REGIONAL CONSERVATION STRATEGY FOR THE CHEETAH AND AFRICAN WILD DOG IN SOUTHERN AFRICA

REVISED AND UPDATED

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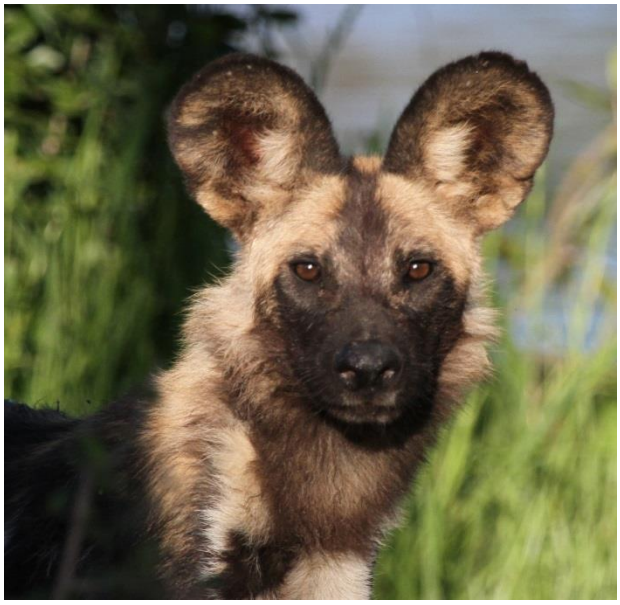

Range Wide Conservation Program for Cheetah & African Wild Dogs

WCS

IUCN

IUCN / SSC Canid Specialist Group

SPECIES SURVIVAL COMMISSION CAT SPECIALIST GROUP

ASSOCIATION OF ZOOS & AQUARIUMS

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REGIONAL CONSERVATION STRATEGY FOR THE CHEETAH AND AFRICAN WILD DOG IN SOUTHERN AFRICA

RWCP & IUCN/SSC

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CHAPTER 1

Executive Summary

1.1 Background

The cheetah (*Acinonyx jubatus*) and the African wild dog (*Lycaon pictus*, hereafter 'wild dogs') present major challenges for conservationists in the 21st Century. All large carnivores need large areas to survive; but wild dogs and cheetah range more widely, and hence need larger areas, than almost any other terrestrial carnivore species anywhere in the world. As human populations encroach on Africa's last wild areas, these two threatened species are often the first to disappear.

Protected areas are very important for the conservation of both cheetah and wild dogs, but the majority of these animals reside outside the protected areas which are the focus of most conservation effort. Over three quarters of cheetah resident range, and 70% of wild dog resident range, falls on community and private lands, outside of formally protected areas. Given this knowledge it is unlikely that populations inside protected areas would be viable if isolated from unprotected lands (Durant et al, in press). Therefore conservation activity outside protected areas is absolutely critical for the long-term survival of these two species. In addition, several important wild dog and cheetah populations straddle international boundaries. Trans-boundary management is therefore likely to be needed for conserving both species in the long term.

1.2 The Range Wide Conservation Program for Cheetah and African Wild Dogs

In recognition of their vast area requirements, the Range Wide Conservation Program for Cheetah and African Wild Dogs (RWCP) was born, formerly called the Rangewide Planning Process. This is a joint initiative of the Zoological Society of London and the Wildlife Conservation Society, endorsed by the IUCN Cat and Canid Specialist Groups. This program has been responsible for driving a coordinated, landscape level approach to cheetah and wild dog conservation, through engagement with government wildlife authorities, field programs, non-governmental organizations and other stakeholders in all range states. The southern African office was established in 2007, with a regional coordinator based in Zimbabwe.

1.3 Cheetah and Wild Dogs in Southern Africa

Both cheetah and wild dogs have experienced major contractions in their geographic range within southern Africa, with resident populations known to remain in just 22.6% (cheetah) and 17% (wild dogs) of their historical range within the region. However, for about a quarter of the region (25% for cheetah and 23% for wild dogs) there are little reliable data available regarding the status and distribution of the two species.

Despite this, southern Africa still supports globally important populations of both cheetah and wild dogs and remains the stronghold for both species within Africa. Nonetheless, populations are declining, due to a number of threats which include habitat loss and fragmentation, conflict with livestock and game farmers, loss of prey populations, unintentional snaring, road kills, small population sizes, infectious diseases (mainly wild dogs) and hunting for live trade and skins (mainly cheetah). The Regional Conservation Strategy developed here provides a framework to alleviate these threats and to ensure the survival of these two species in the region. Given wild dogs' and cheetah's similar ecological needs, it makes sense to plan their conservation together.

1.4 The Regional Conservation Strategy for the Cheetah and African Wild Dog in Southern Africa

The Regional Conservation Strategy presented in this document is a revised and updated version of the first strategy, developed in 2007 (IUCN/SSC, 2007). The strategic planning process has been conducted as a collaboration between national wildlife authorities across southern Africa, the Range Wide Conservation Program for Cheetah and African Wild Dogs (RWCP) and the Cat and Canid Specialist Groups of the IUCN/SSC.

The first Regional Conservation Strategy (IUCN/SSC, 2007) was developed after a workshop in Botswana in December 2007, attended by 38 participants, including representatives from all eight southern African range states. The workshop followed the now recognized IUCN strategic planning framework and produced a regional strategy, designed to foster the development of National Action Plans in each range state.

At a meeting near Johannesburg in August 2015, the Regional Conservation Strategy for Southern Africa was revised and updated (see Chapter 6).

The strategic plan for the species' conservation in southern Africa recognizes the need to (i) develop capacity in all aspects of cheetah and wild dog conservation in the region; (ii) improve knowledge on the conservation of both species; (iii) ensure that information relevant to both species is disseminated to stakeholders; (iv) minimise conflict and promote coexistence between cheetah, wild dog and people; (v) minimise the adverse effects of land development and implement best land use practice for cheetah and wild dog; (vi) obtain political commitment to cheetah and wild dog conservation; (vii) review and harmonise existing legislation and policy affecting cheetah and wild dog conservation; and (viii) facilitate the development and implementation of national conservation plans for both species.

CHAPTER 2

Introduction and Background

2.1 Background

The cheetah (*Acinonyx jubatus*) and the African wild dog (*Lycaon pictus*) present major challenges for conservationists in the 21st Century. Both species were formerly widely distributed in Africa, but both have experienced dramatic reductions in numbers and geographic range in recent decades (Ray, Hunter & Zigouris, 2005). All large carnivores need large areas to survive; however, wild dogs and cheetah range more widely than almost any other terrestrial carnivore species anywhere in the world, and consequently need larger areas. As human populations encroach on Africa's last wild areas, wild dogs and cheetah – both particularly susceptible to the destruction and fragmentation of habitat – are often the first species to disappear.

Despite their threatened status (wild dogs are listed as endangered (Woodroffe & Sillero-Zubiri, 2012) and cheetah as vulnerable (Durant et al., 2015) on the IUCN red list), ecological importance as top carnivores (Woodroffe & Ginsberg, 2005), and value to Africa's tourism industry (Lindsey *et al.*, 2007), remarkably little conservation action had been implemented for these two species when this strategy was first developed in 2007. The majority of Africa's protected areas are too small to conserve viable populations, and active conservation efforts on unprotected lands had hitherto been restricted to a handful of projects.

Three factors have hindered conservation activity for cheetah and wild dogs:

- The species' massive area requirements mean that conservation planning is needed on a daunting geographical scale, rarely seen before in terrestrial conservation.
- Information has, until recently, been lacking on the species' distribution and status, and on the tools most likely to achieve effective conservation.
- Capacity to conserve these species is lacking in most African countries; expertise in managing more high-profile species such as elephants and rhinos may not be transferable to wild dogs or cheetah because the threats and conservation challenges are different.

Recognizing these concerns, in 2006 the Cat and Canid Specialist Groups of the IUCN/SSC, in partnership with the Wildlife Conservation Society (WCS) and the Zoological Society of London (ZSL), initiated a Rangewide Conservation Planning Process for wild dogs and cheetah (now the Range Wide Conservation Program for Cheetah and African Wild Dogs (RWCP)). The two species were addressed together because, despite being taxonomically quite different, they are ecologically very similar and face similar threats.

The Rangewide Conservation Planning Process had six stated objectives:

(1) To foster appreciation for the need to conserve wild dogs and cheetah, particularly among conservation practitioners in range states.

(2) *To collate information on wild dog and cheetah distribution and abundance on an ongoing basis, in order to direct conservation efforts and to evaluate the success or failure of these efforts in future years.*

(3) *To identify key sites for the conservation of wild dogs and cheetah, including corridors connecting important conservation areas.*

(4) *To prepare specific global, regional and national conservation action plans for both cheetah and wild dogs.*

(5) *To encourage policymakers to incorporate wild dogs' and cheetah's conservation requirements into land use planning at both national and regional scales.*

(6) *To develop local capacity to conserve cheetah and wild dogs by sharing knowledge of effective tools for planning and implementing conservation action.*

A key component of this process is a series of workshops, bringing together specialists on the species' biology and conservation managers from governmental and non-governmental organizations. Close involvement of government representatives was considered absolutely critical as they represent the organizations with the authority to implement any recommendations at the management and policy levels.

The RWCP covers the whole of Africa, with the continent split into three regions, each with its own coordinator. This allows for specific and regionally relevant conservation planning. The southern African office of the RWCP was established in 2007, and the first regional workshop was held in Botswana in December 2007. Details of this meeting can be found in the 2007 Regional Conservation Strategy (IUCN/SSC, 2007).

Since wildlife conservation policy is formulated, authorized and enforced at the national level, it is critical that conservation planning be enacted at this level. The development of national plans, through national workshops, is thus a vital part of the RWCP's efforts. To this end, the 2007 southern African workshop was followed immediately by a National Action Planning Workshop for Botswana, to which delegates from other countries in the region were invited as observers. This was to help countries understand the process and help them to organize national workshops in their own countries. Subsequently, between 2008 and 2013, all other range states in southern Africa except Angola developed, and made reasonable progress towards implementing, National Action Plans.

The second southern African regional workshop, held in South Africa in August 2015 had two main objectives. First, to collate and share progress made against the objectives of the 2007 regional strategy, developed eight years previously, and second, to revise and update the strategy and the logframe of objectives, results and activities. **This revised strategy is presented in Chapter 6 and the logframe in Appendix 4.**

2.2 The Biology and Conservation Needs of Cheetah

The cheetah is a unique and specialized member of the cat family. While running down its prey, it can reach speeds of 64 miles per hour (103 km per hour, Sharp, 1997), making it the fastest creature on land. However, despite their specialized hunting strategy, cheetah are habitat generalists, ranging across a wide variety of habitats, from desert through grassland savannas to thick bush (Myers, 1975).

Cheetah have a social system unlike that of any other cat species. Cheetah females are tolerant of other females, and do not maintain territories, having large overlapping home ranges instead (Caro, 1994). Females are highly promiscuous, with high levels of multiple paternity within litters and no evidence of mate fidelity (Gottelli *et al.*, 2007). Cheetah males are often social, forming permanent coalitions of two or three (usually brothers), which stay together for life (Caro & Durant, 1991). Males in groups are more likely than single males to take and retain territories, which they defend against male intruders (Caro & Collins, 1987). In the Serengeti ecosystem in northern Tanzania, male territories average 50km^2, whilst females and males without territories move over 800km^2 every year (Caro, 1994). This system, where males are social and hold small territories, and females are solitary moving across several male territories annually, is known in no other mammal species (Gottelli *et al.*, 2007).

Cheetah females are able to give birth to their first litter at two years of age, after a three-month gestation (Caro, 1994). The cubs are kept in a lair for the first two months of their life, while their mother leaves them to hunt every morning and returns at dusk (Laurenson, 1993). Cheetah cub mortality can be high: in the Serengeti mortality of cubs from birth to independence was reported at 95% (Laurenson, 1994). There, cubs died mostly because they were killed by lions or spotted hyaenas; mothers cannot defend cubs against these much larger predators (Laurenson, 1994). However, a more recent study by Mills & Mills (2014) in the Kgalagadi Transfrontier Park, showed the survival of cheetah cubs was seven times higher than on the Serengeti plains, and cub mortality was rarely attributed to lions (Mills & Mills 2014). Cubs may also die from exposure or fire, or from abandonment if their mother is unable to find food. If they survive, the cubs will stay with their mother until they are 18 months old, after which they will roam with their littermates for another six months (Caro, 1994). The longest recorded longevity in the wild is 14 years for females and 11 years for males, however females have never been recorded as reproducing beyond 12 years (Durant unpublished data). Demographic parameters are available for only a small number of populations; mean and variance of birth and survival have been published from the long term study in the Serengeti National Park in Tanzania (Durant, Kelly & Caro, 2004), whilst mean birth and survival rates are available from ranch lands in Namibia (Marker *et al.*, 2003b).

