www.roavs.com EISSN: 2223-0343
RESEARCH OPINIONS IN ANIMAL & VETERINARY SCIENCES

A survey of snares causing injuries to wild animals in Serengeti National Park, Northern Tanzania

Morris Kalist Ndewinyio Kilewo[1] and Donald Gregory Mpanduji [2]

[1]Ecological Monitoring Department, Tanzania National Parks, Box 3134 Arusha Tanzania, [2]Faculty of Veterinary Medicine, Sokoine University of Agriculture, Box 3020, Morogoro Tanzania

Abstract

A study was carried out to investigate the types of injuries caused by snares to wild animals in Serengeti National Park (SNP) northern Tanzania. Snared animals were purposefully immobilized, snares were removed and injuries were classified based on severity. All immobilized animals were chemically revived after assessment and management of injuries including treatment where necessary. A total of 140 animals from 10 different species were successfully immobilized and snares were removed. Zebra (*Equus burchelli*), giraffe (*Giraffa camelopardalis*), lion (*Panthera leo*) and elephants (*Loxodanta africana*) were affected more than hyena (*Crocuta crocuta*), wildebeest (*Connochaetes taurinus*), buffalo (*Syncerus caffer*), water buck (*Kobbus ellipsiprymnus*), hartebeest (*Alcelaphus buselahus lichtensteinii*) and hippo (*Hippopotamus amphibius*). Majority (70%, n = 98) of snared animals were caught by the neck and fewer (30%, n = 42) had snares tied on other body regions (leg, trunk and horn). Forty percent (n = 56) of caught animals had no visible injuries while 60% (n = 84) showed different levels of severity that ranged from mild injury (9.3%, n= 13), moderate injury (15.7%, n = 22), severe injury (17.9%, n = 25) to very severe injury (17.1%, n = 24). No significant differences were observed between different injury scores (p= 0.3620) among snared animals. Poaching by snaring appeared to be a big conservation problem in Serengeti National Park. The study recommends further research on the spatial and temporal occurrences of snares and snaring in order to determine the hotspot areas that would require special anti-poaching efforts from the park authorities.

Keywords: Snares; bush meat, wildlife; conservation, anti-poaching

To cite this article: Kilewo KMN and DG Mpanduji, 2012. A survey of snares causing injuries to wild animals in Serengeti National Park, Northern Tanzania. Res. Opin. Anim. Vet. Sci., 2(4), 237-242.

Introduction

Snares are the simplest, non selective and common traps which are very effective means for capturing free ranging wild animals. Snares are made of metal wires, often taken from worn off tyres, from abandoned telephone lines, fashioned from nylon fishing line or rope, vegetable fibres and for the larger species, steel winch cables (Seasholes, 2002). Since snares are cheap to produce and easy to set in large numbers, it makes them the number one trap preferred by most illegal bush meat hunters. The choice and location for setting the snares mostly depend on targeted animal (s), season of the year, and accessibility by game scouts (Arcese at al., 1995). For instance, wire nooses (snares) are mostly set on game trails leading to water, usually high up in trees to enable capture of tall animals like giraffe, around communal dung-piles to target territorial antelopes such as dikdik and in freshly burnt grasslands where fresh green shoots attract large numbers of herbivores. Where large number of animals are to be captured, sometimes extended brush fences are created to funnel animals into gaps riddled with snares, where they are trapped in large numbers. Snares are cruel devices which are non-selective (Hofer et al., 1996; Rochlitz et al., 2010). They cause slow, painful loss of organs and agonizing death to all animals regardless of the size. Snares tightens and cuts deeper and deeper into a limb or trunk, sometimes severing it entirely or leading to septic wound (Batamuzi et al., 2005).

