Status Report for the Cheetah in Botswana

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Historically, cheetahs *Acinonyx jubatus* have been distributed throughout Botswana. With once pristine habitat, very low human populations and one of the largest concentrations of ungulates on the continent, space and prey were plentiful. However, the last 40 years have seen great changes in the natural habitat, with overstocking of livestock, range partitioning, the arrival of deep borehole technology and the erection of cordon fences causing dramatic reductions in wildlife populations and the overall integrity of the Kalahari ecosystems. This report assesses current national cheetah status and distribution, detailing the factors presently affecting these populations.

History

Little historical data is available on cheetahs' status nationally. In 1975, Myers, estimated Botswana's cheetah population at 1000-2000 (Mysers 1975). The cheetah was considered to be sparsely distributed. Two-thirds of the country was considered to be suitable habitat, the semi arid Kalahari ecosystem in the South and West (700 cheetah), and the well watered savannah of the Okavango Delta in the North West, which supports higher prey populations (800 cheetah). The remaining third of the country in the East, being semi arid and over utilised was assumed to have lower cheetah densities (500 cheetah). There was great concern over the extensive habitat deterioration due to a lack of management of the national herd of 1.5million cattle. Habitat degradation was resulting in declines in perennial grassland, an increase in scrub savannah, lowered water tables and disappearance of wildlife (Myers 1975). These concerns remain today and the need for habitat conservation in Botswana has never been greater.

Distribution and population estimation

Background of current estimates

Very little focused research has been carried out on cheetah in Botswana. However, the Department of Wildlife and National Parks (DWNP) carried out predator spoor surveys in the Central Kalahari Game Reserve (CKGR) from 1998-1999. Data collected along defined road transects of known length was used to provide an index of abundance (Stander 1998). The analysis yielded the result of 112 cheetahs in the CKGR at a density of 0.25-0.26 cheetah/100 km^2 (Winterbach 2003). Further predator spoor surveys were carried out by P. Funston in the Kgalagadi Transfrontier Park (KTP) from 1998-2001. It was estimated that 204 cheetahs inhabit the KTP at a density of 0.57 cheetah/100 km^2 (Funston 2001). Both CKGR and KTP have similar habitats. Attention must be given to substrates when using spoor surveys to compare different areas.

This data was then utilised for Botswana's draft predator management strategy. This was compiled in 2003 and provides the accepted estimates for cheetah based on the current knowledge.

The national density estimates were derived from calibration factors found in the CKGR and KGTP. The following assumptions were made to estimate the cheetah population size:

- Density in the Kgalagadi Wildlife Management Area is intermediate between the CKGR and KGTP estimates, i.e. between 0.26-0.56 cheetah/100 km^2.
- Density in other areas varies between 0.15-0.56 cheetah/100 km^2.
- Cheetahs only occur in 25% of the Central Agricultural Unit.

This study provided a total national population estimate of 1,768 cheetahs. It should be noted this is a tentative estimate gained through extrapolation and expert assumptions. More data is required to provide an estimate on which to base management options.

The assumption of 0.15-0.56 cheetah/100 km^2 in the agricultural zones is likely to be very conservative, as cheetah distribution in Botswana includes large areas outside conservation zones.

Survey methods

The information used to represent the status of Botswana's cheetah has been derived from: Draft National Predator Management Strategy (Winterbach 2003); Botswana's Department of Wildlife and National Parks (DWNP) Problem Animal Control (PAC) records from 1998-2006; 2006 Status report questionnaires; Sighting reports from 2003-2006. Farming community interviews from 2003-2006; Literature reviews.

Current distribution

In 1992 it was considered that cheetahs were widespread throughout Botswana, being most common in the South West and North West (Vandepitte 1992). Today, although widespread, cheetah distribution will likely be concentrated in the southern part of the country were densities of competitors will be lower (ODMP 2006). It is considered that large part of the cheetahs' distribution occurs outside protected areas and there may be higher densities in agricultural zones, where wild prey is available, than in conservation zones (Winterbach 2003).

