

Analysis of environmental cost and economic benefits of sport hunting in Zimbabwe

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Abstract—Sport hunting is being criticized by animal welfare activists on ethics and moral grounds. They argue that the practice does not respect the intrinsic value of the animals. However, conservationists support sport hunting for socio-economic benefits gained from it. This resulted in the on-going debate on whether the big five animals should be treated as commonly preserved for the intrinsic value to nature or as privatized commodities which can be traded. The study is based on Zimbabwe's debate on sport hunting after the controversial killing of the famous "Cecil the Lion" using a bow and arrow at a cost of \$55 000 United State dollars. The study compares the benefits and the environmental cost of hunting in order to recommend sustainable trophy hunting mechanisms. The study used published articles available on Google scholar, Web of Science (WOS) and Taylor and Francis (T&F) because they are authentic and easily accessible. The study gives a critique online comments from Zimbabwe's main newspapers (The Herald and Newsday), showing opinions of the Zimbabwean citizens and non-citizens regarding the killing of Cecil the lion. The study recorded a total of 54 online comments which were either supporting or against sport hunting. Results from the study suggest a mixed opinion on the issue as some people accept trophy hunting for the socio-economic benefits that the country derive whilst others criticise the hunting on the basis that animals possess intrinsic value not instrumental value. The study's recommendation is that hunting policies must have provisions to account for sustainable utilisation of wildlife resources and proper management of the finance derived from wildlife resource to support wildlife conservation programmes.

Keywords—Sport hunting; Socio-economic benefits; Intrinsic value; Perspectives, Cecil the lion

1 INTRODUCTION

Sport hunting is whereby a tourist engages in hunting usually in the company of a professional guide, with the objective of obtaining a "trophy" (i.e. horns, tusks, skin, etc.) from a rare or exotic animal. The term "sport hunting" is noted to be used interchangeably used with "trophy" or 'sport' hunting [1]. The tourist hunter who hunts the animal is doing it as a sport and is paying a large sum of money for the hunt for his/her leisure, ego or sport but the animal welfare is not taken into consideration. Sport of killing wildlife animals (trophy hunting) is being criticized by animal welfare activists suggesting that it is unethical and also immoral [2], [3]. However sport hunting has been regarded as a major source of foreign currency for developing countries such as South Africa, Namibia, Zambia, Tanzania and Zimbabwe [1], [4], [5]. Governments and the respective hunting Safari operators in these countries are supporting sport hunting on the utilitarian grounds and wildlife animals are given a value of utilization.

This form of consumptive tourism has raised a lot of controversial issues between animal welfare activists and conservationists. The big five game animal species on the basis of high income generation documented are lions, leopards, rhinoceros, buffalos and elephants. Sport hunting is a game for rich people who are willing to spend money on killing of wildlife species in competition for trophy size, experience they got in the wild and leisure (entertainment) as outlined by Veb-

len theory of conspicuous consumption [6][7]. This type of hunting usually generates income for conservation projects (economic incentives) which is the greatest reason for its practise in many countries [3], [4], [8]–[10]. However, the ethics of individual consumption of hunting and of environment, that is, whether big five animals should be commonly preserved for the intrinsic value of the nature or as privatized commodities which can be traded is an ongoing debate. The individual consumption theory of Veblen is overlooked because of the economic benefits that hunting is bringing to the developing countries and to the local communities. Hunters are much more interested in the big five animals hence the big five animals are more expensive because of the high demand. Small game (impalas, kudus, and sables) are hunted as complementary to the big five animals. According to the philosopher Regan 1983, the use of animals in research, for entertainment, or as food are wrong in principle but not because of the pain and suffering they cause. These practices violate animal rights by denying the intrinsic ethical value that animals possess hence hunting of animals is not recommended under the biocentrism theory.

Hunting has been going on for the past decades in some African countries namely Zambia, Tanzania, Namibia, Zimbabwe and South Africa [11]. However, other countries have banned trophy hunting. For instance, Botswana banned tro-

phy hunting in 2011. However this ban is being criticized by other conservationists and individuals who are predicting that the move will have a significant impact on the income generation of the Botswana [1]. The authors view this ban on Botswana hunting as a judgmental conclusion that is not supported by scientific facts; a reason why other countries could not ratify the banning of trophy hunting due to lack of adequate information.

