



# *Baboon-Human Conflict* (BHC), an emerging urban crisis faced by residents in Redcliff Municipality, Zimbabwe.

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**Abstract**—Redcliff is situated in ecological region 3 Midlands Province, Zimbabwe. The district has 9 administrative wards, 9 458 households and a population of 35 924 people that are faced with a new urban crisis of *Baboon-Human Conflict* where the safety of women and children is endangered. The *Baboon-Human Conflict* also results in their crops, fields, infrastructure and livestock being destroyed. The district is home to Baboons (*Papio cynocephalus*) which pose a threat to human livelihoods and endangers the safety and lives of young children and women. The data were obtained from the *Human-Wildlife Conflict* reports submitted to Redcliff municipality and the Zimbabwe National Parks Plumtree office that deals with Problem Animal Control (PAC). These reports on *Human-Wildlife Conflict* incidences in every ward were collected and collated on an *ad libitum* basis. The implications of *Baboon-Human Conflict* on food security and livelihoods of the Redcliff residents were highlighted and *Human-Wildlife Conflict* mitigation Strategy was proposed and must be incorporated in the promulgation of mitigation strategies. The Problem Animal Species (PAS) control strategies applied by the residents were highlighted and discussed. It can be concluded that the *Human-Wildlife Conflict* in Redcliff presents a dire situation requires urgent attention and requisite policies promulgated and mitigation strategies employed to curb a potentially catastrophic situation. It is quite clear that a holistic approach in addressing this scenario is critical as both the animal and ecosystems need the appropriate management that will then ultimately bring a balance which will ensure that the lives and livelihoods of the humans are secured in conserving wildlife to bring a peaceful co-existence to Redcliff residents and wildlife.

**Key Words Index Terms**— food security, Problem Animal Species, Human-wildlife Conflict, Co-existence, livelihoods

## INTRODUCTION

*Human-Wildlife Conflict* (HWC) is defined as "any interaction between humans and wildlife that results in negative impacts on human social, economic or cultural life, on the conservation of wildlife populations, or on the environment." [63]. HWC is a global phenomenon and is becoming more prevalent as the natural resource requirements between humans and wildlife overlap [38]. The world is faced with climate change and global warming resulting in huge changes in microclimates, this is further compounded by habitat fragmentation and increasing pollution, making it essential to understand the basic mechanisms animals use to adapt in their interaction with the environment [42]. As urban and suburban areas expand in Redcliff town due to increased demand in residential space, an increasing number of urban cases of HWC are also being reported [17][35][59].

In Africa, with rapidly expanding urbanization as well as increased population growth, the number of cases of urban HWC is expected to increase [57]. HWC is encountered in all communities ranging from border towns (Kariba, Victoria Falls Chirundu, and Beitbridge) [57], communities close to protected areas, urban towns and communal areas alike [38][39][40][41]. HWC can take various forms, including carnivores attacking and killing livestock or humans, species' raiding crops, competition for game and/or resources, disease exchange between livestock and wildlife, carcass poisoning, and retaliation killing [58][40]. The conflict involves a variety of mammals, birds, fish, insects, and reptiles [47]. The situation in Redcliff town is critical as the communities face relentless crop raiding by baboons. Redcliff town council has no formal baboon management plan and strategy, and this makes

the residents susceptible to *Baboon-Human Conflict* (BHC) as their crops, infrastructure, livestock and livelihoods are destroyed.

Communities in Redcliff town suffer huge losses from the HWC they encounter on a daily basis. The communities' livelihoods are threatened by Baboons (*Papio cynocephalus*) which are posing a severe challenge as they are highly adaptable to any kind of community and environment thereby wrecking havoc. To our knowledge the BHC in urban areas has limited if any documentation in Zimbabwe. There is also limited if any previous studies on baboons that clearly follow the international and sustained primatological protocols in Zimbabwe, apart from the limited research on baboons in the Timber Producing Industry as exhibited by [38]. Habitat utilisation, ecology and nutrition as well as how the baboons interact with their highly fragmented environment have not been researched in Zimbabwe [38]. Investigating the different strategies that baboons employ within the different ecosystems that we find in Zimbabwe provides important information for *Human-Wildlife Conflict* mitigation and management plans to be employed by conservation and local authorities.