According to estimates (Table 1, Fig. 1), the Kgalagadi Transfrontier Park (KTP) and Kgalagadi Wildlife Management Area (WMA) have the highest densities of cheetah. The Central Kalahari Game Reserve (CKGR) has lower estimates than might be ex-

pected, although prey has decreased considerably in the last 40 years and lions may be a limiting factor in this area. The agricultural zones throughout Botswana are important areas for cheetah, in these areas competitors such as lions and spotted hyenas have been removed, although livestock conflict now limits these populations. The Central Agricultural Zone has the lowest densities. This region is the most populated and utilised region in the country and has the highest cattle biomass. The protected areas in the North, Okavango, Chobe and the Pans have the highest prey densities, but also the highest lion and spotted hyena populations. Therefore, cheetah numbers may be limited in these areas. From the current cheetah distribution estimates the importance of conservation management for the cheetah in agricultural zones is very clear.

From PAC reports, interviews and sightings it can also be seen that cheetahs are present throughout Botswana, with the exception of some areas of the Central Agricultural Unit, such as the Tati Farms in the North West of the area, where no reports for cheetahs have been made in last 10 years. Conversely, within the Central Agricultural Unit, the Tuli Block Farms in the South West have higher numbers of reports than the rest of the area. The Tuli region is an area of mixed land use, with a gradual increase in sustainable wildlife utilisation and ecotourism in the region. This may have led to a local recovery of cheetah numbers in the region.

Further studies carried out to assess cheetah numbers include: The Okavango Delta Management Plan carried out a baseline survey of cheetah and leopard numbers in the Ramsar Site in 2006. The cheetah population was estimated through spoor surveys at 243. Cheetah density was estimated at 0.7 cheetah/100 km^2. This is considerably higher than originally estimated in the National Predator Strategy (0.35 cheetah/100 km^2). This suggests that this area holds a more significant population than previously considered (ODMP 2006).

Cheetah Conservation Botswana carried out a spoor survey in Jwana Game Park in the Kgalagadi Agricultural 2 zone. The cheetah population was estimated at approximately 150 cheetah within the study area which spans a quarter of the zone (A. Houser, unpubl. data). This is higher than the estimated 302 for the whole region. Although this supports the assumption that cheetah numbers are likely to be higher in the agricultural zones than the national estimates (Winterbach 2003).

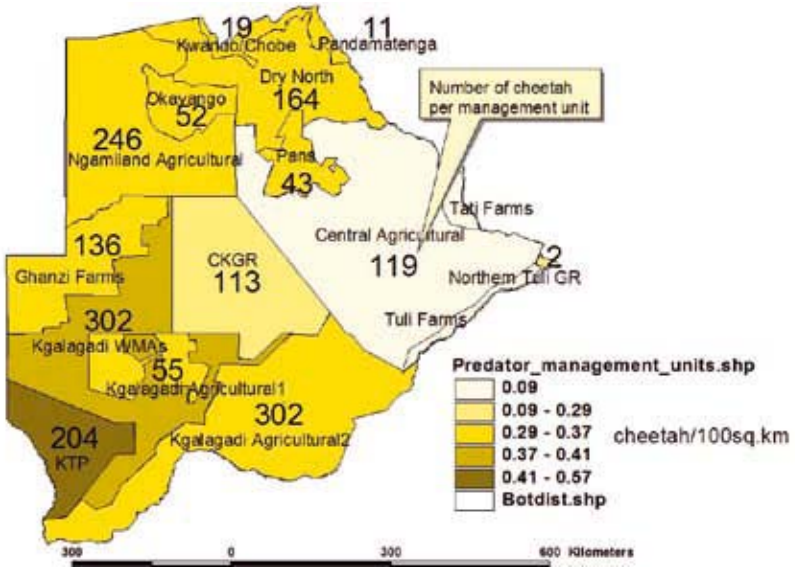

Fig 1. Current National Cheetah Estimates related to predator management zones.