Cheetah are predominantly diurnal, although hunting at night is not uncommon (Caro, 1994). They hunt by a stealthy stalk followed by a fast chase. Because of their unrivalled speed and acceleration, cheetah can hunt successfully even if they start a chase at a much greater distance than bulkier and heavier large cats, such as lions (*Panthera leo*) and leopards (*Panthera pardus*). They take a wide variety of prey, depending on habitat and geographic location, but prefer prey of 15-30kg: the size of a Thomson's gazelle (*Gazella thomsonii*) or impala (*Aepyceros melampus*).

As with African wild dogs, and unlike most other large carnivore species, cheetah tend to avoid areas of high prey density, probably because other large carnivore species are found in these areas (Durant, 1998; Durant, 2000). As previously discussed, lions have been documented to be largely responsible for the high mortality of cheetah cubs observed in the Serengeti (Laurenson, 1994), and will also kill adults, whilst spotted hyaenas can kill cubs and will steal kills from cheetah.

Cheetah live at low densities with most recorded densities ranging between 0.1 to 3 adult cheetah/100km^2 (Burney, 1980; Gros, 1996; Marker, 2002; Mills & Biggs, 1993; Morsbach, 1986; Purchase, 1998). Although markedly higher estimates have been documented in some areas (e.g. the Serengeti plains), it is likely these estimates do not reflect true density, as individuals counted may roam outside the survey area (highlighting a general problem with surveying cheetah, see Bashir *et al.*, 2004). Cheetah home ranges have been recorded as ranging from 50km^2 for territorial males in the Serengeti (Caro, 1994) to over 1,000km^2 in Namibia (Marker *et al.*, 2008). As with wild dogs, cheetah home ranges are much larger than would be predicted from their energy needs (Figure 2.1).

Because they can range across such large areas, cheetah can also disperse widely, having been recorded as moving over much more than one hundred kilometres (Durant unpublished data), making it difficult to determine whether occasional cheetah sightings in an area represent transient individuals or a resident population. However, this ability to disperse enables cheetah to recolonize new areas fairly easily if and when they become available.

Cheetah used to be widespread across Africa and across Asia as far east as India. However today, most of the remaining cheetah are concentrated in sub-Saharan Africa, with only a few populations in north and west Africa and one small Asian population in Iran (c. 70-100 individuals). The first status survey for cheetah was in the early 1970s (Myers, 1975), later, in the 1980s, surveys of selected countries were conducted (Gros, 1996, 1998, 2002; Gros & Rejmanek, 1999), and in 1998 a summary of global status was collated (Marker, 1998). However, given that the cheetah is shy, cryptic and rarely seen across most of its range, accurate information on status and densities are extremely difficult to collect for this species (Durant et al, 2016). Furthermore, the ranging patterns of the species incline it to cluster in areas that become temporarily favourable habitat (due to the absence of competitors and availability of prey), making estimating numbers additionally problematic (Durant *et al.*, 2007; 2016). **This document provides the most up to date and accurate information on cheetah status and distribution across southern Africa.**

The species is listed as vulnerable by the IUCN red list, although a recent paper (Durant et al., 2016) calls for cheetah to be uplisted to endangered following evidence of recent rapid decline. In the 1970s, global population size was 'guesstimated' at 14,000 (Myers, 1975) but is now thought to be only 7,100 individuals (Durant et al., 2016). Unfortunately, as these recent numbers demonstrate, there has been a significant decline in the species numbers. The consensus among the world's cheetah experts suggests this is a genuine decline, rather than a recent underestimate. Certainly the distribution of the species has contracted markedly from its historical range, with declines largely attributed to habitat loss and fragmentation (Myers, 1975; Marker *et al.*, 2003a; Marker *et al.*, 2003b; van der Meer, 2016). The disappearance of the species from across nearly its entire Asian range was also in part due to the habit of the Asian aristocracy of capturing and using cheetah for hunting (Divyabhanusinh, 1995). Today, in sub-Saharan Africa, lethal control due to perceived or

actual conflict with livestock or game ranching also plays a strong role in the decline of the species (Marker *et al.*, 2003a; Marker *et al.*, 2003b; Myers, 1975).

2.3 The Biology and Conservation Needs of African Wild Dogs

African wild dogs are highly social members of the canid family. Packs cooperate to hunt their prey (Creel & Creel, 1995) which consists mainly of medium-sized ungulates (particularly impala, *Aepyceros melampus*), but may range in size from hares (*Lepus* spp) and dik diks (*Madoqua* spp, Woodroffe *et al.*, 2007b) to kudu (*Tragelaphus strepsiceros*) and even, occasionally, eland (*Tragelaphus oryx*) (Van Dyk & Slotow, 2003). Packs also cooperate to breed, usually with only one female and one male being parents of the pups, but with all pack members contributing to pup care (Malcolm & Marten, 1982). As females have rarely been observed to raise pups to adulthood without assistance from other pack members, packs, rather than individuals, are often used as the units for measuringfuntional wild dog population size.

Unlike most carnivore species (except cheetah), wild dogs tend to avoid areas of high prey density, probably because larger carnivores prefer such areas (Creel & Creel, 1996; Mills & Gorman, 1997). Lions (*Panthera leo*) and spotted hyaenas (*Crocuta crocuta*) are important causes of death for adult and juvenile wild dogs (Woodroffe *et al.*, 2007a). This tendency to avoid larger predators may also help to explain the low population densities and wide ranges exhibited by wild dogs. Population densities average around 2.0 adults and yearlings per 100km^2 (Fuller *et al.*, 1992a) and home ranges average 450-650km^2 per pack in southern Africa (Woodroffe & Ginsberg, 1998), with some packs ranging over areas in excess of 2,000km^2 (Fuller *et al.*, 1992a). Both wild dogs and cheetah occupy home ranges larger than would be predicted on the basis of their energy needs (Figure 2.1).

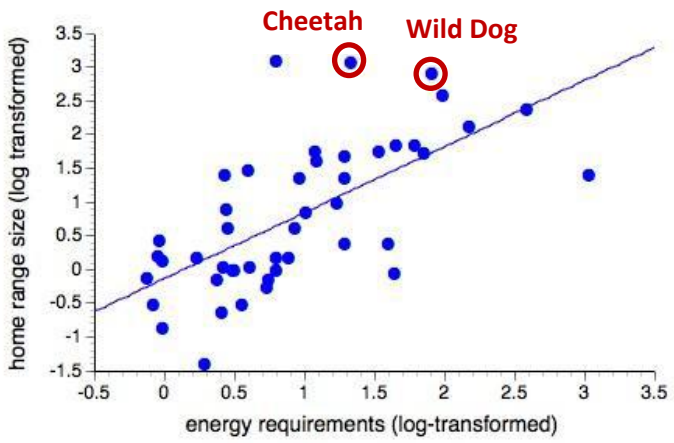


Figure 2.1 *The relationship between energy requirements and home range size in multiple carnivore species, showing the large home ranges occupied by cheetah and wild dogs in comparison with their energy needs. Wild dogs are recorded as having greater needs than cheetah because the social unit is a pack rather than an individual. Data are from Gittleman & Harvey (1982).*

Most new wild dog packs form when young animals (usually but not always in their second year, McNutt, 1996) leave their natal packs in same-sex dispersal groups, and seek new territories and members of the opposite sex. Such dispersal groups may travel hundreds of kilometres (Fuller *et al.*, 1992b), and have been recorded in areas very remote from resident populations (Fanshawe *et al.*, 1997). This dispersal behaviour can complicate the interpretation of distribution data, as sightings of small groups of wild dogs do not necessarily indicate the presence of a resident population. However, the behaviour does allow wild dogs to recolonize unoccupied space when opportunities arise.

Wild dog populations in different regions of Africa are morphologically and genetically different, but no subspecies are formally recognized (Girman & Wayne, 1997; Girman *et al.*, 1993). Wild dogs are habitat generalists, and have been recorded in habitats as diverse as wooded savannah (Creel & Creel, 2002), short grasslands (Kuhme, 1965), montane forest (Dutson & Sillero-Zubiri, 2005) and montane moorland (Thesiger, 1970).

The first status survey for wild dogs was conducted in 1985-88 (Frame & Fanshawe, 1990), and this was updated in 1997 (Fanshawe *et al.*, 1997) and 2004 (Woodroffe, McNutt & Mills, 2004). These surveys revealed substantial loss and fragmentation of wild dog populations, with the species extirpated across most of western and central Africa, and greatly depleted in eastern and southern Africa. However, distribution data, which were collated mainly by exhaustive postal correspondence, were somewhat biased towards protected areas with little information available from unprotected lands. By 1997, wild dogs had disappeared from most of Africa's protected areas, persisting only in the largest reserves (Woodroffe & Ginsberg, 1998). In 2004 the species was estimated to number fewer than 6,000 adults and yearlings (Woodroffe McNutt & Mills, 2004). The species is listed as 'endangered' by the IUCN (Woodroffe & Sillero-Zubiri, 2012). **This document provides the most up to date and accurate information on wild dog status and distribution across southern Africa.**

The decline in wild dogs has been related to their limited ability to inhabit human-dominated landscapes. Where human densities are high and habitat consequently fragmented, wild dogs encounter and suffer mortality from a) hostile farmers and ranchers, b) wire snares set to catch wild ungulates, c) high speed traffic, and d) domestic dogs harbouring potentially fatal diseases (Woodroffe & Ginsberg, 1997). While these threats are common among large carnivores, wild dogs' low population densities and wide-ranging behaviour mean that they are both more exposed to, and more susceptible to, these human impacts than are most other species (cheetah being a possible exception).

Despite human impacts on their populations, however, wild dogs can coexist successfully with people under the right circumstances (Woodroffe *et al.*, 2007b). Wild dogs seldom kill livestock where wild prey remain, even at comparatively low densities (Rasmussen, 1999; Woodroffe *et al.*, 2005b), and traditional livestock husbandry is a highly effective deterrent (Woodroffe *et al.*, 2006). Tools have been developed to reduce the impacts of conflicts with game and livestock ranchers, accidental snaring, and road accidents, but safe and effective tools to manage disease risks are still under development (Woodroffe *et al.*, 2005a).

2.4 The layout of this document

Chapters 3 and 4 of this report present details on the status and distribution of cheetah and wild dogs, respectively, in southern Africa in 2015. Chapter 5 describes the threats to both species. Chapter 6 describes the conservation strategy developed for the region by workshop participants (listed in Appendix 1). The agenda for the workshop is presented in Appendix 2, the methods used to collate the data are outlined in Appendix 3, and a logical framework table of the strategic plan is provided in Appendix 4.

CHAPTER 3

The Distribution and Status of Cheetah within Southern Africa

3.1 Historical distribution

Cheetah are habitat generalists, able to persist in a wide array of environmental conditions as long as prey are available, ranging from the Sahara Desert to reasonably thick bush. Before human activity modified substantial proportions of southern Africa's natural habitats, cheetah were presumed to have occupied virtually the entire region, bounded to the east by the Indian Ocean and to the west by the South Atlantic Ocean (Figure 3.1). In the past, cheetah were broadly distributed across the whole of southern Africa, absent only from the vast expanse of Etosha Pan in Namibia and those areas covered by Lake Malawi and Lake Tanganyika. It was previously thought that cheetah were historically absent from the desert regions on the western coast of what is now Namibia (IUCN/SSC 2007). However at the 2015 workshop, this stretch of coast in Namibia was designated as transient range for cheetah (i.e. within historical range and still used occasionally by migratory individuals). This change of designation resulted from evidence from Namibian cheetah projects showing cheetah moving through those areas, both historically and presently, and was agreed on by all Namibian participants.

Figure 3.1 *Cheetah historical range, prior to the impact of human activity after revision at the second Southern African Regional Workshop for Cheetah and Wild Dogs (2015)*

The highest cheetah densities have been recorded in wooded savannah (Durant et al., 2011; Marnewick et al., 2014). However, the species lives at low density wherever it occurs, partly because it comes into competition with other large carnivores, such as lions and spotted hyaenas

(Durant, 1998). Because of this, in well protected wilderness areas that harbour large numbers of other large carnivores, cheetah densities seldom exceed 2/100km^2. This is because the best habitats attract the highest densities of competing carnivores. Outside of protected areas however, cheetah densities are often even lower, mainly due to lack of prey, persecution and poor quality habitat. It is unlikely, therefore, that cheetah were ever abundant, despite their broad geographical distribution. Even today, while maximum densities rarely exceed 2 cheetah/100km^2, densities in some places are significantly lower; for example 0.21-0.55 cheetah/1,000 km^2 for the Saharan cheetah in Algeria (Belbachir et al 2015).

3.2 Current distribution

3.2.1 Categories of current geographic range

Since cheetah distribution is imperfectly known across the region, the original mapping process recognised seven categories of current geographic range, the definitions for which were updated at the 2015 workshop. These categories are identical to those used for wild dogs (see chapter 4). Further details on range definitions are provided in Appendix 3.