Baboons (*Papio cynocephalus*) are social animals with complex social systems which make them particularly difficult to deal with as they are intelligent and can adapt to any strategies that may be imposed to control them. However, they pose a serious threat to the food security of some communities by raiding homes, digging up planted seed and raiding and foraging on planted crops in the fields [38][39][40][41]. Baboon populations shape the ecosystem through seed dispersal [56] and knowing how they relate to the environment in which they

live help us in controlling them before they become pests.

The fulcrum of primate research is based on the interaction among food availability, diet, movement patterns, and sociality [37]. Animals (baboons: [5][12]: vervets: [6][7] are strongly linked to habitats within which they spend their time. Space-use by animals reveals their habitat preferences and knowing what strategies baboons use to find what, where and when in different habitats constitutes an invaluable contribution on the management of the species [44][43]. Habitat utilisation of animals is linked to many variables which include the nutritional requirements and constraints upon the species' physiological make up, the availability and spatial distribution of resources, population density, and competition with conspecifics and other species [30][28].

Understanding home range and dietary patterns is useful for models of primate behavioural ecology and quantifying the spatial and ecological needs of social groups, as it has important implications for the conservation and management of primate populations, particularly those found in small, isolated habitats as is the situation for many primates today [31].

Hence, knowledge of the dietary requirements of baboons and the plant communities within which their food sources occur could assist in making decisions on the implementation of effective management programmes of these species [44]. Studies of diet, ranging patterns, and habitat utilisation are useful for understanding the habitat requirements that allow maintenance of viable populations, and may also contribute to our comprehension of the population dynamics and carrying capacity of a particular area [37]. Knowledge of the dietary patterns of primates may assist in designing management strategies to reduce human-wildlife conflict [37].

According to [60], animals shift their ranges in response to prevailing environmental and climatic conditions, for instance, the glacial changes in the forest line [60] or human induced vegetational changes such as deforestation or the designation of nature reserves. Habitat utilisation, ecology and nutrition as well as how the primates interact with their highly fragmented environment have not been researched in Zimbabwe [38]. The strategies that baboons employ in order to access and utilise food components, the parts they utilise, their nutritional value and availability are largely unknown in Zimbabwe [38]. Investigating the different strategies that baboons employ within the different ecosystems that we find in Zimbabwe provides important information for *Human-Wildlife Conflict* mitigation and management plans to be employed by conservation and local authorities [38].

The environment, that is the habitat, the climate and seasonality, can also be a potential stressor to the baboon populations and may act as an important ecological constraint [38]. These ecological constraints can affect the day length as is the case in winter when the animals must meet their thermoregulatory requirements due to low temperature [46][27]. This period also coincides with limited food availability where animals have to resort to under storage organs which take longer to process [2].

BHC research seeks to understand how habitat fragmentation due to urban sprawl and rapid urbanisation influences habitat utilisation by urban baboons [38]. Considering climate change

and various anthropogenic influences [34], information on the changes in habitat, climate, and food availability is vital to assist our understanding of baboon behaviour in these areas.

It is also important to understand how baboons are affected by climatic stress factors and how they adapt their travel patterns, activity budget and diets, as they interact with the environment.

An understanding of the ecological importance of fall-back foods could assist in explaining the movement and foraging strategy and effort of baboons and other wildlife thereby aiding in improving the management and conservation of primate populations in Zimbabwe [39].