Population trend

A general view is that cheetah numbers may be increasing in the agricultural zones. High predator populations in protected areas; removal of lion *Panthera leo* and spotted hyena *Crocuta crocuta* from farmlands and the effect on natural prey movements due to the expansion of artificial water points, may encourage cheetahs to utilise these areas. Of people (n=78) interviewed on trends over the last 5 years in the agricultural zones, 68% felt cheetah populations were increasing. 20% felt they had remained constant. While only 12% reported them to be decreasing (R. Klein, unpubl. data). However, high stocking rates and boreholes have made farmlands potential sinks for national predator populations, particularly cheetahs. Claims that cheetah numbers are increasing are just as likely to be attributed to an increase in livestock encounter rates due to expansion into areas previously inaccessible to farming. This requires urgent further study.

Certain areas such as the Molopo Farm block in the South of the Kgalagadi Agricultural 2 Zone have seen decreasing cheetah populations. Sightings of cheetah were once a regular occurrence in this savannah habitat (M.Bing, pers. comm.). However, this region is affected by illegal trade in cheetah due to the proximity of the South African border, as well as livestock conflict. Reports of decreasing cheetah populations have also come from Orapa Game Park and Khama Rhino Sanctuary in the Central Agricultural Unit. Moremi Game Reserve and Chobe National Park both report decreasing cheetah populations.

Table 1. Cheetah estimates from Botswana's draft predator policy (Winterbach 2003).

Management unit	Estimate	Density Ind/100 km^2
Okavango	52	0.35
Dry North	164	0.36
Kwando/Chobe	19	0.35
Pandamatenga	11	0.37
Pans	43	0.35
Central Agricultural	119	0.09
Northern Tuli GR	2	0.29
Ngamiland Agricultural	246	0.35
Ghanzi Farms	136	0.35
Kgalagadi WMAs	302	0.41
CKGR	113	0.21
KTP	204	0.57
Kgalagadi Agricultural 1	55	0.35
Kgalagadi Agricultural 2	302	0.35

Fig. 3. One of a male coalition in Moremi Game Reserve. Cheetahs are rare in this reserve due to high hyena and lion populations. (Photo J. Mossymere).

Situation in protected areas (Fig. 2)
Fully protected areas are National Parks and Game Reserves and occupy 17% of Botswana. An additional 21% is designated as wildlife management areas (WMA's), where it is intended that the main form of land use will be sustainable wildlife utilization

Central Kalahari GR - 52,800 km^2
The largest protected area in the country. It is made up of sandveld, acacia woodland and scrub. The CKGR changes dramatically through the seasons. During the rainy season seasonal game is found in large numbers, particularly springbok, gemsbok and wildebeest. The CKGR is an important refuge for Botswana's cheetahs and further studies are required to understand the population dynamics within the area.

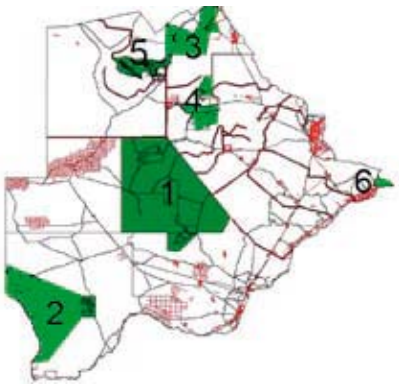

Fig 2. National Parks and Reserves in Botswana. 1 = Central Kalahari GR, 2 = Kalahari Gemsbok Transfrontier Park, 3 = Chobe NP, 4 = Makgadikgadi and Nxai Pan National Park, 5 = Moremi GR and 6 = Northern Tuli GR.

Kalahari Gemsbok Transfrontier Park - 28,400 km^2
The KTP is made up of sandveld, acacia woodland and scrub, frequently interspersed with pans. The pans support nutritious grasses and with the provision of artificial waterpoints there are good populations of springbok, gemsbok and hartebeest. Cheetahs may exist at the highest densities in Botswana within this reserve. Spoor surveys must be repeated to determine trends.

Chobe NP – 10,698 km^2
Habitats range from riverine, grassland, mophane woodland to acacia scrub. Cheetahs are rarely seen in this region, although they are occasionally seen in Savute and Nogatshaa. Cheetahs used to be found in the Northern part of the park but appear to have decreased in the region.