(1) **Resident range**: land where wild cheetah are known to still be resident. (A **Resident fenced** category is used for areas <1,000km^2 which are well fenced, see below)
(2) **Possible resident range**: land where wild cheetah may still be resident, but where residency has not been confirmed in the last 10 years.
(3) **Transient range**: habitat used intermittently by cheetah, but where cheetah are known not to be resident and which does not connect to other resident ranges.
(4) **Connecting range**: land where cheetah are not thought to be resident, but which dispersing animals may use to move between occupied areas, or to recolonise extirpated range. Such connections might take the form of 'corridors' of continuous habitat or 'stepping stones' of habitat fragments.
(5) **Recoverable range:** land where habitat and prey remain over sufficiently large areas that either natural or assisted recovery of cheetah might be possible within the next 10 years if reasonable conservation action were to be taken.
(6) **Extirpated range**: land where the species has been extirpated, and where habitat is so heavily modified or fragmented as to be uninhabitable by resident cheetah for the foreseeable future.
(7) **Unknown range**: land where the species' status is currently unknown and cannot be inferred using knowledge of the local status of habitat and prey.

Populations are considered to be 'wild' when they are not intensively managed, in line with the guidelines of IUCN/SSC (IUCN Standards and Petitions Subcommittee 2016; see also Redford et al 2011). In the case of wide-ranging and low density species such as cheetah, and after consultation with the IUCN/SSC Cat Specialist Group, we consider intensive management necessary in reserves less than 1,000km^2 when they are surrounded by impermeable fencing. We consider cheetah populations in reserves that are unfenced, or where fences are permeable to cheetah, as wild. Populations in small fenced reserves can make a valuable contribution to 'wild' populations by providing individuals for restocking when they are well-managed to maintain high levels of genetic

diversity, such as the South African cheetah meta-population. For now these areas are referred to as fenced populations, but it needs to be emphasised that this does not imply captive populations.

3.2.2 Current distribution across different range categories

Figure 3.2 shows cheetah geographic range as mapped by workshop participants in 2015, according to the seven categories listed above; Table 3.1 presents the same data in a quantitative format.

The current geographic distribution of cheetah is greatly reduced in comparison with their historical distribution. Cheetah are known to be resident in only about 22.6% and possibly resident in another 6.6% of their historical range. Therefore, even if all known and possible range holds resident populations, there has still been an apparent loss of over two thirds of their historical range.

The largest known resident population of cheetah in southern Africa extends across five countries (Angola, Namibia, Botswana, South Africa and Mozambique). The cheetah population in north western Zimbabwe (in the Greater Hwange Ecosystem) may in future be connected to this large transboundary population, but currently evidence for such connectivity is lacking. However, there have been cheetah sighted in the concessions bordering the Botswana border (Matetsi and Imbabala) as well as occasional cheetah sightings around Kasane (Esther van der Meer pers. comm.). Nonetheless there is no direct evidence of connectivity at this point in time.

In southern Africa, consensus opinion concluded cheetah have been extirpated across a minimum of 40.7% of their historical range in southern Africa (see Table 3.1), an increase from 26% in 2007. Rather than an increase in loss of range, this increase in percentage of extirpated range rather represents a recognition that much of the area formally designated as 'unknown' is in fact extirpated (see Section 3.3). Most of this extirpated area occurs in the intensively agricultural country of South Africa, the heavily populated country of Malawi, and more recently in Zimbabwe, since the land reform program resulted in a loss of many game farms and conservancies (Figure 3.2).

However, cheetah were also recorded absent from areas in Zambia (the Luangwa protected area complex) and in Mozambique (Zinave and Gorongosa National Parks) where they had been recorded as present until relatively recently, and are currently designated as 'recoverable' range. Accordingly, the extent of extirpated range is almost certainly an under-estimate, given that a high proportion of the 'unknown' range, and a proportion of the 'possible resident' range, is likely to no longer support cheetah (although assessment of recoverable range status also need to be carried out).

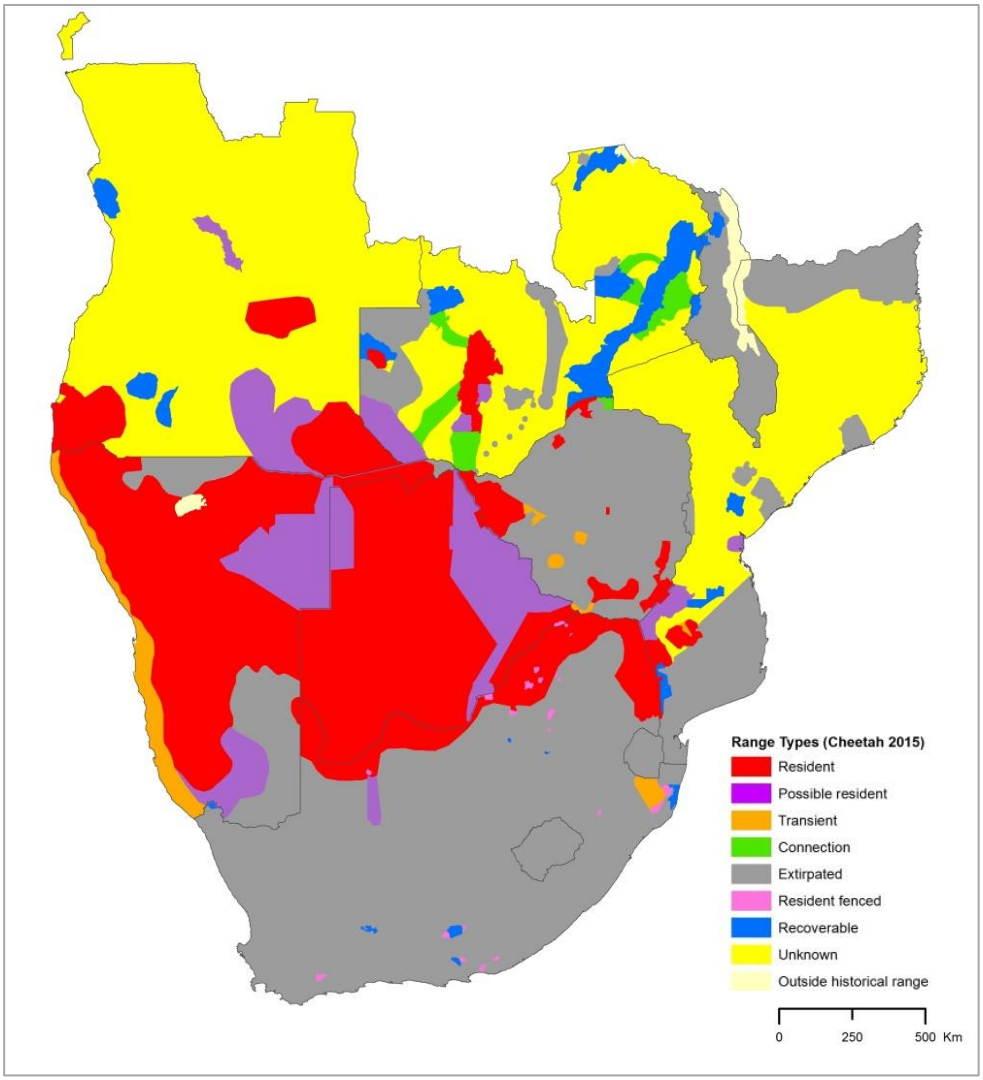


Figure 3.2 *Distribution of Cheetah across southern Africa as mapped by participants at the 2015 workshop (and updated for Angola, December 2016)*

A small, but important, 1% (56,855km^2) of historical range is considered potentially significant for cheetah conservation because it connects areas of resident or possible range. As data become available for unknown areas, the extent of connecting range is likely to increase. Note that connecting range, by definition (Section 3.2.1), is believed not to contain resident populations and is likely to be highly threatened.

It was acknowledged during the workshop that there was a large area of southern Africa (25%) where the status of cheetah is unknown (despite this decreasing from 40% since 2007). Although it is unlikely that all this unknown area would contain resident populations of cheetah, it was agreed that the extent of resident range is likely to increase once more information is available from these currently unknown areas, particularly for some areas in Angola (although data presented at the October 2016 National Conservation Planning workshop for Cheetah and Wild Dogs in Angola added significantly to our knowledge of cheetah and wild dog distribution in some parts of the country, and such updated information is included in this updated strategy).

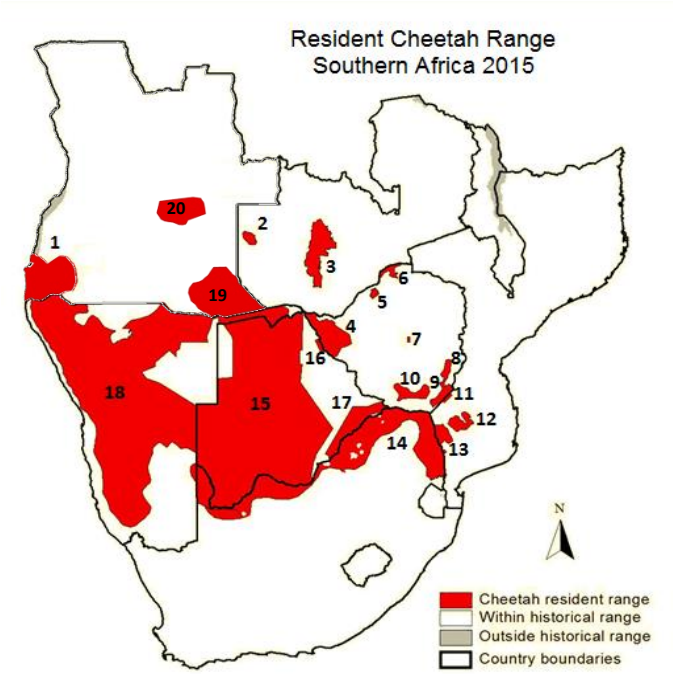
Table 3.1 *Distribution of cheetah in range states within southern Africa, in 2015 (and updated for Angola, December 2016). (Note percentage totals were calculated as the total land area estimated to be in each category of cheetah range in 2015, divided by the total land area falling inside historic cheetah range). For changes in range since 2007, please see section 3.3.*

	Total country area	*Outside of historical range*	*Total area within historical range*	*Resident*		*Small Resident Fenced**		*Possible Resident*		*Transient*		*Connecting*		*Recoverable*		*Extirpated*		*Unknown*	
				km²	**%**	**km²**	**%**	**km²**	**%**	**km²**	**%**	**km²**	**%**	**km²**	**%**	**km²**	**%**	**km²**	**%**
Angola	1,239,890	0	1,239,890	128,963	10	0	0	127,902	10	0	0	0	0	13,104	1	0	0	977,206	79
Botswana	578,123	0	578,123	454,283	79	484	0	123,117	21	0	0	0	0	0	0	0	0	0	0
Malawi	117,784	22,091	95,693	0	0	0	0	0	0	0	0	0	0	6,399	7	89,294	93	0	0
Mozambique	788,242	10,543	777,699	14,928	2	0	0	15,382	2	873	0	0	0	11,113	1	242,367	31	492,958	63
Namibia	823,987	0	823,987	506,980	62	0	0	121,010	15	55,175	7	0	0	0	0	140,743	17	0	0
South Africa	1,219,700	0	1,219,700	142,303	12	11,089	1	6,445	1	7,328	1	0	0	5,816	0	1,049,354	86	0	0
Zambia	751,769	2,445	749,324	29,396	4	0	0	30,362	4	0	0	55,205	7	89,885	12	95,638	13	448,838	60
Zimbabwe	390,427	0	390,427	47,717	12	0	0	0	0	7,434	2	1,650	0	0	0	333,837	86	0	0
				1,324,570	**22.62**	**11,573**	**0.1**	**424,218**	**6.62**	**70,810**	**1.16**	**56,855**	**0.97**	**126,317**	**2.66**	**1,951,233**	**40.73**	**1,919,002**	**25.25**

* 'Small' fenced areas are here defined as those fenced areas which are less than 1,000km^2 in size.

3.2.3 Current areas of Cheetah Resident Range and Cheetah Population Estimates in Southern Africa

Cheetah are currently resident in parts of all southern African countries except Lesotho, Swaziland and Malawi (Figure 3.3). Estimated numbers of cheetah resident in each area are given in Table 3.2. By far the widest extent of cheetah resident range is found across Botswana and Namibia, although population densities are low for most of this range.