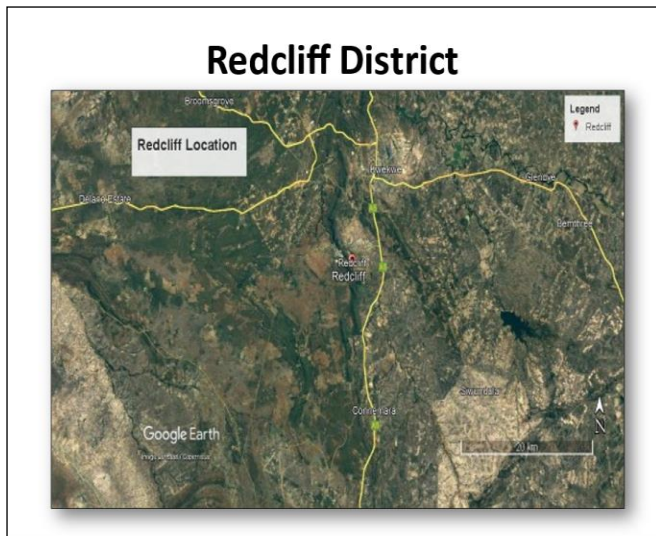
As fall-back foods are frequently the primary determinant of primate carrying capacity, determining whether the baboons have such foods, and if so, what management strategies can be implemented to aid the conservation of the baboons and mitigate BHC in the country. HWC has escalated because of changes in land use, arable farming and the expansion of communal areas and urban sprawl due to increases in population [13]. The situation in Redcliff is dire as the residents face relentless crop raiding by Baboons (*Papio cynocephalus*). This paper seeks to:

- ❖ Determine the nature of *Baboon-Human Conflicts* that occur in Redcliff town.
- ❖ Forecast the impacts and implications of the Baboon-Human Conflict in Redcliff town (every ward) and the requisite mitigation strategies.
- ❖ Generate a science-based *Human-Wildlife Conflict* Mitigation Policy that can possibly be used to advocate for the promulgation of an Act of Parliament to deal with this critical challenge on a long-term basis.
- ❖ A theoretical framework for *Human-Wildlife Conflict* mitigation strategies will be crafted and promulgate resolutions that are holistic and bring about a harmonious coexistence between residents and baboons.

## 2 METHODOLOGY

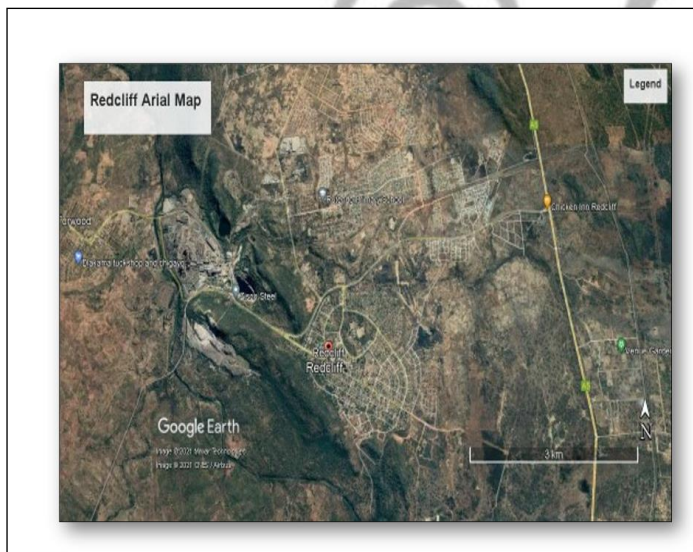
### 2.1 Research Site

Redcliff district has 13 administrative wards of which 9 are urban and 4 are rural. The urban wards fall within Redcliff (4 wards), Rutendo residential area (3 wards) and Torwood (2 wards) which also includes the Zisco steel industrial site. Redcliff town (9 wards) has a population of 35 924 people which consists of 17 197 males, 18 721 females and a total of 9 458 households that are greatly affected by *Baboon-Human Conflict* (BHC) [64] (Figure 1).