Makgadikgadi and Nxai Pan NP – 7,478 km^2
The pans make up an area of approx. 12,000 km^2, although only 7,478 km^2 are protected. This area is characterised by numerous large pans and grassland. Large herds of springbok and zebra congregate during the rainy season as the clay soils yield rich grazing. For the rest of the year the game is highly dispersed. Cheetahs are present in the pans but not in high numbers and are a seasonal rather than permanent presence.

Moremi GR – 4,871 km^2
The reserve incorporates a large part of the Okavango Delta. Moremi is a key wildlife area with high populations of elephant, buffalo, lion, spotted hyena and large game. Cheetahs are present (Fig. 3) but not common. This is possibly due to inter-predator conflict with lion and hyena which may limit the cheetah population in the area.

Northern Tuli GR – 1,350 km^2
This area is a combination of mophane forest, acacia bushveld, grassland and riverine habitats. Cheetahs are present (Fig. 4), but tend to be seasonal and not permanent, appearing to be more common during impala calving season at the onset of the rainy season. Since 2004, 19 cheetahs have been utilising the reserve (V. Stein, pers. comm). This implies the cheetah densities may be higher than earlier suggested by Botswana estimates.

Gaps in knowledge
Population size: Surveys need to be carried out in different habitats and land uses throughout the country to improve current estimates of cheetah populations.
Trends: Surveys need to be scheduled every 5 years in order to establish trends.
Conflict: It is known that the cheetah is considered a significant problem animal in many communities. The impact of such conflict on cheetah populations needs to be urgently assessed.

Habitat
Most of Botswana is semi-arid (Fig. 5). Mean annual rainfall ranges from 650 mm in the extreme northeast to less than 250 mm in the extreme southwest. Almost all rainfall occurs during the summer months, from October to April, and rainfall is highly variable temporally and spatially. The North-West, is dominated by the large inland delta and permanent wetland of the Okavango Delta, while the Central-North East consists of a large area of calcrete plains and salt pans. The East and South-East is hardveld and with around 450mm annual rainfall.

Most of the remaining areas of the country, about two-thirds, are covered by deep Kalahari sands and are sparsely populated (Jones 1999).

Regional differences
Cheetahs have been reported as present

in each major habitat type in Botswana. The cheetah density estimates are highest in the Kalahari sandveld and it is generally assumed that cheetah numbers are greater in this region.

Land Use Change

Since the 1970's cattle farmers in Botswana have benefited economically under the European Union Beef Protocol Agreement, which paid above world prices for Botswana's beef. Along with the development of deep borehole drilling technology and good rainfall years in the 1970s, this provided a strong incentive for the expansion of permanent livestock keeping into Kalahari pastures (Cooke 1985) and a move from low density usage by hunter-gatherer populations to borehole-centred livestock keeping. It is a change that has resulted in the substitution of domestic stock for formerly large herds of wild ungulates over large areas (Perkins 1996). The 1975 Tribal Grazing Land Policy (TGLP), promoted the expansion of commercial cattle ranches, in response to concerns of overgrazing and degradation due to the communal land system. Later, the 1991 National Policy on Agricultural Development facilitated further expansion. Hunter-gatherers and other non-cattle owners found their lands reclassified as cattle ranches. This has resulted in significant loss of wild lands.

Furthermore, the creation of veterinary fences, erected in order to control the spread of livestock disease, effectively blocked migration routes of vast numbers of migratory ungulates, with devastating effects on populations. The same restrictions arise from the increasing installation of ranch fences. Drought therefore will have a more severe impact on wildlife populations, due to the limitations on movement of migratory species to areas of surface water (Jones 1999).

The expansion of farming into the Kalahari, with considerable areas of new land for grazing, has continued for many decades and resulted in a significant increase in the national cattle herd, from 1.2 million in 1934 to about 3 million in 1998 (White 1998).

In response to these developments, Wildlife Management Areas (WMA's, Fig. 6) were established through the Fauna Conservation Act, in 1986. These areas now make up 20% of land in Botswana, although many are still to be officially gazetted and managed for wildlife.