1	Iona NP & surrounds	Angola
2	Liuwa Plains National Park	Zambia
3	Greater Kafue Ecosystem	Zambia
4	Greater Hwange to Victoria Falls	Zimbabwe
5	Matusadona National Park	Zimbabwe
6	Zambezi Valley Complex	Zimbabwe
7	Midlands Rhino Conservancy	Zimbabwe
8	Savé Valley Conservancy	Zimbabwe
9	Gonarezhou NP & Malilangwe	Zimbabwe
10	Nuanetsi & Bubye Conservancy	Zimbabwe
11	Maunge	Mozambique
12	Banhine National Park	Mozambique
13	Limpopo NP & Lebombo	South Africa
14	Northern South Africa & Kruger	South Africa
15	Botswana resident range	Botswana
16	Pandamatenga	Botswana
17	Tuli Block	Botswana
18	Namibian resident range	Namibia
19	Luengue-Luiana National Park	Angola
20	Moxico	Angola

Figure 3.3 *Resident Cheetah Range in southern Africa 2015 (excluding fenced reserves in South Africa, and with Angola updated December 2016)*

Table 3.2 *Areas in southern Africa considered by participants to support resident cheetah populations in unfenced areas in 2015 (and updated for Angola, December 2016). Population estimates are derived from a number of different methodologies and some have a wide margin of error. Locations are shown in Figure 3.3 above. Area protected includes only land within IUCN Category I-IV Protected Areas.*

Map unit	Area	Country	Area (km^2)	Population Estimate	Area protected (km^2)	No of cheetah protected	Method of calculating*
1	Iona NP & surrounds	Angola	44,966	39	20,455	18	Expert based
2	Liuwa Plains National Park	Zambia	3,170	20	2,921	18	Expert based
3	Greater Kafue Ecosystem	Zambia	26,222	65	22,185	55	0.25 / 100km^2
4	Greater Hwange to Victoria Falls	Zimbabwe	24,470	45	15,541	29	Expert based
5	Matusadona National Park	Zimbabwe	1,422	3	1,422	3	Expert based
6	Zambezi Valley Complex	Zimbabwe	3,612	12	2,102	7	Expert based
7	Midlands Rhino Conservancy	Zimbabwe	318	4	-	-	Expert based
8	Savé Valley Conservancy	Zimbabwe	2,664	15	-	-	Expert based
9	Gonarezhou NP & Malilangwe	Zimbabwe	6,414	25	4,734	18	Expert based
10	Nuanetsi & Bubye Conservancy	Zimbabwe	8,816	40	-	-	Expert based
11	Maunge	Mozambique	844	6	22	0	Expert based
12	Banhine National Park	Mozambique	7,261	10	-	-	Expert based
13	Limpopo NP, Lebombo & Sabie	Mozambique	6,823	41	6,392	38	Expert based
14	Northern South Africa & Kruger	South Africa	142,303	696	28,631	412	Expert based
15	Botswana resident range	Botswana	429,622	1547	105,225	379	0.36 / 100km^2
16	Pandamatenga	Botswana	1,456	5	10	0	0.35 / 100km^2
17	Tuli Block	Botswana	23,204	142	743	5	0.61 / 100km^2
18	Namibian resident range	Namibia	506,980	1498	67,017	134	Expert based
19	Luengue-Luiana National Park	Angola	58,281	58	58,281	58	
20	Moxico	Angola	25,717	26	0	0	0.1 / 100km^2
			1,324,570	**4,297**	**335,686**	**1,172**	

* 'Expert based' is where the population estimate provided is based on either intensive monitoring over the whole polygon, detailed surveys and / or spoor surveys or extrapolation from intensive monitoring in part of the polygon, taking into account habitat suitability across the polygon. For areas where density estimates are given, these are based on best estimates from researchers combined with knowledge of cheetah needs and the habitat suitability.

The population estimates provided in Table 3.2 must be interpreted with caution as they were derived using a variety of formal and informal approaches, sometimes on the basis of relatively sparse data. However, knowledge has improved significantly since 2007 and whilst there is still some degree of uncertainty in some areas, this is the most accurate dataset of population estimates currently available.

It is important to note that in southern Africa one large resident population was identified covering five countries (Angola, Namibia, Botswana, South Africa and Mozambique) and encompassing an area of over a million km^2. However, only 20% of this range falls on protected land, again emphasizing that to safeguard cheetah, conservation action needs to take place outside of protected areas. In total this large area is estimated to hold c. 4,000 cheetah (of which only c. 1,000 are in protected areas). No other resident population identified in the region had an estimated population of cheetah greater than 100 adults and independent adolescents.

3.2.3.1 Small fenced cheetah populations

Table 3.2 provides detail on the areas of unfenced cheetah resident range mapped by participants (locations of these areas are shown in Figure 3.3). In South Africa, participants also provided information for 53 small (<1,000km^2) fenced reserves with resident populations of cheetah. These are not included in calculations of 'wild' free roaming cheetah numbers, or areas, as the populations in each reserve are isolated from all other cheetah populations, and are intensively managed as components of a metapopulation. However, they do constitute a significant contribution to the cheetah population in terms of numbers. In total, these fenced reserves in South Africa cover 11,089km^2 and hold 334 cheetah (EWT pers comm). These cheetah have conservation value in that they are genetically well managed, are wild, well protected, predator-aware and tourist friendly, and thus are contributing to the greater, wild cheetah population and can also be used for restoration in areas designated as recoverable range.

3.2.4 Distribution of cheetah across protected areas

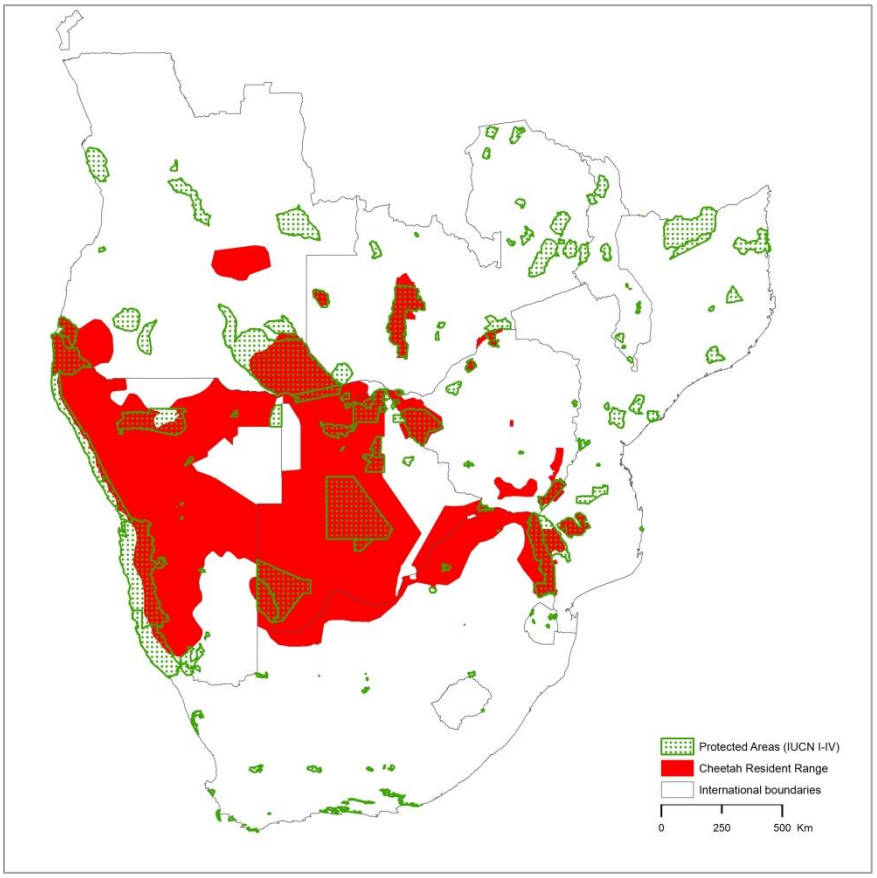


Figure 3.4 *The distribution of IUCN Category I-IV Protected Areas relative to Cheetah Resident Range, 2015 (and updated for Angola, December 2016)*

As is apparent from Figure 3.4, a comparatively small proportion of the current geographical range of cheetah falls inside protected areas (see also Table 3.2), with only about 25% (335,686km^2) of the total resident range occurring on protected land (IUCN categories I-IV). The remaining population, c 75%, occurs outside the region's formal protected area network. Unfortunately, most unprotected

areas in southern Africa are rarely secure for cheetah, with heavy pressure on land, and increasing conflict with humans, coupled with a declining prey base (which can also be a threat in protected areas). However, there are some exceptions to this, including some of the conservancies in Namibia (totalling 161,900km^2) and Zimbabwe (c. 13,000km^2) where protection is usually adequate enough to secure resident cheetah populations. Although these areas are excluded as protected areas from the maps and calculations because they are not designated as IUCN category I-IV, they nonetheless represent areas which do have a level of protection and in which wildlife populations can thrive.

However, in most places, cheetah are more vulnerable outside of the formal protected areas, and this represents cause for concern. In Botswana, for example, if cheetah were lost from all non-protected lands, the national cheetah population would decline from c. 1,547 to just 379 cheetah. Moreover, without the non-protected lands that support resident cheetah, resident populations would be mostly small and highly fragmented, with limited connectivity. Such populations in turn would thus face an elevated risk of extinction.

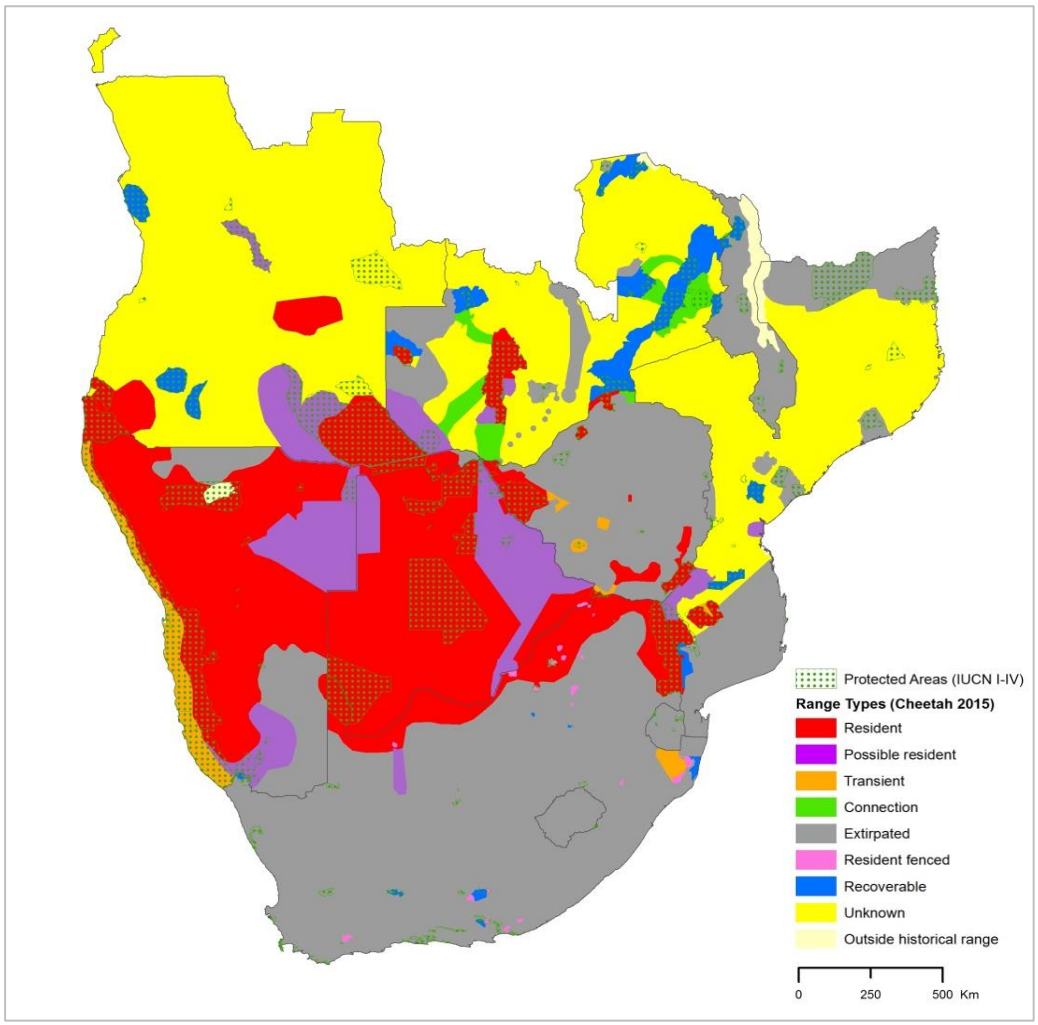


Figure 3.5 *The distribution of IUCN Category I-IV Protected Areas relative to Cheetah Distribution (All Range Types), 2015 (and updated for Angola, December 2016)*

Very little of the possible resident range falls inside protected areas (Figure 3.5). In Zambia (mainly) and Zimbabwe, none of the areas listed as connecting range are protected and thus the future of these valuable corridors is unlikely to be secure (Figure 3.5).

Much of the recoverable range identified lies in protected areas, for example Quicama, Bicuar and Mupa National Parks, Angola; North and South Luangwa National Park, Zambia; Nyika, Vwaza Marsh and Kasungu National Parks, Malawi; and Gorongosa and Zinave National Parks, Mozambique (Figure 3.5). These are the areas judged by the experts attending the workshop to be areas that could, under a certain set of circumstances (including removal of original causes of decline), once again support resident cheetah populations.

3.2.5 Distribution across international boundaries

The largest resident population of cheetah, that spans five international boundaries, incorporating areas of Angola, Namibia, Botswana, South Africa and Mozambique (Figure 3.3), supports a cheetah population of 4,021 individuals. This represents 94% of the total resident population, and 92% of the total population of the region when the managed meta-population in small fenced reserves in South Africa is included. This large and highly significant population of cheetah highlights the importance of the need for transboundary management, and harmonisation of control of threats across international borders. In addition, with proper transboundary conservation (and more research) on the north western side of the Greater Hwange Ecosystem, it is likely that that large area of resident range of cheetah in Zimbabwe could be eventually connected as well.

