# PHYSICAL HAZARDS IN AEPYCEROS MELAMPUS CARCASSES KILLED FOR MEAT PURPOSES BY AERIAL AND THORACIC SHOTS

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## I. INTRODUCTION

Physical hazards, such as bullet particles and bone splinters in wild meat, could be introduced by processes applied whilst killing game animals. Since game meat is generally eaten in most countries, these hazards may pose a health risk to non-suspecting consumers and must therefore be identified, evaluated, and removed from meat [1]. The extent of dispersion of these hazards in carcasses harvested for human consumption has not been sufficiently investigated. As a result, the objective of this investigation was to evaluate bullets particles and bone splinters contributed by the two mostly accepted game meat animals killing during a commercial harvesting plan

## II. MATERIALS AND METHODS

This study describe and quantify the occurrence of physical hazards in animals shot by aerial (helicopter) shotgun targeting the head and higher neck region (n = 12) and single-projectile/free-bullet rifle shots targeting the thorax region (n = 36) of impala killed as part of game meat production. Forequarters of carcasses were X-ray imaged [2]. The sizes of significant hazards ranging between (2-6mm; 7-25mm and 25<mm) were then recorded. A Chi-square $\chi^2$ test ($P < 0.05$) was conducted to compare the association of the contributed hazards by each killing method.

## III. RESULTS AND DISCUSSION

The results indicated that both killing methods could contribute bones and bullets particles, big enough to cause harm when ingested (Table 1). Bullet particles and bone splinters of significant sizes were introduced by the killing method adopted. A high incidence of bullet particle and bone splinter sizes from the rifle thorax shots ($P = 0.000$) and helicopter shot ($P=0.040$) were found.

Table 1. Sizes and numbers of bullet fragments and bone splinters

| Size (mm) | Rifle (n = 18) | | Shotgun (n = 12) | |
|---|---|---|---|---|
| | Bullet Fragments | Bone Splinters | Pellet Fragments | Bone Splinters |
| 2–6 | 58 | 7 | 44 | 11 |
| >6–25 | 7 | 38 | 6 | 3 |
| >25 | 1 | 9 | 1 | 3 |
| Total | 66 | 54 | 51 | 17 |
| | $\chi^2$ =67.24; (P< 0.000) | | $\chi^2$ =6.4; (P= 0.040) | |

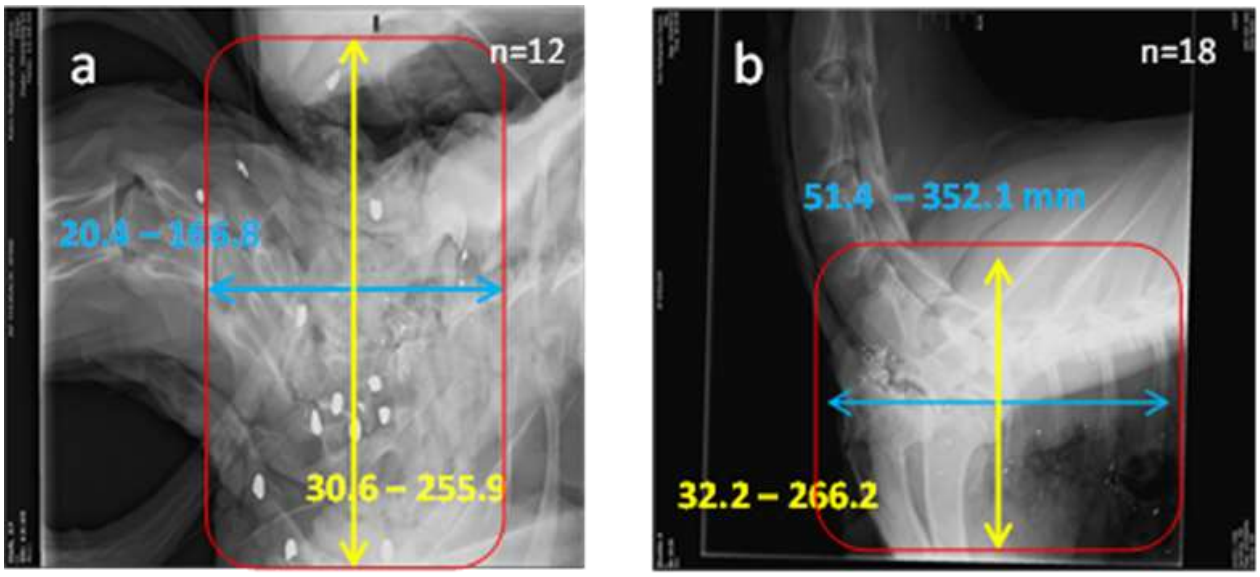


Figure 1. Carcas surface area affected by different ammunition from killing methods. (a) Typical helicopter kill showing pellets' dispersion ranges (mm) and (b) bullet particles' dispersion ranges (mm) from rifle shot kill

The dispersion of both physical hazards could cover a wide distance of up to >332 mm between significant particles. Meaning a wider portion of the meat could be contaminated by these hazards and should subsequently be trimmed and the affected meat condemned (Fig 1). However, if undetected many unsuspecting consumers could be left exposed to these physical hazards.

## IV. CONCLUSION

Game killing for meat purposes methods, i.e. with a rifle targeting the chest cavity should be refined and these shots must be regulated especially when the meat will be used for human consumption. These regulations should include the type of bullets chosen by hunters. This will ensure that bullets less fragmenting on impact are selected for meat production, compliance with regulated game meat animal-killing protocols, and the placement of shots to allow only head or high neck shots for game meat animals slaughtered/culled for human consumption. It is noted that wider carcass surfaces maybe affected by the selected killing plan. As a result emphasis should be focused on the detection and removal of these hazards during meat inspection.

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