Fig. 4. A coalition of three males in Northern Tuli Game Reserve. Cheetah may be recovering in this area due to the protected status and increased ecotourism in the region (Photo J. Klein).

High rates of stocking and borehole densities eventually result in widespread thornbush encroachment (Verlinden 1997), sometimes generating woodland in as little as two decades (Abel *et al*. 1987). With current livestock distribution and densities, thornbush encroachment probably affects most of the unprotected land in Botswana (Bonifica 1992). Studies on grazing in the Kalahari show that as more boreholes are established more bush encroached zones appear, at the expense of grass covered grazing areas (Perkins 1999).

Prey

Interviews and sightings imply that impala and springbok (Fig. 7) are among the most common prey items for Botswana cheetahs, followed by small game such as steenbok and duiker. Calves of larger ungulates are also key prey items, such as eland, gemsbok, hartebeest and kudu. Alternative prey species can include smallstock and calves. There have not been studies to accurately assess this in Botswana

Livestock in diet of cheetahs

There have not been any studies to assess this in Botswana. Cheetahs are considered to be a regular problem animal, particularly in southern and western Botswana.

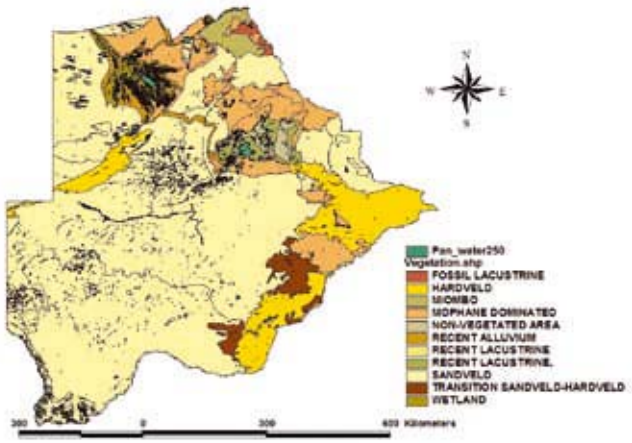

Fig. 5. Habitat classes throughout Botswana.

Evolution of prey species populations

Before the land use changes of the 1970's, Botswana had one of the largest surviving reservoirs of African plains game left on the continent' (White 1998). There have been drastic reductions in the wildlife population over the last 40 years The decline is due to several reasons, including loss of habitat to growing human and livestock populations, installation of veterinary fences, drought, poaching and over hunting. As a result of these factors, wildlife is increasingly restricted to protected areas, which are insufficient in size and wealth of resources to support the current numbers of wildlife without seasonal movement.

Mass die offs occurred in the severe drought from 1982-1986, resulting in an 80% reduction in Kalahari ungulates (Verlinden 1997). This occurred as a result of dry season refuges being fenced off and increasingly encroached by humans and livestock. Subsequent game counts in 1992 showed no significant recovery (Bonifica 1992).

Competition for grazing and water between wildlife and livestock may also be a factor, with studies showing 'a strong inverse relationship between cattle and wildlife densities, demonstrating that wildlife disappears from livestock invaded areas' (Arntzen 1998). Despite the low human densities and land devoted to conservation and wildlife utilization, the status of most mammal species declines.

Health and genetics

Cheetah Conservation Botswana has collected blood samples from 47 wild cheetahs in the Southern and Ghanzi Districts from 2004-2007. Samples were tested for IgG antibodies to feline herpesvirus (6% positive), feline calicivirus (15% positive), feline coronavirus (15% positive), canine distemper virus (4% positive) and for toxoplasmosis (55% positive) by immunofluorescence testing. They were also tested for puma lentivirus (0% positive) using an ELISA test. 22 samples were tested for feline leukemia virus antigen (0% positive) using an ELISA test produced for domestic cats (Dr K.Good, unpublished data). The results can only indicate that these cats have been exposed to and developed a titer to these viruses, further studies are required to give a better understanding of the prevalence of diseases nationwide.