2.0 Trophy hunting in Zimbabwe

2.1 History of trophy hunting in Zimbabwe

In Zimbabwe, the area occupied by recreational parks, national parks, sanctuaries and safari areas (collectively called the Wildlife Estates) totals about 13 percent of the total land area. The Zimbabwe Parks and Wildlife Management Authority (ZPWMA) is the authority responsible for wildlife resources throughout the country, including commercial and communal areas [12]. The utilization of natural resources is either through non-consumptive or consumptive forms. Non-consumptive use involves tourist facilities which include lodges, chalets, picnic and camping sites and recreational activities such as game viewing through national parks, canoeing, boating, photographic safaris, walking and pony trails and other ecotourism activities. Consumptive utilization entails the sustainable exploitation of natural resources and includes fishing and hunting through safari areas. According to the Parks and Wildlife Act (1975), it is permissible for the private landowners and communal areas to utilize the wildlife on their land but ZPWMA is still accountable for the welfare of the animals.

Safari areas are areas where hunting is permitted but strictly controlled through a quota system. Quotas are allocated by ZPWM to both Safari areas and hunting concessions. Under the Parks and Wildlife Act (1975), ownership of wildlife is passed from the State to whoever owns the land the animal is living on. When the landowners (both communal and private) became custodians of the wildlife, a change in mindset occurred [13]. Communal people who lived in places where wildlife was began to see their wildlife resources as an asset to be nurtured, ensuring their benefits continued into the future.

In 1975, some communal areas harbouring significant wildlife resources or bordering National Parks were given Rural Council status and as a result, the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) was formulated [13]. CAMPFIRE has developed into an important conservation strategy, ensuring that significant financial earnings from wildlife revert back to rural communities for their benefit. This philosophy has been adopted on a Pan-African basis and is slowly being implemented in Asia and South America too [13].

CAMPFIRE is a community-based natural resources management (CBNRM) programme initiated by the Government of Zimbabwe in the late 1980s. The programme is principally

designed to promote the sustainable utilization of natural resources and preserving the rich natural heritage of Zimbabwe, through the generation of income for rural communities. CAMPFIRE operates with the support of the Zimbabwe Parks and Wildlife Management Authority, as part of its conservation function in rural areas, in which 58 out of 60 Rural District Councils (RDCs) in Zimbabwe participate [13]. Under CAMPFIRE, people living in Zimbabwe's communal lands, which represent 42% of the country, claim the same right of proprietorship. The theory underlining CAMPFIRE is that communities will invest in environmental conservation if they can exploit these resources on a sustainable basis for their own benefit since there is a link between wildlife resources and economic benefit which is necessary for the continuing success of community-based wildlife development.

2.2 Regulation of Sport Hunting in Zimbabwe

Trophy hunting is regarded as sport so it has its rules and regulations which are country specific. In Zimbabwe, trophy hunting is based on a fair chase system where the animals are not deceived either by provision of salt licks or supplementary feed like in South Africa where they practice canned hunting. Hunting season ranges from April to early November. Hunting is prohibited during the breeding season of the animals which spans mainly the rainy season from late November to March. Hunters are usually in the company of a professional guide and a parks ranger. The permitted hunting time is strictly during daytime, from dawn (around 0600 hours) to dusk (around 1900 hours), therefore no hunting is allowed at night. Hunters are strictly forbidden to shoot at the waterholes (drinking place). Only mature male animals that are not within a herd are permitted for sport hunting. Shooting of female animals and within the herd is a chargeable offense that is noted by the ranger that accompanies the hunter. Sport hunting usually harvests a small fraction of total population size, contrary to culling or uncontrolled poaching. Harvest rates are traditionally set at about 2% of the total population [14]. Hunters are not allowed to hunt from vehicles, so all hunts are performed on foot. On the quota issued by the ZPWMA, it shows information such as the hunting days i.e. numbers of the days that the hunter is allowed to hunt before the hunting permit expires, regardless of success or failure.

2.3 Methods used in sport hunting in Zimbabwe

[15] pointed out that humans use numerous methods to catch their prey, including snares, iron-jaw or gin-traps, pit traps, net drives, firearms, crossbows, bow and arrow, blowpipes, spears, catapults, dogs, machetes, poisoning, fire, dazzling by torchlight or gathering by hand. Trophy hunting in Zimbabwe commonly uses two methods, namely shooting using rifles and bow and arrow. On the hunting quato permit it states the method of the shooting (for instance, type of rifle) and failing to compile results in the penalties by the ZPWMA.