Corresponding author: Mpanduji Donald Gregory, Faculty of Veterinary Medicine, Sokoine University of Agriculture, Box 3020, Morogoro Tanzania. Email: dgmpanduji@suanet.ac.tz

Generally while some wild animals are trapped others may escape with or without snares, and others suffer unnoticed to death (Rochlitz et al., 2010). The general objective of this study was to determine the effects of snaring on the welfare and conservation of wild animals in Serengeti National Park with specific objectives of determining the type of bodily injuries caused by snaring in wild animals.

Materials and Methods

Study area

The study was carried out in SNP located in northern Tanzania at Latitude: 2° 19' 60 S and Longitude: 34° 49' 60 E. The park is the second largest among the 15 currently established national parks in Tanzania with an area of 14,763 square kilometres. The park is part of the larger Serengeti ecosystem, which covers about 25 000 square kilometres. The park is the cornerstone of the Serengeti ecosystem; surrounded by the Ngorongoro Conservation Area, four Game Reserves (Maswa, Ikorongo, Grumeti, and Kijereshi), Loliondo Game Controlled Area (all in Tanzania), and Maasai Mara National Reserve in Kenya (Fig. 1).

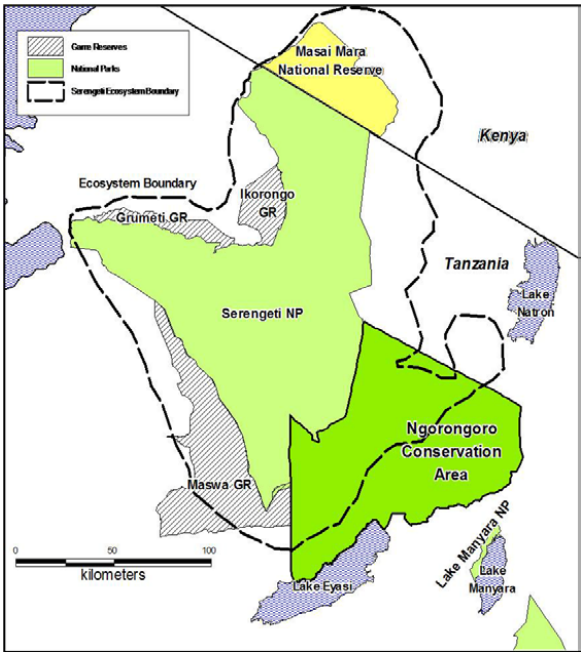

Fig. 1: Map of Serengeti National Park and adjacent wildlife protected areas in the Serengeti ecosystem, Source: Kideghesho (2010).

Study animals and sampling

The present study was carried out from July to September 2011. During this time, field work and retrieving archived data available from 2001 to 2011 were carried out. The field work concentrated on the central zone of the park which is highly utilized by tourist. Snared animals were purposefully immobilized according to protocols described by Kock et al. (2007). Animals were approached by a motor vehicle or a helicopter and depending on the specie concerned; were either immobilized or anaesthetized by chemical alone or combined with physical restraint techniques. Immobilization or anaesthetic drug (s) were prepared in dart syringes and propelled by Dan inject ® dart gun to selected target site on the animal's body, preferably the rump, neck or shoulder.

Herbivores were immobilized by Etorphine Hydrochloride (M99®, Captivon, Wildlife Pharmaceuticals South Africa, Karino) in combination with Xylazine Hydrochloride 2% (Ilium Xylazil-100® Troy Laboratories, Smithfield), while carnivores were anaesthetized with Ketamine Hydrochloride (Ketamine HCl®; 100 mg/ml/Kepro, Deventer, Holland) in combination with Medetomidine (Domitor®; Orion Corporation, Espoo, Finland); or Zoletil®; (Tiletamine HCl + Zolazepam HCl); Virbac Laboratories, Carros, France). In herbivores, Etorphine HCl was reversed by Diprenorphine Hydrochloride (M5050®, Captivon, Wildlife Pharmaceuticals South Africa, Karino) while Medetomidine was reversed by Atipamezole (Antisedan®, Orion Corporation, Espoo, Finland) but where a combination of anaesthetics and pre-anaesthetics was used; the pre-anaesthetic component was reversed by appropriate antagonist and anaesthetics (Ketamine and Tiletamine-HCL) were left to be metabolized by the animal itself.