**Figure 1.** Location of Redcliff town.

Redcliff is an urban town that is 10 km away from the city of kwekwe and is located at GPS location 19°01'31.79''S, 29°46'27.76''E (Figure 2). The town is in Midlands province of Zimbabwe which is in ecological region 3 which receives average rainfall of 800mm. the rainfall pattern and distribution is unimodal and odd which greatly affects the season quality.



**Figure 2.** Satellite image of Redcliff municipality.

## 2.1 Methods

The data were collected from the *Human-Wildlife Conflict* cases reports spanning a period between 2019 and 2021 (Jan-Dec). This data consists of approximately 25 reported cases of *Human-Wildlife Conflict* in Redcliff District. The data were collated with the *Human-Wildlife Conflict* cases reported to the Parks and wildlife Authority Problem Animal Control (PAC) and the Redcliff Municipality Natural Resources Office. The data were then consolidated for the purposes of coming up with a

short communication on the *Baboon-Human Conflict* crisis that is posed by Baboons (*Papio cynocephalus*) in Redcliff District.

### 2.2.1 Problem Animal Species (PAS)

Baboons are large semi terrestrial monkeys that occupy a wide range of habitats across the African continent [4][31][33]. Plants are their most important source of nutrients, with invertebrate and vertebrate animals contributing relatively little in terms of calories and protein to their diet [1].



**Figure 3.** A female Chacma baboon (*Papio ursinus*).

Baboons play a crucial role in the ecosystems they occupy as their ecological and behavioural flexibility enables them to utilize a diverse array of plant species available within their ecosystems and habitats that include forests, deserts, savannas and grasslands [27][20]. This flexibility is facilitated by a high degree of selective omnivory [3], relatively large social groups and non-seasonal reproduction [3]. They play a crucial role in ecosystem engineering and structuring of plant communities through the dispersal of seeds from various plant species which they forage on within their home range [56]. The foraging strategy of baboons enable them to achieve relative dietary stability by being able to utilise a large array of plant species and parts throughout the year, selectively exploiting foods as they become available [1]. Chacma baboons rely heavily on fruits and grasses where they consume both the underground storage organs and leaves [54][51][48][61][15][3] with a concomitant supplement of invertebrate and vertebrate animals in food limiting seasons [1]. Baboons are of significance in ecosystem research as they are highly mobile within individual home ranges that vary in size between baboon troops [42].

### 2.2.1 Problem Animal Control PAC

All the cases that were attended to by the Problem Animal Control (PAC) during the period 2019-2021 are recorded and the mitigation strategies implemented were documented. The mitigation strategies also employed by the residents are documented and addressed in this paper.

### 3 RESULTS

The year 2012 was used as the base year to look at the projected population structure for Redcliff [64]. The town has a majority population of the most vulnerable age groups, i.e. those who are of school going age (0-19 years, see Table 1). The [53], Zimbabwe, does not have provisions for direct compensation for losses from wildlife this therefore means that the residents that are exposed to BHC suffer a double-edged sword thereby impacting mostly the vulnerable members of the society and the girl child. The 2032 projection (Table 1) shows that the population is going to continue to increase and this will put further pressure on scanty land resources thereby escalating the BHC [34].