3.3 Status of Cheetah in 2015 as compared with 2007

Table 3.3 *Comparison of percentage area under different range distribution categories between 2007 and 2016 (Angolan figures updated December 2016)*

	Resident	Resident small fenced	Possible resident	Transient	Connecting	Recoverable	Extirpated	Unknown
2007	20.90%	0.07%	6.80%	---	1.60%	4.20%	26.00%	40.50%
2015	22.62%	0.10%	6.62%	1.16%	0.97%	2.66%	40.73%	25.25%
Difference	1.72%	0.03%	-0.18%	---	-0.63%	-1.54%	14.73%	-15.25%

Table 3.4 *Comparison of areas (in km^2) under different range distribution categories between 2007 and 2016 (Angolan figures updated December 2016)*

	Resident	Resident small fenced	Possible resident	Transient	Connecting	Recoverable	Extirpated	Unknown
2007	1,178,563	8,336	385,643	---	89,320	236,904	1,466,400	2,289,461
2015	1,324,570	11,573	424,218	70,810	56,855	126,317	1,951,233	1,919,002
Difference	146,007	3,237	38,575	---	-32,465	-110,587	484,833	-370,459

Tables 3.3 and 3.4 reveal that resident range in 2016 was 146,007km^2 more than in 2007; an increase of 1.72%). However, there have been some notable changes in the distribution of land classified as resident range (see section 3.3.1).

Possible resident range has increased by c. 38,000km^2 and connecting range and recoverable range have both declined a little, although the new transient range category may partially account for

some of this. The biggest differences are in the areas of extirpated and unknown range. The former has increased by 14.73% (or 484,833km^2) whilst the latter has decreased by 15.25% (or 370,459km^2). This difference is largely due to improved information and knowledge; shifting some area of previously unknown range into different categories, and also of greater certainty regarding areas where cheetah are definitely now known to be extirpated.

3.3.1 Changes in resident range distribution since 2007

Encouragingly the area of land designated as resident range for cheetah has increased by 146,007km^2; from 1,178,563km^2 in 2007 to 1,324,570km^2 in 2015. However, there have also been some significant changes in the spatial distribution of land classified as resident range (Figure 3.6).

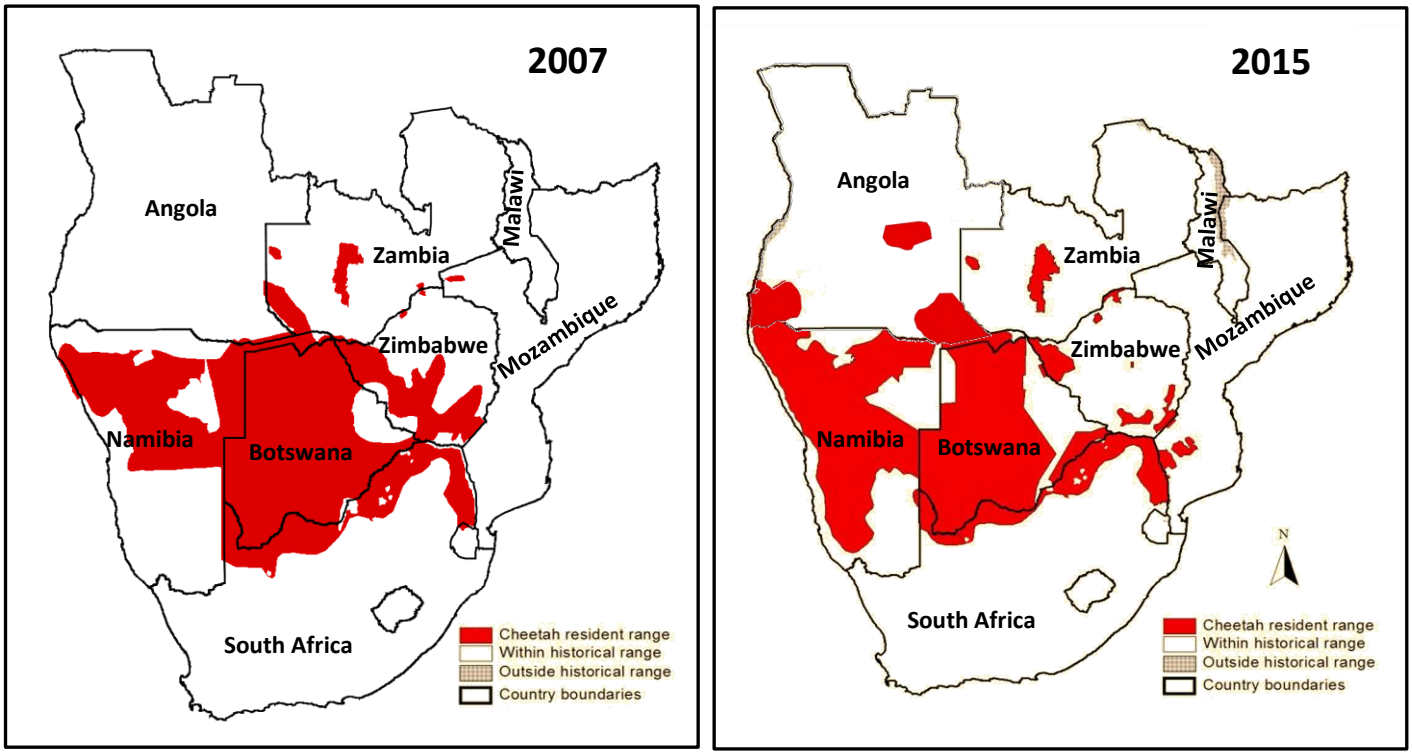


Figure 3.6 *Resident range of cheetah in 2007 (left) and 2015 (right) (and updated for Angola, December 2016). The amount of land designated as resident range for cheetah has increased by 146,007km^2 since 2007, but the distribution has also changed. Note the large extension of cheetah resident range in Namibia and the addition of several populations in Angola, but also the severe reduction in cheetah resident range in Zimbabwe.*

Since 2007, much more of Namibia, and three populations in Angola have been classified as resident range for cheetah, whilst much of the area previously considered resident range in Zimbabwe is now extirpated. Whilst the increase in resident range in Namibia and Angola looks fairly encouraging, it must be noted that the estimated cheetah densities for these landscape are very low (0.1 to 0.2 individuals / 100km^2). In contrast, some of the areas that have been lost as resident range for cheetah (e.g. in Zimbabwe) supported higher densities of cheetah.

Accordingly, **in terms of numbers, the total estimate for cheetah in southern Africa has declined from 6,260 cheetah in 2007 to only 4,297 cheetah in 2015 (or 4,631 if we include the 334 individuals in the small fenced reserves in South Africa).** The number of cheetah in formally

protected areas has also declined from 1,460 individuals in 2007 to 1,172 in 2015. Some of this change is due to more information about density in different habitats, but some almost certainly represents real decline.

3.4 Conclusions

The geographical distribution of cheetah in southern Africa has contracted drastically in recent years. Cheetah are now known to inhabit only 22.6% of their previous historic range in the region, as identified by the participants of the 2015 workshop. The population is dominated by one critically important, relatively widespread, population which covers five different countries: Angola, Namibia, Botswana, South Africa and Mozambique. There are also a number of smaller fragmented resident populations in Mozambique, Zambia and Zimbabwe, and a number of managed cheetah populations in South Africa.

Overall, the population estimate for free ranging cheetah in southern Africa in 2015 is 1,963 individuals less than it was in 2007 (6,260 in 2007 as compared with 4,297 in 2015). In terms of numbers, this represents a loss of 33% in 8 years, or a compounded annual growth rate of -4.83% per year. However, as mentioned, not all of this can be attributed to actual loss as some may represent the availability of better data. It is clear that there has been a major decline of cheetah in Zimbabwe and there is anecdotal information that may represent real decline in Namibia as well, but more information is needed before we can tease out exactly what has been happening.

With over 77% of remaining cheetah resident range in southern Africa unprotected, and considering also that even cheetah populations in protected areas are not always safe (Durant et al, 2016), the population is far from secure. There is therefore an urgent need for international cooperation in the conservation of cheetah across the region, not just in protected areas, if the connectivity of the remaining populations is to be maintained.

Despite a great deal of information being available for some of the region (namely Botswana, Namibia, South Africa and Zimbabwe) cheetah status is unknown across 25% of the region, and uncertain (considered “possible range”) in a further 6.6%. It is a priority to establish whether identified unknown range contains cheetah, as well as confirming whether or not possible resident range does in fact contain breeding populations of cheetah. This will necessitate surveys which may open up the possibility of further transboundary range, including between south eastern Angola, Namibia and Zambia, and between Mozambique and Zimbabwe, highlighting the need for transboundary co-operation in cheetah conservation.

A number of areas were identified in Zambia (mainly), Angola, Malawi and Mozambique with some form of protected area status, where cheetah populations could recover (‘recoverable range’). The potential for such recovery should be assessed through an increased understanding of the causes for the initial decline, and whether these causes can be removed or reduced. However, almost 41% of total historical cheetah range (mainly in Malawi, Zimbabwe and South Africa) was considered extirpated and unrecoverable. This emphasises the threat of increasing human populations and

intensive agriculture to the survival of cheetah populations. Finally, much of the unknown range is likely to be devoid of cheetah given high human population densities and intensive agriculture.

Taken together, the decline in population size, increase in extirpated range and vulnerability of the 77% of the cheetah population living outside of protected areas, call for immediate planning and implementation of cheetah conservation at the landscape scale, before habitat is irretrievably fragmented and lost.

CHAPTER 4

The Distribution and Status of African Wild Dogs within Southern Africa

4.1 Historical distribution

In the past, wild dogs were broadly distributed across southern Africa. Wild dogs are habitat generalists, able to persist in a wide array of environmental conditions as long as prey are available. Although the highest wild dog densities have been recorded in wooded savannah (Creel & Creel, 2002), populations have been recorded in habitats as diverse as short grasslands (Kuhme, 1965), montane forest (Dutson & Sillero-Zubiri, 2005), and semi-desert (Fanshawe, 1997). Before human activity modified substantial proportions of southern Africa's natural habitats, wild dogs would have occupied most of the region, bounded by the sea to the east and south, and by the sand deserts of the Namib to the west. Today, wild dogs remain uncommon even in essentially pristine wilderness, apparently due to negative interactions with larger carnivores (Creel & Creel, 1996; Mills & Gorman, 1997). Hence, despite their formerly broad geographical distribution, wild dogs were probably never abundant.

The map of wild dogs' historic distribution (Figure 4.1) was updated during the 2015 Regional Workshop from a map produced in 2007. Participants amended the published historic range by excluding more of the western coast of Angola (an extension of Namibia's skeleton coast).

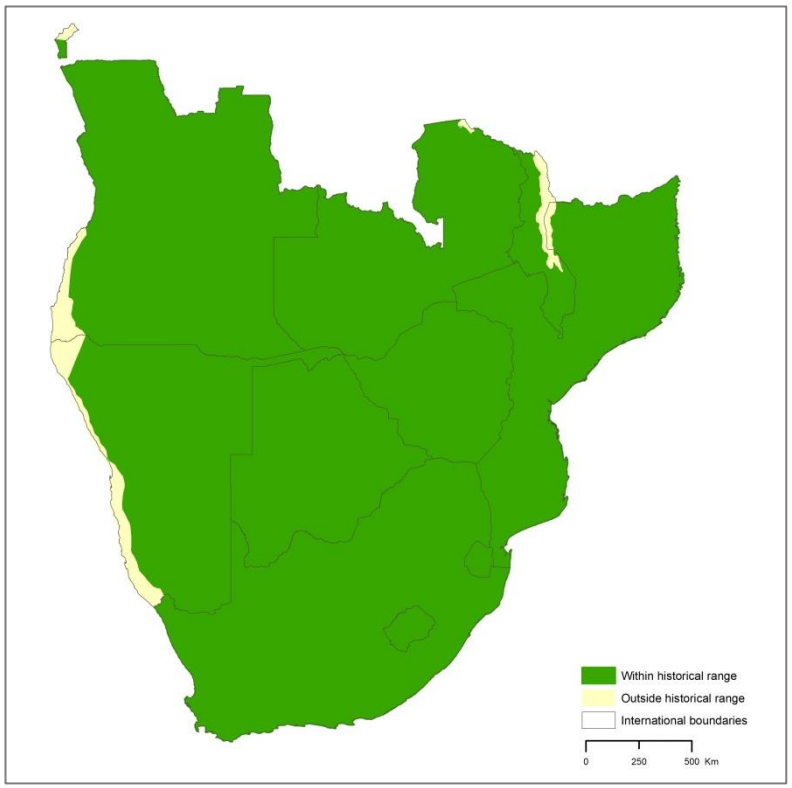


Figure 4.1 *African wild dog historical range, prior to the impact of human activity as agreed at the second Southern African Regional Workshop for Cheetah and Wild Dogs (2015)*

4.2 Current distribution

4.2.1 Categories of current geographical range

Since African wild dog distribution is imperfectly known across the region, the original mapping process recognised seven categories of current geographical range, which were updated at the 2015 workshop. These categories are identical to those used for cheetah (see Chapter 3). Further details on range definitions are provided in Appendix 3.