3.0 Research method and Analysis

This study examines the socio-economic benefits and environmental impacts (i.e. cost to species existence or ecosystem food chains) of trophy hunting as conservation practice. The research paper used published articles in national, regional and global international websites and journals. Mainly the study focused on available articles on Google scholar, Web of Science (WOS) and Taylor and Francis (T&F) journals because these are the journals database that the authors could access where the relevant information regarding the topic was collected. The study used the current publications from the year 1997 up to date. The research study excluded citations that are duplicated. The study mainly used the following keywords regarding trophy hunting to search for the articles; Economic benefits of hunting, impacts of hunting, ethics of hunting, positive and negative effects of hunting. The main aim of this methodology was to collect as much information (facts) on the controversial issue of hunting to come up with an informed conclusion that can assist in decision making. The study was articulated on the trophy hunting cases documented about the famous Cecil the lion (July 2015) which was shot using bow and arrow at a cost of \$55 000 US dollars [16] and the largest ever seen elephant which was killed (September 2015) at a cost of \$60 000 reported in Zimbabwe. The study gives a critique of online comments from Zimbabwe's online main newspapers (The Herald and Newsday) showing perspectives of the Zimbabwean citizens and non-citizens on these cases. Online comments were classified into two categories, those supportive and against trophy hunting. If someone posted only negative comment/s on trophy hunting it was counted as against trophy hunting and vice versa for positive comments. The authors used Microsoft Excel software to obtain the proportion of online comments supporting and against sport hunting. Comments used for this study were collected from July to September 2015.

4.0 Results and Discussion

4.1 Economic benefits and environmental impacts of trophy hunting

4.1.1 Positive effects of hunting (Economic incentives)

Research evidence shows that trophy hunting is of major importance to conservation in Africa [1], [4], [5]. By creating economic incentives for conservation over vast areas, including areas which may be unsuitable for alternative wildlife-based land uses such as photographic ecotourism. Trophy hunting is the most profitable form of consumptive wildlife utilization, and represents a large and growing industry in several parts of Africa. For example, trophy hunting generates US\$65.6–137 million per year in South Africa, US\$27.6–36.1 million per year in Tanzania, US\$18.5 million per year in Zimbabwe and US\$12.6 million per year in Botswana [17]. These revenues provide economic justification for wildlife as a land use over vast areas hence conservationists' support for sport hunting to benefit both humans and wildlife. These previous studies are giving animals the right to be utilized for the eco-

economic benefit for the people, wildlife conservation and for the country.

Trophy hunting takes only 2% of the total population of animals as documented [14]. [18] provide evidence about trophy hunting creating economic incentives with low off-takes and high prices for the conservation of threatened and endangered species [19]. These authors suggest that trophy hunting is a method of controlling wildlife animal population and as means of generating income for conservation. [20] argue that sport hunting has more revenue than ecotourism. Trophy hunters tend to pay higher fees per client than conventional tourists and therefore revenues can be generated from lower volumes of people, resulting in potentially lower environmental impacts. Trophy hunting can also generate revenue for conservation in areas which may not be suitable for tourism for example in those countries experiencing political instability.

The presence of trophy hunting operators can reduce illegal hunting. For example, revenue from trophy hunting enables hunting operators to employ approximately 150 anti-poaching game scouts as documented in Zambia by [20]. Protected areas that use biocentrism theory to govern wildlife animals have experienced high poaching activities from poachers than Safari areas. Communal areas that benefited from wildlife land reform in Zimbabwe have reduced poaching activities because the communities have the custodianship of wildlife and realised benefits so they involve themselves in anti-poaching activities and discourage each other from killing of the animals just for meat [13].

[21], [22] suggests that trophy hunting is a tool for problem animal control hence these problem animals should be hunted for the benefit of the communities. The authors view trophy hunting as a compensation in cases of human-wildlife conflict where humans would have lost livestock e.g. cattle and goats predated by lions, hyenas and leopards. Human-wildlife conflict being right on the top of the pile incidentally is generally considered to be a far bigger wildlife killer than controlled hunting [23], [24]. The trophy hunters are only interested in the trophy of the animal. After killing of the animal the communities are given the meat from the beast as demonstrated from Tanzania Wildlife Value, Trophy Hunting and Rural Development.