**Table 1.** The projected population structure for Redcliff using 2012 as a base year [34].

2012 Population Projection				2032 Population Projection			
Age	Male	Female	Total	Male	Female	Total	Total
0-4 yrs	2,672	2,709	5381.0	3024	3768	6,792	6,792
5-9 yrs	2,219	2,259	4478.0	2843	3652	6,495	6,495
10-14 yrs	1,893	2,065	3958.0	2518	3493	6,011	6,011
15-19 yrs	1,918	2,401	4319.0	2672	3972	6,644	6,644
20-24 yrs	1,753	2,217	3970.0	2654	3422	6,076	6,076
25-29 yrs	1,560	1,898	3458.0	2435	2979	5,414	5,414
30-34 yrs	1,438	1,610	3048.0	2102	2655	4,757	4,757
35-39 yrs	1,148	1,080	2228.0	1693	1989	3,682	3,682
40-44 yrs	782	819	1601.0	1314	2108	3,422	3,422
45-49 yrs	596	686	1282.0	1134	1882	3,016	3,016
50-54 yrs	557	539	1096.0	1227	1191	2,418	2,418
55-59 yrs	479	397	876.0	1032	802	1,834	1,834
60-64 yrs	287	231	518.0	483	407	890	890
65-69 yrs	166	123	289.0	243	221	464	464
70-74 yrs	83	65	148.0	107	146	253	253
75-79 yrs	31	58	89.0	34	133	167	167
80+ yrs	36	79	115.0	35	134	169	169
<b>Total</b>	<b>17,618</b>	<b>19,236</b>	<b>36,854</b>	<b>25,550</b>	<b>32,954</b>	<b>58,504</b>	<b>58,504</b>

Most of the populations in Redcliff are females (18 721) as compared to males (17 197) (Table 1), this implies that in cases where children must guard homes to prevent invasion by baboons it would be the girl child that will be affected the most. The observation also means that the school going children would need to be accompanied to and from school as they may be in danger of baboons that chase them and raid bags for food [38][39][40][41]. There is an urgent need to monitor the dynamics and nature of the *Baboon-Human Conflicts* occurring in Redcliff and a requisite strategy implemented.

The population projection for 2032 (Table 1) [64] shows a continued increase in the population structure of the school going age group (0-19 years). This implies that there is going to be increased pressure on natural resources between people and animals soon, which if not addressed may reach catastrophic levels [64]. This signals increased competition on space and space use, water resources, forest food resources, an increase in tensions between humans and baboons. The habitats baboons [5][12] and vervets [6][7] utilise are related to their diets and the structural complexity of patches within habitats affects choice of foraging location [23]. One way in which ani-

mals balance the conflicting demands between food acquisition and predator avoidance, is through their strategic use of habitats [29], which is amplified seasonally by seasonal variation of resources and resultant changes in home range size, or the use of different habitat types [7][55][30][11]. The *Baboon-Human Conflicts* may increase as the wildlife habitats shrink with encroachment of people into forests as the town expands [38]. An increase in households will also mean an increase in anthropogenic factors that will further fuel *Baboon-Human Conflicts* in Redcliff; hence a robust *Baboon-Human Conflict* mitigation policy is urgently necessary in Redcliff and all urban areas in Zimbabwe.

#### 3.1 Human-Wildlife Conflicts in Redcliff

Extensive research has been undertaken on *Papio* species in savanna habitats, and they have been shown to be ecologically flexible omnivores which are highly selective in their dietary choice and habitat utilisation [7][29][4][26][62]. The chacma baboons in Zimbabwe are expected to exhibit significant selection or preference to certain habitats as an adaptation to times of scarcity within their home range. Food availability is highly variable in savanna habitats or biomes, hence food availability acts as an ecological constraint on the baboons, prompting them to compensate with different foraging strategies [4][8]. Temporal variations in food availability in an animal's habitat may force it to modify its home range size as a behavioural adaptation [37][7]. The study of an animal's home range enables an understanding of the distribution and utilisation of resources in time and space [18][21] and is expected to correspond to the distribution of resources that the animals need to use.

**Table 2.** The Ward populations, Wards that experience *Human-Wildlife Conflicts* and the Problem Animal Species involved.

