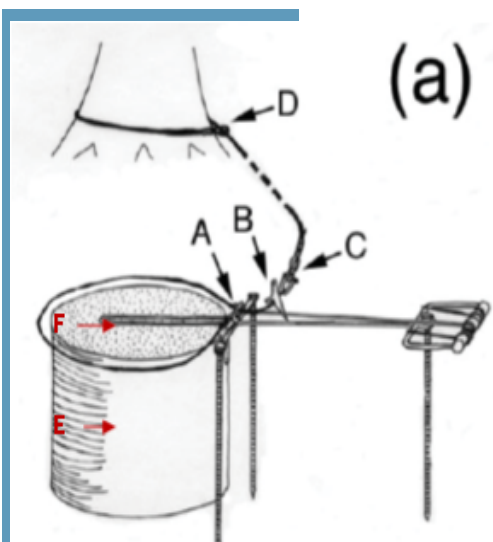
Above two pictures show how wary leopards are when they enter a cage. This He Wary male leopard sniffed the cage for a long period before he entered the cage. The only reason this male was caught was because we used the leopards own kill as bait. It is very common for mature leopards to avoid cage traps in areas where they have been heavily persecuted in the past.

### 3. Foot Trapping

Foot snares have been used extensively in the USA, UK and Sweden for capture of coyotes, bobcats, mountain lion, bears, red foxes, wolves and various other animals. Recently (2001), Darien Simpson, a professional trapper from California, made some adjustments and refinements in foot snares which he used to catch Mountain lions quite successfully. He has since use this method to capture various feline species catching carnivores for a host of researchers' worldwide.

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• Very safe for the animals;</li> <li>• Very easily transported;</li> <li>• Highly efficient;</li> <li>• No more than 2 people required to set traps;</li> <li>• Cheap to make;</li> <li>• Effective for wary leopards</li> </ul>	<ul style="list-style-type: none"> <li>• Large non target species need to be darted;</li> <li>• Selective only up to a certain size;</li> <li>• Needs a well-trained person to set traps;</li> <li>• Negative perception among the public, due to the use of the word 'snare' in the name</li> </ul>

(taken from Laurence Frank; Trapping methods for lions)



A foot snare setup consists of a snare loop that rests on a thrower (A), grounded at (B), which is connected via a swivel and shock absorber (at C) to an anchor (D). We plan to use a 4 way cross stake to anchor the leopards to the ground, using a tree only as a secondary anchor. A sponge (E) is placed under the trigger (F) that fires the thrower. The 'snare' locks in place at a certain size with a simple piece of angle iron; this makes it possible for small animals to escape without injuries. The trigger can also be set a different pressure ratings which would also allow small non targets to cross device without triggering it.



Bait is used to attract leopard to the site. The target is then guided, with the aid of some sticks, to step into the snare. Alternatively, brush can be used (below) where no guiding sticks are used to guide the leopard to the site.

## 4. Hounds Darting

Specialized hounds have been used extensively in the hunting & research of Mountain lions in the USA as well as leopards in Africa for a number of years. This is a very effective method of darting and capture given the type of terrain we are monitoring in. Being semi coastal forest there is no rocks or caves for the leopard to fight with the dogs on the ground and an abundance of large trees allows the leopard to remain calm while being approached for darting.

<i>Advantages</i>	<i>Disadvantages</i>
<ul style="list-style-type: none"><li>• Very specie specific;</li><li>• Highly efficient;</li><li>• Most effective way to target a specific cat for collaring.</li><li>• Small team of max 4 people required.</li><li>• Effective for wary leopards</li></ul>	<ul style="list-style-type: none"><li>• Essential to catch the cat in net once tranquilized to avoid injury</li><li>• Costly to hire specialized hounds to bay the leopard.</li><li>• Hounds are susceptible to trypanosomiasis from tsetse flies.</li><li>• Possible injury to hounds if leopard doesn't tree immediately.</li></ul>



Large Male Leopard treed prior to darting.



Quad bikes used for quick access to the leopard in the sandy rivers.

## IDENTIFIED ADDITIONAL LEOPARD FOR COLLARING



Female Leopard with 3 cubs



Large Male Leopard