(1) **Resident range:** land where wild African wild dogs are known to still be resident. (A **Resident fenced** category is used for areas <1,000km^2 which are well fenced, see below)
(2) **Possible resident range**: land where wild African wild dogs may still be resident, but where residency has not been confirmed in the last 10 years.
(3) **Transient range**: habitat used intermittently by African wild dogs, but where wild dogs are known not to be resident and which does not connect to other resident range.
(4) **Connecting range**: land where African wild dogs are not thought to be resident, but which dispersing animals may use to move between occupied areas, or to recolonize extirpated range. Such connections might take the form of 'corridors' of continuous habitat or 'stepping stones' of habitat fragments.
(5) **Recoverable range**: land where habitat and prey remain over sufficiently large areas that either natural or assisted recovery of African wild dogs might be possible within the next 10 years if reasonable conservation action were to be taken.
(6) **Extirpated range**: land where the species has been extirpated, and where habitat is so heavily modified or fragmented as to be uninhabitable by resident African wild dogs for the foreseeable future.
(7) **Unknown range**: land where the species' status is currently unknown and cannot be inferred using knowledge of the local status of habitat and prey.

As with cheetah, populations of African wild dogs are considered to be 'wild' when they are not intensively managed, in line with the guidelines of IUCN/SSC (IUCN Standards and Petitions Subcommittee 2016, see also Redford et al 2011). Given their low densities and wide ranging nature, after consultation with the IUCN Canid Specialist Group, we consider intensive management necessary in reserves less than 1,000km^2 when they are surrounded by impermeable fencing. We consider African wild dog populations in reserves that are unfenced, or where fences are permeable to wild dogs, as wild. Populations in small fenced reserves can and do make a valuable contribution to wild populations by providing individuals for restocking when they are well-managed to maintain high levels of genetic diversity, such as the South African wild dog meta-population. For now these areas are referred to as fenced populations, but it needs to be emphasised that this does not imply captive populations.

4.2.2 Current distribution across different range categories

Figure 4.2 shows African wild dogs geographic range as mapped by workshop participants in 2015, according to the seven categories above; Table 4.1 presents the same data in a quantitative format. For detailed comparison with 2007, please see Section 4.4.

African wild dogs are considered to still be resident in approximately 17% of their historical range (as compared with 12.4% in 2007). Although this figure represents a 'worst case scenario', it does highlight the major contraction in geographic range that appears to have occurred in this species over the last century. Participants considered it possible (or even probable) that a further 8.6% of wild dogs' historical range might still support resident populations. This figure is very similar to that generated in 2007 for possible range (8.7% in 2007). No information was available for 22% of the species' historical range, as compared with 34% in 2007.

If even a small proportion of this 'possible' and 'unknown' range still supports wild dogs, the species' status could be more encouraging than the data on resident range would imply. Most of the 'unknown' range falls in Angola, Zambia and Mozambique, highlighting the need for surveys in these countries. Mozambique, Botswana and Angola also contain large areas of 'possible' range (Figure 4.2).

Wild dogs are considered to be extirpated across 43.9% of their historical range (including extirpated, recoverable and connecting range, Table 4.1; Figure 4.2). This is almost certainly a substantial underestimate; it is likely that a high proportion of the 'unknown' range no longer supports wild dogs. Of this extirpated range, only 2.3% was considered likely to be able to support wild dog populations in future (i.e. recoverable range). The largest tract of such 'recoverable' range falls in, and to the west of, Etosha National Park in Namibia (Figure 4.3). Wild dogs' history in Etosha is uncertain, and three attempts at reintroduction have failed (Scheepers & Venzke, 1995). However, considerable experience of successful reintroductions has been accumulated since the last attempt (Gusset *et al.*, 2008), and it would certainly be worth considering another attempt if careful evaluations suggested that the habitat was suitable and the causes of wild dogs' original extirpation have been alleviated. However, more recent evidence suggests wild dogs may in time naturally recolonise Etosha from the farmlands east of the park, which would be far preferable to any assisted reintroduction attempts.

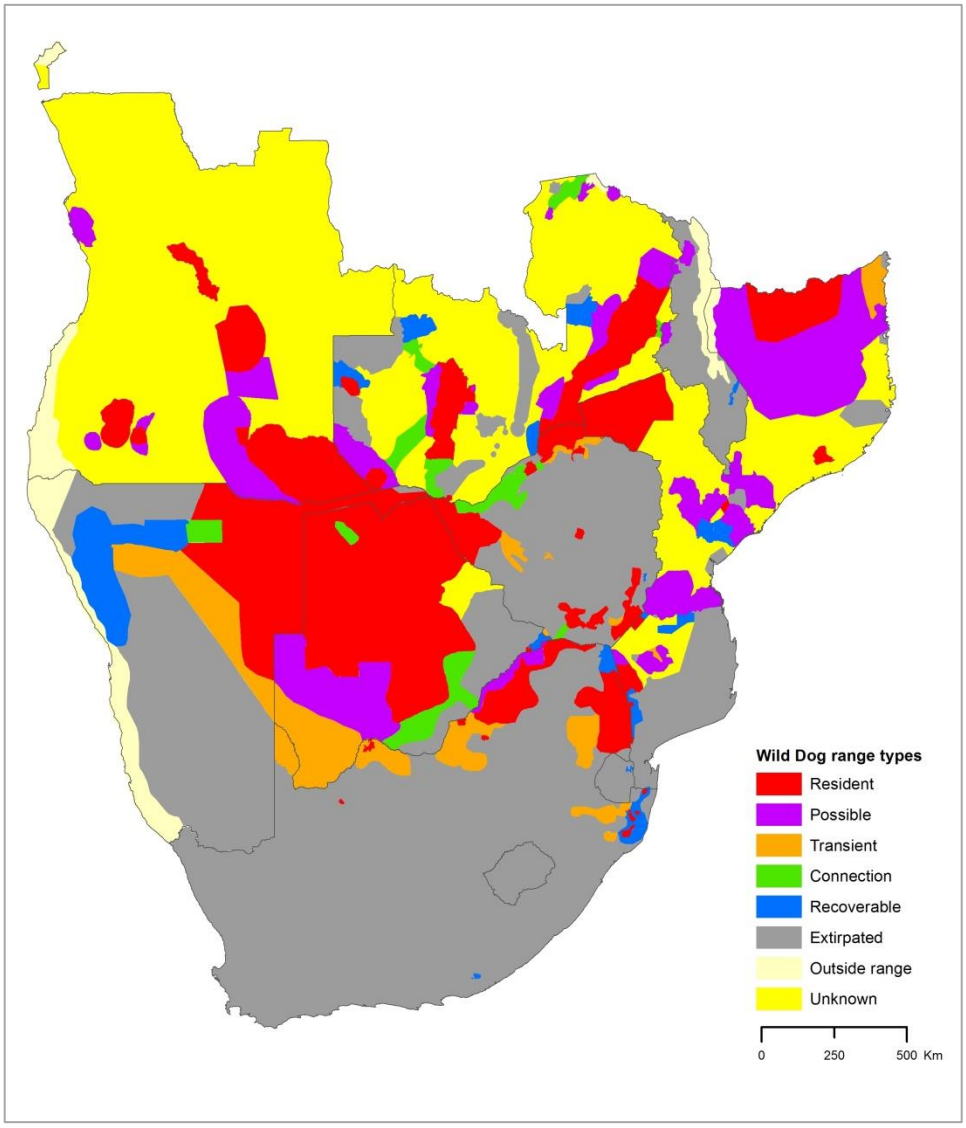


Figure 4.2. *Distribution of African Wild Dogs across southern Africa as mapped by participants at the 2015 workshop (and updated for Angola December 2016)*

Despite supporting no known resident populations, a further 2% of historical range was considered potentially important for wild dog conservation because it connected areas of resident or possible range.

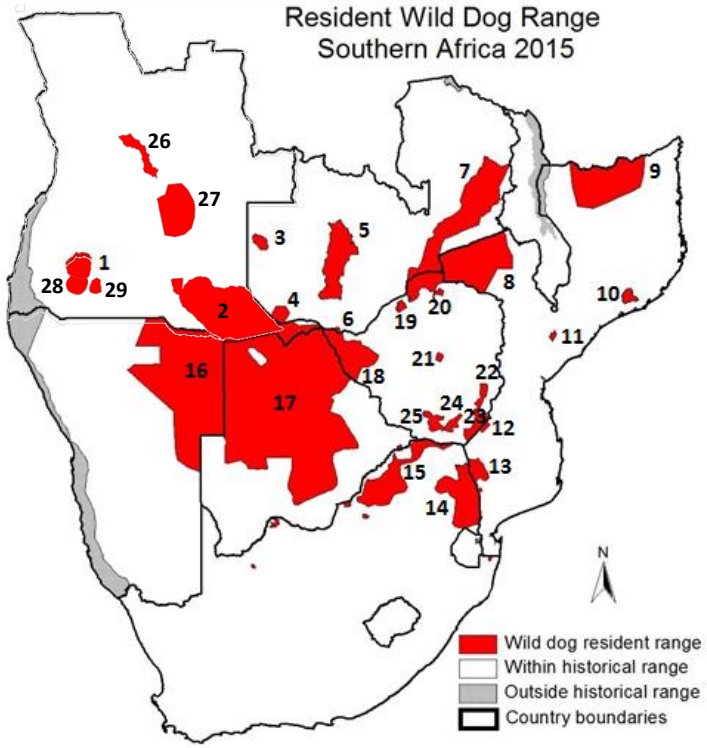
Table 4.1 *Distribution of African wild dogs in range states within southern Africa in 2015 (and updated for Angola, December 2016). (Note that percentages were calculated as the total land area estimated to be in each category of wild dog range in 2015, divided by the total land area falling inside historical wild dog range).*

	Total country area	*Outside of historical range*	*Total area within historical range*	*Resident*		*Small Resident fenced*		*Possible Resident*		*Transient*		*Connecting*		*Recoverable*		*Extirpated*		*Unknown*	
				km²	**%**	**km²**	**%**	**km²**	**%**	**km²**	**%**	**km²**	**%**	**km²**	**%**	**km²**	**%**	**km²**	**%**
Angola	1,239,890	38,267	1,201,623	129,328	11	0	0	75,097	6	0	0	0	0	0	0	0	0	1,004,431	83
Botswana	578,123	0	578,123	315,405	55	335	0.1	83,086	14	56,354	10	33,197	6	2,023	0	69,574	12	18,993	3
Malawi	117,784	22,091	95,693	0	0	0	0	6,399	7	0	0	0	0	1,060	1	88,236	92	0	0
Mozambique	788,242	10,543	777,699	113,291	15	0	0	248,872	32	13,160	2	0	0	16,522	2	131,927	17	254,922	33
Namibia	823,987	78,319	745,668	181,442	24	0	0	0	0	73,671	10	9,507	1	78,147	10	408,254	55	0	0
South Africa	1,219,700	0	1,219,700	64,665	5	4,094	0.3	10,375	1	70,137	6	0	0	13,219	1	1,057,330	87	0	0
Zambia	751,769	1,982	749,787	100,895	13	0	0	69,749	9	0	0	31,716	4	26,630	4	85,781	11	434,129	58
Zimbabwe	390,427	0	390,427	57,954	15	0	0	0	0	12,967	3	17,780	5	262	0	301,484	77	0	0
Average				962,978	17.25	4429	0.05	493,578	8.63	226289	3.88	92200	2.00	137863	2.25	2142586	43.88	1,712,475	22.13

* 'Small' fenced areas are here defined as those fenced areas which are less than 1,000km^2 in size.

4.2.3 Current Areas of African Wild Dog Resident Range and African Wild Dog Population Estimates in Southern Africa

African wild dogs are currently (2015) determined to be resident in various parts of all southern African countries except Lesotho, Swaziland and Malawi. Figure 4.3 illustrates the current areas of known wild dog resident range across southern Africa. Estimated numbers of wild dogs resident in each area are given in Table 4.2. By far the widest extent of wild dog resident range is, as for cheetah, found across Botswana and Namibia, although population densities are low for much of this range (excluding parts of Botswana's Okavango delta, and parts of the Zambezi Region (formerly the Caprivi Strip) in Namibia where wild dog densities are relatively high).