Ward	Ward Name	Status	Population and households in each Ward				Problem Animal Species		
			Males	Females	Totals	households	Baboons	Monkeys	Snakes
1	Redcliff	Urban	1,154	1,251	2,405	656	Critical	Frequent issue	Not reported
2	Redcliff		1,738	1,745	3,483	954			
3	Redcliff		1,323	1,379	2,702	692			
4	Redcliff		1,943	2,118	4,061	1,023			
5	Torwood		3,405	3,741	7,146	1,970			
6	Torwood		4,579	5,004	9,583	2,493			
7	Rutendo		863	987	1,850	494			
8	Rutendo		938	1,026	1,964	520			
9	Rutendo		1,254	1,476	2,730	656			
<b>Total</b>			<b>17,197</b>	<b>18,727</b>	<b>35,924</b>	<b>9,458</b>			
<b>Key</b>								Not reported	
<b>Urban</b>			Critical					Frequent issue	
			Not reported					Not a major issue	

There is an interesting observation on the *Baboon-Human conflict* cases reported in Redcliff, the low-density areas that fall under wards 1 (656), 2 (954), 3 (692) and 4 (1 023) have the least number of households and have bigger yards where they can grow bigger orchards of fruit trees, gardens and set up other small backyard projects [64](Table 2). The same wards comprise the wealthy residents with affluent lifestyles which

mean that they may be having more organic waste which may attract baboons to those areas. The same wards also experienced a lot of cases of *Snake-Human Conflicts* due to their big yards and also proximity to mountains (Figure 4).



**Figure 4.** The google map showing Mountains & baboon habitats in Redcliff town.

These baboons also seem to find comfort and safety from predation in and around or near human settlements. Efficient space use is a critical challenge for foraging animals as they rely on resources that are stationary [50]. Navigating large territories is energetically costly and animals are expected to develop strategies to reduce energy expenditure [25]. Animals use various strategies to navigate through their landscapes to reduce travel costs and avoid predators, including the selection of topographic features, and the repeated use of paths or travel areas (home ranges) [50]. The diversity and distribution of plants form the premise of understanding how animals utilise space in their home range as they interact with their environment to meet their basic needs, including sleeping sites, food, water and mates [13]. The identification, detailed description, classification and mapping of vegetation is fundamental for land use planning and management [16]. Habitat structure can influence many of the components that determine both potential energy gain and predation risk [39][24][45]. This might explain why baboons might be encroaching into human habitats.

### 3.2 Human-Baboon Conflicts in Redcliff District.

The baboons (*Papio cynocephalus*) are problematic to the residents during July-December and December-February (Table 3) thereby threatening the security, food and nutritional security of the residents. The baboons (*Papio cynocephalus*) destroy infrastructure, raid gardens, raid orchards, pollute the environment and mess roofs and windows and make general noise in the neighbourhoods. All the wards are affected by the baboons, though ward 1, 2, 3 and 4 are more affected.

**Table 3.** The *Human-Baboon Conflicts* experienced in all the wards of Redcliff District.

		Period of the year when Conflict is at its peak											
Ward Name	Ward	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Redcliff	1												
Redcliff	2												
Redcliff	3												
Redcliff	4												
Torwood	5												
Torwood	6												
Rutendo	7												
Rutendo	8												
Rutendo	9												

**Key**  
 Less severe challenges  
 Severe challenges

The *Baboon-Human Conflicts* seem to be seasonal peaking during the rainy season when people grow crops and fruit trees like mangoes ripen. Baboons have an eclectic diet but have a selective preference for fruits compared to other items and utilise a wide array of plant resources like leaves, roots, bulbs and corms [37][11][28][62][42]. Considering the seasonal shifts posed by climate change, phenological monitoring is key as it aids in the management of wildlife and enables reserve managers to distinguish shifts in phenophases, for example onset of leafing, flowering or fruiting and the implications this could have to the food availability to the baboons. Baboons have a dietary flexibility that enables them to adjust their diet to the habitat structure of the environment they live in, allowing them to utilise a wide variety of plant species ranging from a single plant part to multiple parts including flowers, seeds and leaves [62][11]. Baboons do however show a preference for fruits as mentioned previously, hence the importance to note that habitat choice is driven by the presence of woody plant fruit species [11][37][42].