Wounds found on animals were appropriately managed by the method described by Buffa et al. (1997) and Batamuzi et al. (2005). Bodily injuries were assessed as described by Alibhai et al. (1988), and modified by assigning scores based on the level of severity. Five scoring system (injury score 1-5) were designed and applied as follows:

Score 1 (No injury): Absence of visible physical trauma at the site of attachment of the snare on the animal's body. This category does not include trauma that are not visible by naked eye but could have developed in the tissues below the skin at the time when the animal was trapped by the wire snare during the process of struggling in attempt to get rid of the snare.

Score 2 (Mild injury): Refers to physical trauma of the skin also known as abrasion involving the epidermis.

Score 3 (Moderate injury): Refers to physical trauma also termed as lacerations. Wounds of this category involve the epidermis, dermis and muscle tissues just underneath the skin.

Score 4 (Severe injury): Refers to physical trauma which involved the epidermis, dermis, muscle, tendon, nerve and sometimes large blood vessels. These type of injuries can be fresh but with deep seated wound and no evidence of secondary infection.

Score 5 (Very severe injury): Wounds of this score can either be fresh or old mainly in the form of lacerations which involve the epidermis, dermis, muscle, tendon, nerve and large blood vessel with varying degrees of secondary microbial infection. In addition, the trauma may be extensive to the extent of forming flaps and/or avulsion of tissue, and may be infested with parasitic larvae "myiasis" and/or loss of organ or organ dis-function.

All immobilized animals were photographed, important biodata particularly on the species, site of snare on the animal's body and the type and score of bodily injury were noted and summarized to enable statistical analyses.

Statistical analysis

Descriptive statistics was carried out for number of snared animals of each species encountered. The effects of snares were determined by comparing the score of bodily injuries from the rescued animals, and the number of animals killed over time by using Prism 3.0 computer software.

Results

During the study a total of 140 different animals from 10 species were darted to remove and treat injuries associated with snares and snaring. In about 40% (n= 56) of immobilized animals, snares were loosely clung and caused no visible injury, while 9.3% (n= 13) was mild injury, 15.7% (n= 22) moderate injury, 17.9% (n = 25) severe injury and 17.1% (n= 24) very severe injury (Table 1). However, this observation showed no significant difference on the five categories of injury score (P=0.3620) between the number of animals found without visible injury, mild, moderate, severe and very severe injury.

Table 1: List of snared animals and corresponding score of bodily injury attended in 2001 to 2011 (n=140)

Species	Uninjured	Mild	Moderate	Severe	Very severe	Total	%
Zebra	26	4	5	11	4	50	35.7
Giraffe	20	5	8	5	4	42	30
Lion	1	1	7	6	3	18	12.9
Elephant	4	1	1	1	7	14	10
Spotted hyaena	1	1	0	2	4	8	5.7
Wildebeest	2	0	0	0	1	3	2.1
Buffalo	0	0	1	0	1	2	1.4
Waterbuck	1	0	0	0	0	1	0.7
Hartebeest	1	0	0	0	0	1	0.7
Hippo	0	1	0	0	0	1	0.7
Total	56	13	22	25	24	140	100

Fig. 2: A giraffe (left) with mild injury of the neck region; and a zebra (right) with mild injury of the back and brisket areas caused by wire snares.

Fig. 3: A lion with moderate injury of the neck region with signs of healing process.

Fig. 4: A zebra with fresh extensive laceration around the neck. This animal had signs of severe injury.

Most of the snares, 70% (n=98) were found locked around the neck while 30% (n=42) of snared animals had snares on other sites of the animal's body including the leg, trunk or horn. Sex wise, large proportion of injured or snared animals, 70.7% (n= 99) were males and small percentages 29.3% (n= 41) females. Age wise adults were 82.1%, (n= 115), sub-adult 9.3% (n= 13) and juvenile 8.6% (n= 12). The details of the wound scores from rescued snared animals are shown on Table 1 and pictorial presentations of different types of lesions in Figures 2, 3, 4 and 5.