Some conservationists view trophy hunting as an option for land use necessary to protect wildlife areas from land use change (agriculture, resettlement, industries) in the cases of CAMPFIRE areas since the human population is increasing at a fast rate [13]. There is enormous pressure on land and wildlife from expanding human populations. Land owners need to get a benefit from having wildlife on their land otherwise the land use may be changed to agriculture or settlement leaving very little space for wildlife. Funds from trophy hunting on communal lands provide an important source of income for community livelihoods and other schemes. According to [24] there is a suggestion that land use change has great effects on wildlife conservation. The authors also view the trophy hunt-

ing as an alternative for land use change to activities such as agriculture, industry and urbanization. CBNRM encourages conservation of wildlife resources which improve on the livelihoods of poor rural households if resources are exploited legally and commercially by local communities.

Elephants are large herbivores hence they have few predators. For example, a mature lion can only target the calf of the elephant. Mature elephants are not often preyed on by the predators because of their big size. Uncontrolled elephant population in the ecosystem has serious consequences on the ecosystem. Elephants (*Loxodonta Africana*) are known for converting woodlands into grasslands. The feeding behaviour of elephants is that it uproots trees thereby reducing breeding, feeding space of other ungulates such as impalas, kudus and sable that prefer woodlands. It is therefore necessary to reduce the numbers of such animals to manageable levels through sport hunting in return for income in the process. A ban on hunting prevents human beings hunting down animal predators (e.g. lions) even to protect prey animals (livestock). Another option available for population control of elephants is relocation of which it is quite expensive. As a consequence, conservationists suggest that species without or with few predators can have their population regulated through trophy hunting thereby generating income unlike the other options that require investment. Hunting may therefore be necessary to preserve the health and integrity of an ecosystem by controlling animal populations.

4.1.2 Negative effects of hunting (Environment impacts of trophy hunting)

Animal welfare and rights activist argue that all living things have an intrinsic value hence hunting practices violate animal rights [2], [25]. By denying the intrinsic value that animals possess, hunting of animals is therefore not recommended under the biocentrism theory even through hunting is still practised in some other states.

Hunting deprives an important recreational opportunity and has the potential to reduce viewing opportunities [24] suggested that human disturbance through hunting on deer population dynamics and behaviour may indirectly affect population dynamics and behaviour in temperate ecosystems. It is already known that human hunting has contributed to the extinction of some species. For instance, the dodo bird's disappearance is attributed in part to sport hunters [26]. [27] provided evidence that increased human hunting activities have led to reductions and local extinctions of some wildlife populations and that many populations of tropical species such as gorillas have been or will be lost in equatorial Africa. [28] suggests that uncontrolled trophy hunting has contributed to species extinction due to over hunting, for example blue buck (*Hippotragusleucophaeus*) and Quaggas (*Equus quagga*).

Sport hunting has the direct effect of reducing animal populations. Unless it is tightly regulated, this form of hunting can decimate species and disrupt the balance of ecosystems. [29]

suggests that hunting has contributed to reductions in the populations of dorcas gazelle (*Gazelladorcas*). Where humans or their machines are perceived as a threat, animals often experience increased stress levels and subsequently expend more energy attempting to avoid the disturbance.

[2] noted that in Islamic principles, humans are not allowed to take the life of any living things and must only take lives if necessary. According to the authors, from an Islamic viewpoint, hunting as a hobby without necessity is forbidden and deemed a great sin, and anyone who goes on a journey to hunt for fun has committed a sin. The authors view the hunting of trophy animal not as a sin since hunting is done as a competition just like the use of horse and dog in racing.

Vast literature suggests that animals subjected to human hunting shift their habitats. For example, wildebeest in hunting areas shift habitats from short grass habitats, their typical habitat in undisturbed environments to tall grass habitats as a strategy of hunter avoidance. African ungulates (impala, kudu and sable) subjected to hunting trend shift their visits at waterholes from day hours towards night hours also as a hunter avoidance strategy [30].

Animal welfare activists recommend education to the American hunters that the trophy and heads of the beautiful animals do not belong on their home walls (see online article The Cruelty of Trophy Hunting (Editor: Cathy Kangas) www.africanindaba.co.za or the Conservation Force website (www.conservationforce.org)) for examples since the wildlife animals have their intrinsic value in the ecosystem.