#### 3.2.1 General nuisance

The baboons are a general annoyance to the residents as their presence is often associated with potential loss of gardens crops and fruits from orchards and noise. The residents therefore report their presence to the ZimParks Problem Animal Control (PAC) team.

#### 3.2.2 House breaking

Baboons respond to food scarcity in different ways, but they always adapt to any situation to ensure that they survive. For instance, summer months were characterised by a very strong reliance on fruit, with a small-to-moderate contribution of green seed pods (Marisa 2020). Pods remained a relatively consistent contributor to monthly feeding allocations until October, although in winter it was their seeds that were harvested, but the marked decline of fruit by May was primarily compensated for by a corresponding increase in USOs and seeds, as well as by the initiation of foraging on invertebrates

[42]. Overall, the dry season, not surprisingly, was characterised by the use of durable food items obtained from a smaller range of changing species [42]. November, as the transition month, was distinguished by the fact that flowers and leaves, along with invertebrates, provided the bulk of the diet, only to disappear in December, when fruit once again predominates [42].

### **3.2.3 Destruction of infrastructure**

Most of the residents and business owners have been tormented by the primates to the extent that they will be very happy and relieved if the primates could be removed in the area. The community sees no value from the baboons, but they feel that the primates are only there to cause havoc and destruction to their property. The asbestos roofs are broken by baboons as they play on roof tops, they also break windows, fences and durawalls which results in residents incurring expenses. In some cases, the baboons have even damaged cars which results in expensive repairs to the owners.

### **3.2.4 Depredation of chickens**

Baboons kill and eat the chickens that are kept for domestic consumption and small business by the residents. The baboons also raid and eat eggs thereby negatively affecting both the chicken and egg businesses of the residents. The residents report *Human-Baboon Conflicts* to ZimParks Authority Problem Animal Control (PAC), however, the ZimParks is under resourced hence they are unable to attend to all the cases reported. The residents are in a distressful situation as the strategies they use of chasing and scaring away baboons seem futile. A holistic approach would assist in ensuring that a peaceful co-existence between the residents and the baboons is attained.

### **3.2.5 Stealing**

Baboons invade homes and steal food and some house utensils which then then destroy. Some groceries are stolen from pantries and destroyed. The normal household lives have been greatly affected as residents can no longer leave their windows open for fresh air as they fear that baboons would invade their houses.

### **3.2.6 Chasing children & women**

Baboons in Redcliff can distinguish between a woman, child and grown man as they discriminately chase women and children if they happen to come across them in their foraging. This is affecting children as they go to school because their lives can be in danger.

### **3.2.7 Raiding groceries**

Baboons have reportedly seen raiding shops for food, and they also raid women and children whom they encounter coming from shopping, it is however interesting to note that it is the adult males with large and sharp canines that have been ob-

served to be chasing women and children. This is a bad situation because baboons' range in the Redcliff central business district and residential flats which necessitates those children and women to take extra cautious measures to be safe.

### **3.2.8 Raiding gardens**

Baboons raid gardens and home gardening yields crops for domestic intake to improve the value, assortment and nutrient content of foods [41]. The excess harvest can be traded for profits to procure other foodstuffs to supply various nutrients [41]. This means that when the fields and household gardens are raided by baboons, the nutrition status of the residents is greatly affected since in most households, the crops are sold for profits to buy more food. This implies that if a family has little land and the animals raid their crops, the family is bound to harvest nothing, leaving each member hungry and children malnourished and nutritional deficient [40].