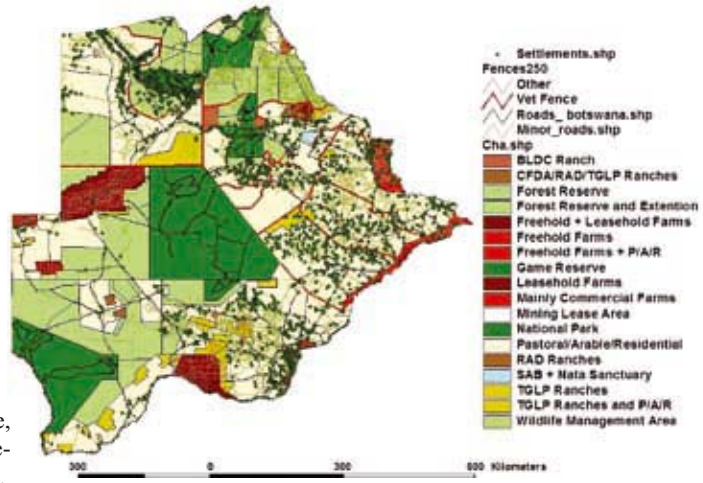

Fig. 6. Land use, roads and settlements in Botswana.

Human population

The human population is approaching 1.6 million, and is growing at ca. 2.3% per year. The average population density is only 3 inhabitants per km^2, but more than 80% of the population is concentrated in the east on more fertile soils in the hardveld (covering ca. 20% of the country). More than 75% of the population lives in rural areas (CSO 2001), but population density is low suggesting there is potential for larger species of wildlife to coexist with people.

Small-scale farming is the primary economic activity for the majority of rural communities. Livestock have a strong cultural and economic value to most rural citizens of Botswana (Twyman 2001) and are widespread throughout the country.

Changes in distribution of population

Since the 1970's the human populations have expanded along with the expansion of the livestock industry into vast areas of the Kalahari previously inhospitable. This has been accompanied by the move away from low density usage by hunter-gatherer populations to borehole-centred livestock keeping.

Recently, there have been migrations away from cattleposts to villages and then larger urban centres, in search of employment, although on the whole the human impact on the landscape increase.

Threats and problems

Livestock conflict

One of the biggest threats to cheetah populations in Botswana is the conflict with livestock farming communities, who tend to view the cheetah as a threat to livestock and of no real value. Retaliatory killings are widespread but unreported or recorded. DWNP Prob-

lem Animal Control (PAC) conflict incidence reports (2000-06) for cheetah (Fig. 8) are highest in the Southern district (32%), followed by Kweneng (26%), Central (20%), Ghanzi (11%), Kgalagadi (8%), Ngamiland (2%), and Chobe districts (1%). PAC reports can assist in identifying conflict hotspots and are a useful indicator of cheetah distribution.

Community surveys were carried out in Southern Botswana, assessing farm management and perceptions towards predators. 60% of interviewees (n=78) perceived they had a cheetah problem. 75% had a negative perception of cheetahs. Only 12% had a positive perception of cheetah (R. Klein, unpubl. data).

Currently, cheetahs are often killed on farmlands. While it is illegal to kill cheetah for any reason, the reality of enforcing this is immensely challenging.

Fig. 7. Kalahari springbok in Southern Botswana, one of the main prey species of cheetahs in Botswana (Photo L. Boast).

Illegal trade

This occurs regularly and is one of the primary threats to Botswana's cheetah population. It is not possible to accurately assess how many cheetahs are leaving the country. However, it has been estimated to be approximately 50-60 individuals annually, mostly subadults and cubs (A. Houser, CCB; D. Cilliers, NCMP; pers. comm.). This is based on information from the Bray/Verda area, which is situated on the Botswana/South Africa border.

Conflict with other larger predators

Interspecific competition with lion and spotted hyena may influence cheetah distribution. Analysis of spoor surveys in the Okavango/Linyanti Ramsar site show that areas with higher cheetah densities had lower densities of lion and vice versa (ODMP 2006).

Solutions

The following actions are taken in response to the current threats towards predator populations.