4.2 Online Survey regarding the killing of Cecil the Lion

The study recorded 54 online comments both supporting and against sport hunting. From the online analysis, it is found that opinions of the Zimbabwean citizens and non-citizens about sport hunting regarding the big five animals are mixed. Table 1 shows the proportions of opinions (supporting and against trophy hunting).

Table 1: Perspectives on trophy hunting in Zimbabwe

Category	Online Comments Number	Percentage (%)
Supportive of trophy hunting	33	61.9
Against trophy hunting	21	38.1
Total	54	100

The results obtained reveal that the majority of people are in support of trophy hunting for the economic benefits that the country derive from wildlife. This shows that most online readers on the case of the Cecil the lion in Zimbabwe have more positive views on sport hunting. This can imply that wildlife animals are given the value of utilization rather than the intrinsic value. From the most mentioned benefits, the ma-

job ones making up 76% were income generation, employment, animal population control, and alternative land use whilst 24% is for other reason such as meat and more income than ecotourism. Some people that live within the national parks boundaries suggested the best way to solve human and wildlife conflict as trophy hunting especially community members of the Victoria Falls and Kariba, Zimbabwe are supportive of hunting as a culling tool and problem animal control. The study by Sikopo (2014) in Namibia suggests that sport hunting plays a crucial contribution to the Gross Domestic Product of the country, the employment of rural populations and the wellbeing and social upliftment of rural communities. All these benefits help in reducing poaching of the animals which usually benefit a few individuals contrary to societal benefit through shared revenue from trophy hunting. This finding agrees with a report by the International Union for Conservation of Nature (IUCN) which claims that "well-managed trophy hunting has little to do with poaching, and indeed can be a key tool to help combat it ." Thus, the study improves on previous studies by showing that conservationist and some local people in Zimbabwe believe that hunting is necessary for conservation of wildlife resources and for community development.

Some Zimbabweans and animal welfare rights activists view hunting as immoral and unjustified hence criticize sport hunting of the big five animals as their major concern. Some people advocate for banning of sport hunting for animals have value intrinsically. Most arguments against sport hunting mentions the painful way with which the animals are subjected to death and fear during the chase. For instance, animals that escape may be injured or wounded since hunting involves unnecessary cruelty. They also argue that this sometimes leads to extinction of animal species in extreme cases and reduction in animal population while the basic interests of the hunted animals are seriously violated in the process. These points have contributed about 87% of the negative comments of trophy hunting. As documented in Zimbabwe, the killing of Cecil the lion took almost two days with the animal in pain from being wounded by the hunter before it was given another shot to kill the lion. This shows how animal rights are violated. It is documented by Kilgoet *al.* (1998) and Dycka and Baydackb (2003) that uncontrolled sport hunting contributes to reduced animal population and to a greater chances of extinction of the species.

The evidence presented above shows that achieving wildlife conservation will need a combination of approaches such as increased security for animal populations, ensuring local communities living in key wildlife areas benefit from employment, education and training.

5.0 Conclusion

In this study, the authors can conclude that the opinions on sport hunting in Zimbabwean citizens and non-citizens considered in the study are mixed. Online comments revealed more support (socio-economic benefits) of sport hunting compared to those against (environmental cost) sport hunting in Zimbabwe. This study also showed that revenue from sport hunting

contributes significantly towards the conservation of wildlife resources and community development for the local people. The results suggest that most comments were in support of hunting as a way of generating income and conservation of animals. However, there is a small proportion of population criticizing sport hunting of the big five animals. Trophy hunting should therefore be done in accordance with strict quotas and on a sustainable basis.

5.1 Recommendations

- Hunting policies should be enacted that have provisions which can account for sustainable utilisation of wildlife resources
- Proper management and accountability of the finances derived from wildlife resource to support conservation of animals
- Wildlife Management Authorities should issue sustainable hunting quotas accompanied by regular monitoring schemes of hunted animals and the quality of trophies
- Close monitoring of hunters by parks rangers to ensure adherence to regulations on non-hunting areas and at waterholes
- Further research should be carried out on hunted animal species to find out the trophy size trends and animal population of hunted animals

6.0 Reference

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