### **3.2.9 Raiding orchards**

Baboons generally exhibit a high monthly turn-over in the use of particular food species as 'eclectic omnivores' [62], they are able for the most part to shift the species structure of their diet in order to sustain an optimal diversity centred in the wetter months on fruit, while allowing for a shift to more 'durable' sources (invertebrates, pods, seeds, underground storage organs) during the drier months when fruit is not available [42]. This is reflected in the negative relationship between foraging effort and the number of different species used in each month. As preferred foods disappeared from the list of possible options, the animals compensated by diversifying their diet [42] and this includes raiding foods in residential areas. The *Baboon-Human Conflict* coincides with the peak of the dry cold winter months where there is a shift in baboon diet due to the disappearance of fruit, and persists until the wet season brings a return of preferred fruits? The dry season results in loss of dietary diversity and any delay in spring rain would require a greater reliance on foods proffered by the gardens of the which might be reduced in significance once young leaves, flowers and fruits are available.

### **3.2.10 Raiding bins**

Waste management by the residents may act as a motivation for the baboons to visit the houses to raid the waste like what was happening with elephants in Chirundu [57]. In this case the waste needs to be sorted and collected in baboon proof bins both at homes and in the public places.

### **3.2.11 Messing roofs and yards**

Baboons jump onto roofs of houses breaking the asbestos roofs thereby exposing the residents to unplanned expenses and costs. The baboons also have managed to read the patterns of residents and visit the homes when the owners are not around thereby wrecking havoc. This has resulted in residents having to alter their daily schedules and guard their homes to scare away the baboons.

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### 3.2.12 Noise

Baboons are generally social animals which vocalise through out their interactions during the day, this may include an alarm call, play, screams of submission, aggression, fighting or copulatory vocalisations. These vocalisations can be very loud, and the noise is an irritation to the residents. When they fight, they can chase each other around making continuous loud noises in their dominance interactions and this may involve running and jumping onto roof tops. This is a notable irritant to the residents that stay in flush and affluent suburbs of Redcliff.

### 3.3 Response to Human-Wildlife Reports in Redcliff

It is sad that all the highest cases of *Baboon-Human Conflict* reported by the residents do not get 100% attendance by the PAC team from ZimParks. This creates an impression on the residents that the losses they are incurring are not being prioritised which fuels tensions amongst the residents and baboons. The *Baboon-Human Conflict* which has a larger bearing on the food security of the residents had a low percentage attendance [40]. This is quite disturbing and may discourage the residents from reporting any future cases given the fact that baboons are problematic on a daily basis during their peak time.

### 3.4 Implications of BHC on Policy & laws

The increased demand in housing fuelled by population growth and rural to urban migration means that more and more forest areas will be converted to residential stands and other forms of development in Redcliff. This therefore means that all future development will fragment the baboon habitats causing loss of their dietary diversity and erosion of their fallback foods which also comprise of underground storage organs USO as most of the landscape gets paved up. It is therefore necessary that all developmental projects that require an Environmental Impact Assessment be inclusive of the baboon management aspect to minimise the Baboon-Human Conflict crisis in the future. A complete revision of the EIA policy needs to be done and to further empower the Environmental Management Agency (EMA) to be able to enforce compliance. The Redcliff municipality also needs to adopt developmental strategies that fact in baboons like baboon proof bins, waste sorting and management and making sure residents roof their homes with material that can withstand baboon damage to avert costs in the future.

## 4 CONCLUSION

Redcliff Municipality and residents are faced with a crisis that is precipitated by *Baboon-Human Conflict*. A holistic approach that will result in the safeguarding of the households from loss of their properties and crops yet managing the ecosystems in a sustainable manner is urgently required in Redcliff. There is need of comprehensive research that factor in the behavioural ecology and ecosystem services of the Problem Animal Species (PAS). A deliberate well coordinated behavioural change, response and adaptation of the residents to baboons is also necessary to shape a positive view of the baboons in them. The

lack of funds to respond to *Baboon-Human Conflict* cases reported by the residents may seriously damage their confidence in both the municipality and the regulatory and government authorities, which may result in cases not being reported at all. There is also need for the promulgation of a *Human-Wildlife Conflict* policy, law and management document that will bridge the gap between the residents, local authorities, regulatory authorities and wildlife for a sustainable peaceful co-existence.

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