DWNP Managed Compensation Scheme

The Department of Wildlife National Parks (DWNP) is responsible for the state funded compensation scheme for livestock depredation or crop destruction by wild animals. In 1997, the DWNP compensation scheme excluded livestock losses by cheetahs and other species that were not listed as dangerous in the Botswana Wildlife Conservation and National Parks Act no. 28 of 1992. The exclusion of cheetah depredation from compensation and the ban on killing of problem cheetahs may also have contributed to low tolerance by farmers (Selebatso 2006). In response to this, cheetah and wild dog were added to the list of compensated animals in April 2004. It is hoped that this will increase tolerance towards these predators. In practice, communities are not satisfied with the current compensation system. It is felt the reimbursements are insufficient and untimely. DWNP officers may have difficulties getting to claims in time and this can cause friction with local farmers.

DWNP Managed Problem Animal Control (PAC)

PAC is the responsibility of DWNP PAC officers. After an initial complaint, PAC officers advise the complainants of methods that can reduce the problem. Livestock owners are advised to herd stock during the day and kraal animals at night. PAC officers also address communities through traditional council meetings. The second stage in PAC is non-lethal control. PAC teams may chase the predator, shoot over the animal's head and use non lethal explosives to move the animal away, normally towards a protected area. Translocations may also occur if the predator returns, which must be done in the presence of a licensed veterinarian. Occasionally, with persistent problem animals or when there is threat to human life, lethal control may be considered. There is no clear evidence that these methods are effective in decreasing conflict, although it is the hope that these measures will reduce the number of cheetahs killed by farmers.

Predator Conservation Organisations

Several organisations are involved with monitoring cheetah populations and working with communities to decrease conflict (See Appendix).

Policy and Legislation

Botswana law

The cheetah has always been classified as Royal game or conserved animals under the different game laws in Botswana and as such was protected from hunting since 1968. This was reinforced in 1992 with the Wildlife Conservation and National Parks Act, which states that the cheetah is a protected predator species in Botswana that may be hunted or captured only under and in accordance with the terms and conditions of a Director's

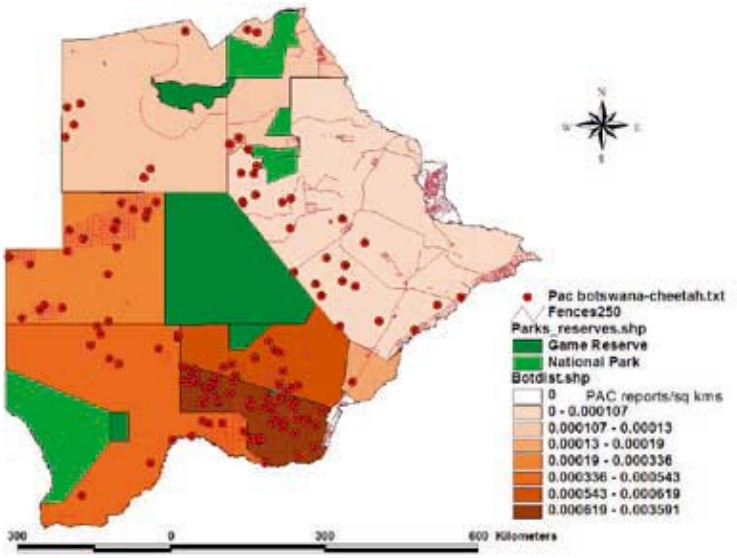

Fig. 8. Distribution of cheetah recorded by the Problem Animal Control.

permit. At this time cheetahs could be killed in defense of stock.

In 2000, a moratorium was passed banning the killing of cheetah and lion for any reason, including due to livestock conflict, after an alarming rate of retaliatory killing by farmers in protection of their livestock.

This law was added to in 2005, with the passing of a statutory instrument banning the killing of cheetah as problem animals and issuing offenders with P1000 (US$200) fine or 1 year imprisonment.

Red listing

IUCN lists the cheetah as Vulnerable (VU), therefore it is considered to be facing a high risk of extinction in the wild.