After successful capture, all wounds were managed accordingly. Depending on the type of injury the process entailed removal of the wire snare, shaving and cleaning of surrounding area with water followed by antiseptic solution, wound debridement and removal of necrotic tissue and finally wound dressing by application of antibiotics, fly repellent and injection of Ivermectin in order to prevent infection and annoyance from maggots and/or flies.

Fig. 5: A head of a spotted hyaena (top) with extensive laceration extending laterally and caudally from the mouth commissure towards the back below the left ear; and the distal portion of the hind leg of a giraffe (bottom) with extensive laceration (involving the skin, muscles and tendons) invaded by fly maggots "myiasis". The two pictures represent "very severe injury" cases.

Discussion

The present study shows that, illegal hunting by snaring is a big problem in Serengeti National Park (SNP). For ten years, over 100 free ranging animals from 10 different species were successfully relieved from sufferings inflicted by snares. These animals were observed on a small administrative portion of the park-the central zone. The larger areas of the park which cover four other zones (northern, southern, eastern and western zones) were not covered in this exercise. Animals which were rescued were the ones opportunistically spotted by tourist and tourist guides and reported to the veterinary unit or ecology monitoring department. Others were those observed during active surveillance conducted during the present study. It is clear from the present observation that, many animals were not observed particularly on those areas that were not covered during this study and possibly ended up suffering severe pain and possibly died in agony.

The observation in the present study calls for increasing anti-poaching efforts in SNP. The SNP management has a special unit to deal with illegal hunting. This unit has been carrying its activity routinely in the five park administrative zones aforementioned. Interestingly however, animals entangled by snares have been observed to increase in recent times (Mtanzania, 2011). There is therefore a need to strategise anti-poaching surveillance to cope with increasing incidences of snaring in SNP. In order the anti-poaching activities to be effective, the present findings recommend a detailed study on the spatial and temporal distribution of snares and snaring to understand in-depth the behaviour of illegal hunters' and the hotspots areas that may require special attention.

In general, it is difficult to quantify the welfare impact of snares to affect free ranging wild animals. However, the welfare issue of concern ranges from apparently mild to extremely severe suffering and death among the animals that manage to break free whilst encircled by snare (Rochlitz et al., 2010). The short and long-term welfare concern of snared animals include injury, pain, chronic stress from restraint, nervousness and rage; fear of predation or capture; and reduced ability to survive following escape; reduced ability of injured escapees to forage, move and hence compromise health status; thirst, hunger and exposure to cold or hot weather when restrained for long periods; animals that manage to free themselves from entangled snare or that are immobilised and snare removed are likely to die from secondary infection, debilitation or from capture myopathy within a period of days or weeks.

In most cases, snares cause traumas leading to formation of wound or organ loss in animals (Quiatt et al., 2002). Other animals bleed to death or get infected and die. In order to maintain the welfare of the injured animals, proper intervention is a prerequisite. This includes good protocol for immobilization and anaesthesia, management of wounds which depend largely on time lapse, extent of wounding and whether or not there are signs of infection (Batamuzi et al., 2005).

Naturally mild and moderate injuries have high chances of healing with no complications; while severe and very severe injuries most often have marginal chances of healing without complications. The presence of a metal wire snare on the animal's body causes continuous friction and irritation and therefore delays the normal body healing processes. Condition of the affected area becomes even worse especially when secondary microbial infection sets. Injuries from snaring have been shown to result into deformities (Waller and Reynolds, 2001) and functional disability (Quiatt et al., 2002; Tumusiime et al., 2010).

Acknowledgments

The authors wish to acknowledge the financial support from Frankfurt Zoological Society (FZS) and the Tanzania National Parks for granting study leave to Kilewo Morris Ndewinyio.

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