1	Bicuar National Park	Angola
2	Luengue Luiana & Mavinga NPs	Angola
3	Liuwa Plains National Park	Zambia
4	Sioma Ngwezi	Zambia
5	Greater Kafue Ecosystem	Zambia
6	Livingstone	Zambia
7	Luangwa Ecosystem & Lower Zambezi	Zambia
8	Tete	Mozambique
9	Niassa National Reserve	Mozambique
10	Gile	Mozambique
11	Catapu Concession	Mozambique
12	Maunge	Mozambique
13	Limpopo National Park, Lebombo & Sabie	Mozambique
14	Greater Kruger (& western boundary)	South Africa
15	Greater Waterberg Region to Venetia	South Africa
16	Namibian resident range	Namibia
17	Botswana resident range	Botswana
18	Greater Hwange to Victoria Falls	Zimbabwe
19	Matusadona National Park	Zimbabwe
20	Zambezi Valley Complex	Zimbabwe
21	Midlands Rhino Conservancy	Zimbabwe
22	Savé Valley Conservancy	Zimbabwe
23	Gonarezhou NP & Malilangwe	Zimbabwe
24	Nuanetsi Wildlife Section	Zimbabwe
25	Bubye Conservancy & Bubiana	Zimbabwe
26	Luando Partial Reserve	Angola
27	Central Angola	Angola
28	Southern Bicuar Farms	Angola
29	Central Mupa National Park	Angola

Figure 4.3 *Resident African Wild Dog range in southern Africa 2015 (excluding fenced reserves in South Africa, and updated for Angola, December 2016)*

Table 4.2 *Areas in southern Africa considered by participants to support resident African wild dog populations in unfenced areas in 2015 (and updated for Angola, December 2016). Population estimates are derived from a number of different methodologies and some have a relatively wide margin of error. Locations are shown in Figure 4.3 above. Area protected includes only land within IUCN Category I-IV.*

	Name	Country	Area (km^2)	Population estimate		Area protected	No of wild dogs protected	Method of calculating
			Total	*Adults / yearlings*	*Packs*			
1	Bicuar National Park	Angola	7,728	45	4	7,728	45	Expert based
2	Luengue Luiana & Mavinga	Angola	75,010	225	19	75,010	225	0.3 per $100km^2$
3	Liuwa Plains National Park	Zambia	3,170	16	2	2,921	15	0.5 per $100km^2$
4	Sioma Ngwezi	Zambia	4,300	30	3	4,297	30	1 per $100km^2$
5	Greater Kafue Ecosystem	Zambia	30,680	110	11	22,184	100	Expert based
6	Livingstone	Zambia	353	4	1	69	1	1 per $100km^2$
7	Luangwa Ecosystem & Lower Zambezi	Zambia	62,392	300	52	20,216	97	Expert based
8	Tete	Mozambique	52,135	209	43	0	0	0.4 per $100km^2$
9	Niassa National Reserve	Mozambique	49,666	497	41	26,660	267	1 per $100km^2$
10	Gile	Mozambique	2,840	28	2	2,838	28	1 per $100km^2$
11	Catapu Concession	Mozambique	779	8	1	0	0	1 per $100km^2$
12	Maunge	Mozambique	1,067	5	1	21	0	1 per $100km^2$
13	Limpopo National Park, Lebombo & Sabie	Mozambique	6,803	35	3	6,392	33	Expert based
14	Greater Kruger (& western boundary)	South Africa	31,850	288	24	14,737	133	Expert based
15	Greater Waterberg Region to Venetia	South Africa	32,815	20	2	728	0	Expert based
16	Namibian resident range	Namibia	181,441	544	45	11,672	35	0.3 per $100km^2$
17	Botswana resident range	Botswana	315,405	1310	131	76,450	318	Expert based
18	Greater Hwange to Victoria Falls	Zimbabwe	25,038	189	36	15,430	116	Expert based
19	Matusadona National Park	Zimbabwe	1,497	2	1	1,422	2	Expert based
20	Zambezi Valley Complex	Zimbabwe	13,499	135	11	2,118	21	1 per $100km^2$
21	Midlands Rhino Conservancy	Zimbabwe	937	7	1	0	0	Expert based
22	Savé Valley Conservancy	Zimbabwe	2,999	98	14	0	0	Expert based
23	Gonarezhou NP & Malilangwe	Zimbabwe	6,371	126	13	4,998	99	Expert based
24	Nuanetsi Wildlife Section	Zimbabwe	2,884	34	3	0	0	Expert based
25	Bubye Conservancy & Bubiana	Zimbabwe	4,729	70	7	0	0	Expert based
26	Luando Partial Reserve	Angola	8,737	9	1	8,737	9	0.1 per $100km^2$
27	Central Angola	Angola	29,126	29	3	0	0	0.1 per $100km^2$
28	Southern Bicuar Farms	Angola	5,886	18	2	0	0	0.3 per $100km^2$
29	Central Mupa National Park	Angola	2,841	20	2	2,841	20	Expert based
			962,978	**4,411**	**479**	**307,469**	**1,594**	

The population estimates provided in Table 4.2 must be interpreted with caution as they were derived using a variety of formal and informal approaches, sometimes on the basis of relatively sparse data; however there are no alternative more accurate data available, and the current knowledge is a significant improvement on what has been known previously. It is important to note that in southern Africa one large resident wild dog population was identified covering five countries (Angola, Namibia, Botswana Zambia and Zimbabwe) and encompassing an area of over half a million km^2 (601,547km^2). However, only 30% of this area (182,928km^2) falls under protected land, again emphasizing the fact that conservation action needs to take place outside of protected areas. In total this large area is estimated to hold 2,302 wild dogs, or 235 packs, (of which only 725 individuals are in protected areas: Table 4.2).

4.2.3.1 Small fenced African wild dog populations

Table 4.2 provides detail on the areas of unfenced wild dog resident range mapped by participants (locations of these areas are shown in Figure 4.3). In South Africa, participants also provided information for 11 small (<1,000km^2) fenced reserves with resident populations of wild dogs. These are not included in calculations of free roaming wild dog numbers or areas as the populations in each reserve are isolated from all other wild dog populations, and are managed as components of a metapopulation. However, they do constitute important areas for the conservation of the species as a whole. In total, these fenced reserves in South Africa which support African wild dogs cover 5,086km^2 and hold 19 packs of wild dogs (225 adults & yearlings; EWT pers comm).

4.2.4 Distribution across protected areas

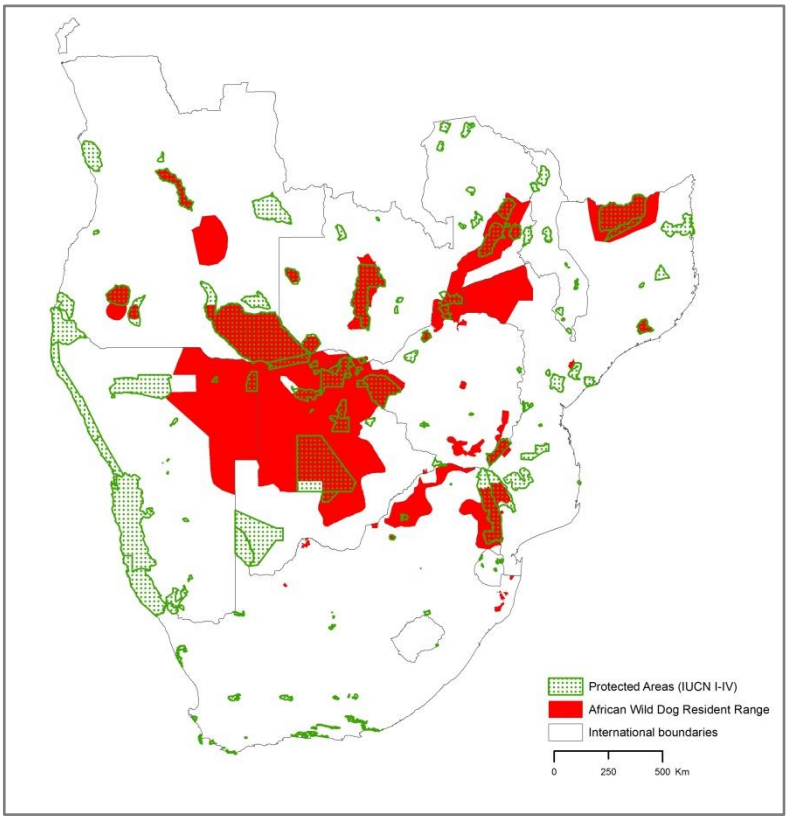


Figure 4.4 *The distribution of IUCN Category I-IV Protected Areas relative to African Wild Dog Resident Range, 2015 (and updated for Angola December 2016)*

As is apparent from Figure 4.4, much of wild dogs' current geographical range falls outside protected areas. This is quantified in Table 4.2. Overall, only 32% of resident range for wild dogs occurs on protected land (IUCN categories I-IV) with the remaining populations (68%) occurring outside the regions formal protected area network. Although in 2007, 38% of the resident range occurred on protected land, the difference is not due to a decline of resident range in protected areas but rather the identification of new resident range outside protected areas (for example in the Tete area of Mozambique).

That over 65% of Africa's wild dogs are found outside of formally protected areas is cause for concern, as unprotected areas are by no means secure, with heavy pressure on land, and increasing conflict with humans coupled with a declining prey base. Indeed even inside protected areas, wild dog populations are not always secure due to increased demand for bushmeat reducing prey availability and causing direct mortality in wire snares. Human encroachment and declassification of protected areas are also a significant current threat to both wild dog and cheetah populations in protected areas.

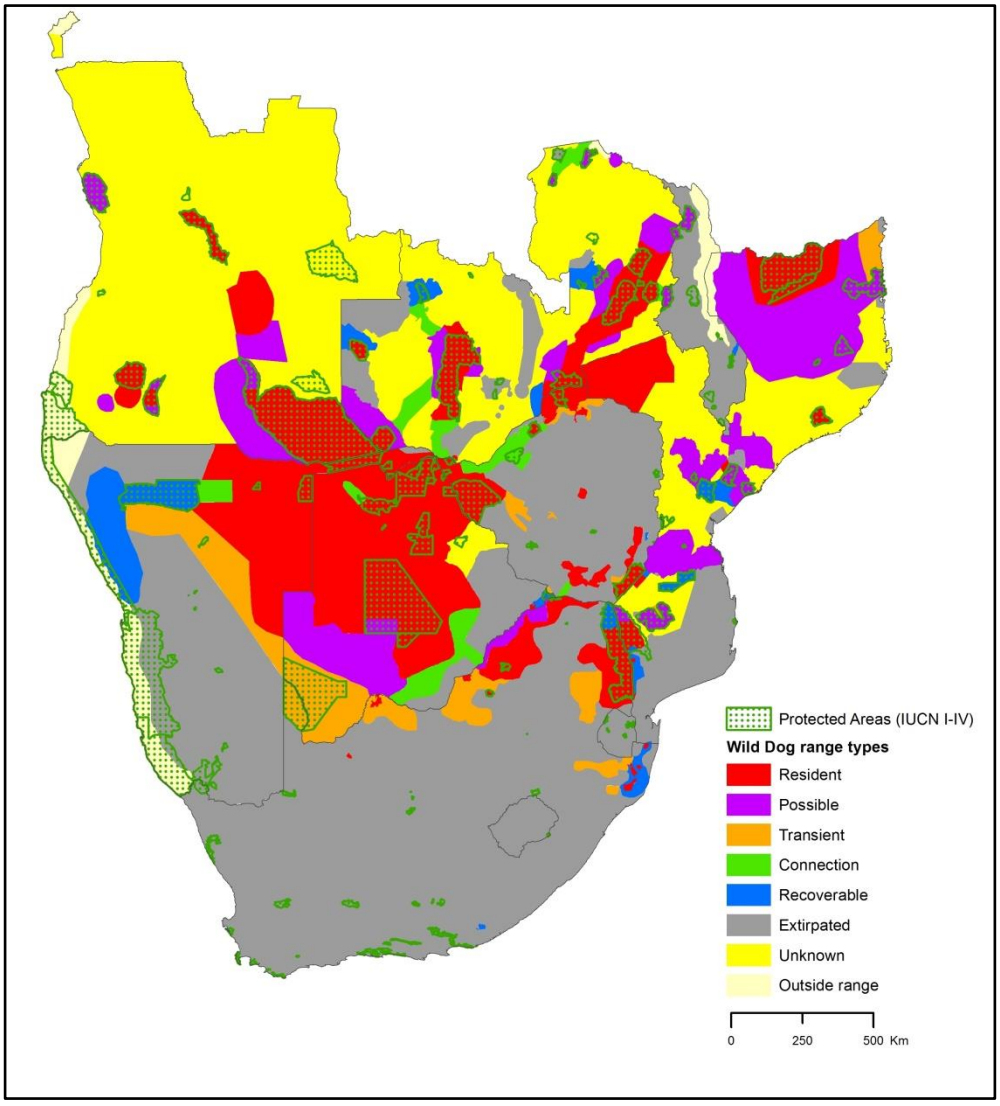


Figure 4.5 *The distribution of IUCN Category I-IV Protected Areas relative to African Wild Dog Distribution (All Range Types), 2015 (and updated for Angola, December 2016)*

Although wild dog populations outside of formal protected areas are for the most part very insecure, there are some exceptions to this. Private or community conservancies in Namibia and Zimbabwe, for example, tend to be well protected and many support good, secure wild dog populations. These conservancies are not shown on the maps, and our calculations consider them outside protected areas because they are not designated as IUCN category I-IV; nevertheless they represent areas which do have a level of protection and in which wildlife can thrive.