Implementation of laws

Where possible the laws are implemented by the DWNP. However, due to large distances and limited manpower, laws are very difficult to enforce.

Extent and consequences of translocation of cheetahs

Translocation is a technique utilised by the PAC department in situations where a predator is considered to be a persistent problem. It is carried out as a last resort as an alternative to killing the individual. However, there are no mechanisms for guiding translocation exercises or proper monitoring of the consequences of translocated cats.

In certain regions, such as the Ghanzi farmlands, where farmers trap cheetah considered to be problematic, translocation is occurring regularly. There is an acknowledgement from the DWNP that translocation is not an ideal solution. However, it is seen as an option preferable to lethal control.

Sustainable use

There has been a ban on hunting cheetahs since 1968. Prior to this, in 1967, records for game trophies were compiled: 1964=54; 1965=55; 1966=37; 1967=54 (UNDP 1969). Since this time, legal hunting has not occurred. However, Botswana may consider sustainably utilising cheetah in the future.

Legal trade

CITES lists the cheetah as Appendix I. Botswana has a CITES quota of 5 cheetahs. However, this is not utilized as Botswana also has laws stating that the species can not be killed for any reason. There is no legal trade, whether trophies nor live animals.

Illegal trade

There is a regular illegal trade operating between Botswana and South Africa. Live animals and skins are smuggled across the long porous borders between the two countries.

Cheetahs in captivity

Seven cheetahs are currently being kept in two temporary holding facilities in the Ghanzi farmlands. They are being kept for private concerns. Two cheetahs are kept at Mokolodi Nature Reserve, in South East Botswana, they were orphaned due to livestock conflict. Hand raised, they now act as ambassadors of the species. There are no other records of cheetahs in captivity in Botswana, and there are no zoos in the country. Breeding of cheetah is not encouraged and there are no breeding centres. Currently, there are no regulations for keeping cheetahs in captivity. DWNP is working on a captive predator policy and acknowledges this is urgently required.

Important next steps for conserving cheetahs

• Accurate information on the population size, distribution and trends. Baseline data for key habitats needs to be collected. Follow up surveys are required in CKGR and KTP. Studies need to assess the impact of predator/livestock conflict on cheetah populations.

• Maintenance of prey populations, including creation of corridors between protected areas to allow for natural wildlife movements.

• Awareness raising (Fig. 9) amongst communities on the status of cheetahs, the importance of predators and use of effective livestock management techniques to reduce conflict.

• Enforce the use of effective livestock management techniques in order to qualify for compensation.

• Investigate alternative livelihoods to enable communities to benefit from coexistence with cheetahs. i.e. ecotourism, predator friendly beef, veldt products, honey production.

• Investigations into illegal trade and strong penalties for offenders.

• Produce a captive predator policy, with standards for keeping large predators in captivity.

Conclusions

Botswana supports a significant number of the Southern African cheetah population. It is vital that wildlife policies incorporate the need for cheetah conservation nationally, particularly in agricultural zones. Further research and conservation management are essential to enable Botswana to conserve this thre-

atened national resource and Africa's most endangered large cat.

Acknowledgements
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Fig. 9. Cheetah Conservation Botswana has a community outreach and educaation program to raise awareness for the importance of predators. Regular school talks take place, particularly in areas of high human/predator conflict (Photo W. Letubo).

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Appendix I

Projects

Cheetah Conservation Botswana (CCB) is a long term conservation project incorporating research, community outreach and public education. CCB has research camps in Jwaneng and Ghanzi farmlands, along with a national community education program to raise awareness and promote sustainable farm management.

Organizations involved

• Cheetah Conservation Botswana, Mokolodi Nature Reserve, Private Bag 0457, Gaborone, Botswana. info@cheetahbotswana.com; www.cheetahbotswana.com

• Botswana Predator Conservation Program, Private Bag 13, Maun, Botswana. lycaon@info.bw

• Centre for Conservation of African Resources: Animals, Communities and Land Use (CARACAL) Private Bag K60, Kasane, Botswana. caracal@botsnet.bw; www.caracal.com

Responsible authorities

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