As illustrated in Figure 4.5, 68% of resident range falls outside of protected areas, as well as most of the possible resident range, and connecting range. This indicates that, as with cheetah, conservation activities outside protected areas are likely to be critical for preservation of this species. Unlike for cheetah, very little of the recoverable range identified falls inside formally protected areas. The exception is Etosha National Park which, as mentioned, may be recolonised naturally from the east.

4.2.5 Distribution across international boundaries

As shown in Figure 4.3, the most important areas for wild dog conservation traverse international boundaries; these include the three largest populations in the region. The total number of wild dogs estimated to be in transboundary populations in southern Africa in 2015 (including Niassa National Park which is transboundary with populations in Tanzania) is 3,995 individuals (437 packs), which is 91% of the total estimated population in southern Africa. This high percentage serves to emphasise the importance of transboundary conservation, including harmonisation of control of threats across international borders.

4.3 Status of African Wild Dogs in 2015 as compared with 2007

Table 4.3 *Comparison of percentage of historical range within different range distribution categories in 2007 and 2015 (and updated for Angola, December 2016)*

	Resident	Resident small fenced	Possible resident	Transient	Connecting	Recoverable	Extirpated	Unknown
2007	12.50%	0.02%	8.80%	---	3.00%	2.10%	39.80%	33.80%
2015	17.25%	0.05%	8.63%	3.80%	1.98%	2.25%	43.87%	22.13%
Difference	4.75%	0.03%	-0.17%	---	-1.02%	0.15%	4.07%	-11.67%

Table 4.4 *Comparison of areas (in km^2) under different range distribution categories between 2007 and 2015 (and updated for Angola, December 2016)*

	Resident	Resident small fenced	Possible resident	Transient	Connecting	Recoverable	Extirpated	Unknown
2007	690,575	3,818	483,389	---	167,975	114,076	2,200,685	1,867,166
2015	962,978	4,429	493,578	226,289	92,200	137,863	2,142,586	1,712,475
Difference	272,403	611	10,189	---	-75,775	23,787	-58,099	-154,691

As can be seen from Tables 4.3 and 4.4, between 2007 and 2015, resident range has increased by almost 5% (272,403km^2), but extirpated range also increased by over 4%. We have managed to

reduce the area of unknown range by over 11%. The new transient category probably accounts for much of the reduction in areas designated as connecting range in 2015, as well as the discrepancy in the extirpated category where the percentage of extirpated land has increased, but the actual area has decreased (by 58,099km^2) since 2007.

4.3.1 Changes in resident range distribution since 2007

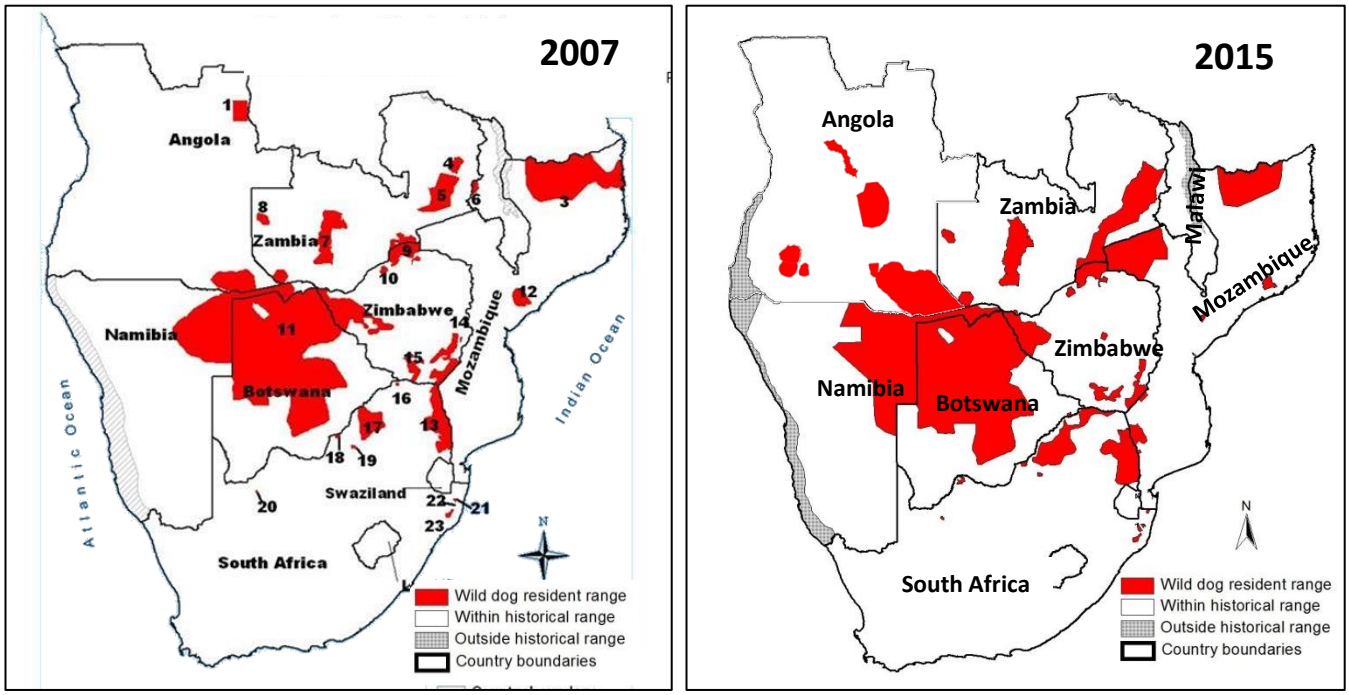


Figure 4.6 *Resident range of African wild dogs in 2007 (left) and 2015 (right; and updated for Angola December 2016). The amount of land designated as resident range for wild dogs has increased by 267,107km^2 since 2007, but the distribution has also changed. Note the large extension of wild dog resident range in eastern Zambia and into the Tete area in Mozambique, an extension of resident range in Namibia and the addition of several areas in Angola.*

Since 2007, the availability of better data for wild dogs in northern Namibia has resulted in resident range expanding westwards to cover a large portion of north eastern Namibia. Whilst some of this is likely to reflect a genuine range expansion, much is probably simply improved knowledge. In addition, a probably genuine range expansion for wild dogs, coupled with better data, results in a significant expansion south west from Luangwa National Park in Zambia. Contrary to the situation in 2007, it is now believed that the wild dog population in the Luangwa Valley is connected through Lower Zambezi National Park into the Zambezi Valley in Zimbabwe. An additional significant area of range in the Tete area of Mozambique was agreed by participants at the 2015 workshop to also be resident range for wild dogs, and with this linking through to the Zambezi Valley, and up into the Luangwa ecosystem, it makes this area a new and important transboundary population. At the October 2016 National Conservation Planning Workshop for Cheetah and African Wild Dogs in Angola, experts also confirmed several new areas in Angola as resident range for wild dogs.

When looking at numbers, the total estimate for African wild dogs in southern Africa has increased slightly from 4,273 wild dogs in 470 packs in 2007 to 4,411 wild dogs in 479 packs in 2015/16. If the small fenced reserves are included, this figure increases to 4,636 dogs in 498 packs. Whilst the

estimated number of free ranging wild dogs has not changed significantly since 2007 (increase of only 138 wild dogs, or 9 packs), there have been some subtle changes. Areas of resident range have been added (Fig 4.6), and density estimates for some areas revised down based on better availability of data.

Given an increase in resident range of 272,403km^2 (almost 5% increase since 2007), the limited increase in population estimate indicates that populations must be declining across much of the previously known resident range.

4.4 Conclusions

The geographic range of wild dogs in southern Africa has experienced a substantial contraction over the past two hundred years. From a historical distribution formerly covering over 5 million km^2, in 2015 less than 1,000,000km^2 (17% of the total) still appears to support resident wild dog populations. Even so, both resident range area and population estimates for free roaming dogs have increased since 2007, although the latter by only 138 individuals or 9 packs.

Only seven of the 10 countries in the region support wild dogs; Lesotho and Swaziland have no wild dogs at all, while Malawi has only occasional sightings of presumably transient wild dogs in Kasungu National Park (although there are moves to reintroduce some. Close to 92% of wild dogs in the region live in populations which span international boundaries, and as such transboundary cooperation in their conservation is imperative.

Overall, estimated free ranging wild dog numbers have not changed significantly since 2007, showing only a slight increase from 4,273 wild dogs in 470 packs in 2007, to 4,411 wild dogs in 479 packs in 2015. This represents an increase of only 4.8% over 8 years, and were this to be genuine population growth, would demonstrate a compound annual growth rate of 0.59% per year.

However, it is unlikely that this is indicative of an increasing population, but rather of more areas discovered as holding resident wild dogs. In fact, the estimate of resident range for wild dogs has increased by 272,403km^2 since 2007, so such a modest increase in overall population numbers (of only 138 individual wild dogs) does indicate a decline in many of the previously known populations. Nonetheless it is moderately encouraging that even with our substantially improved knowledge we are not recording a decline in overall wild dog numbers.

Although the number and geographical extent of known populations is small relative to the species' historic range, there are additional areas that may still support resident populations ('possible range'). Of particular relevance here are large areas in northern and central Mozambique, south eastern Angola and southern Botswana. Surveys in such areas would be of great value and should be prioritised.

Only a comparatively small number of locations were identified where recovery of extirpated wild dog populations might be considered (recoverable range). The most notable of these is a large area of land in Namibia, going west through Etosha National Park and then south a short way in from the

coast. Most other areas designated as recoverable range, adjoin areas that are currently occupied by wild dogs, and natural recovery is thus potentially possible. Reintroduction is probably not, therefore, a high priority for conserving wild dogs in the region in the medium term.

Despite a great deal of information being available for some of the region (in particular South Africa, Namibia, Botswana and Zimbabwe), wild dog status is still unknown across 22.1% of the region and uncertain (considered 'possible') in another 8.6%. Most of the unknown range is currently located in Angola, Zambia and Mozambique. These areas are also priorities for survey work.

CHAPTER 5

Threats to Cheetah and African Wild Dogs in Southern Africa

5.1 Introduction

An evaluation of threats to cheetah and wild dog populations is a crucial component of strategic planning for the species' conservation. Understanding the nature of these threats is critical to identifying measures likely to mitigate the threats and hence achieve conservation objectives.

5.2 Proximate threats

In the 2007 workshop, data on threats to known wild dog and cheetah populations were contributed by workshop participants. In addition, during the mapping process, participants were asked to list the factors most likely to threaten current known populations, and to provide evidence that each factor represented a threat. This information was then reviewed and collated separately for wild dogs and cheetah. However, as the threats identified were almost identical for the two species, they are from here on discussed together.

The sections below describe the major threats faced by the species, as identified at the 2007 workshop and updated at the 2015 workshop. Additional threats identified in 2015 are listed below these points.

5.2.1 Habitat loss and fragmentation (both species)

Loss and fragmentation of habitat together represent the greatest over-arching threat to both cheetah and wild dogs, and contributes to several of the other proximate threats listed below. Because both species live at such low densities and range so widely, their populations require much larger areas of land to survive than do those of other carnivore species. For this reason, cheetah and wild dogs are more sensitive to habitat loss than are related species. In the long term, conserving viable populations of cheetah and wild dogs is likely to require land areas far in excess of 10,000km^2, unless very intensive management can be maintained. Fortunately, both species have the ability to survive and breed in human-dominated landscapes under the right circumstances; as such the large areas needed for wild dog and cheetah conservation could be protected land, unprotected land, or a combination of the two. Both species also have excellent dispersal abilities, therefore by conserving connecting habitat it should be made possible to maintain gene flow between populations, and to encourage recolonization of suitable unoccupied habitat, even in landscapes which have been moderately fragmented. However, as human population continues to increase in Africa, and pressure on the natural resources intensifies, this remains a very significant and real threat.

5.2.2 Conflict with livestock farmers (both species)

Both cheetah and wild dogs are threatened by conflict with livestock farmers in some parts of their geographic range. While both species tend to prefer wild prey over livestock, both may kill livestock under some circumstances and therefore risk being killed by farmers in retaliation. Such conflict may

involve both subsistence pastoralists and commercial ranchers. As neither species regularly scavenges, they are less susceptible to poisoning than are other carnivores such as hyaenas and leopards, but may be shot or speared. Even where there is no genuine conflict, common misperceptions about the species amongst community members can also lead to unnecessary persecution.

5.2.3 Conflict with game farmers (both species)

Both cheetah and wild dogs are threatened by conflict with game farmers in parts of their geographic range. Since farmed game often represent the two species' natural prey, there are few, if any, measures which can be taken to reduce predation by cheetah and wild dogs. Wild dogs are particularly unpopular with game farmers not only because they take valuable game, but also because their tendency to chase large prey into fences (Van Dyk & Slotow, 2003) can cause serious damage to fences (Lindsey, du Toit & Mills, 2005). This was highlighted in the 2015 meeting as an increasing problem in South Africa particularly, where the breeding of expensive rare genetic and colour morphs of plains game species is becoming increasingly widespread. Due to their value, there is often low tolerance of any threat from a predator and persecution is more common.

5.2.4 Prey loss (both species)

Both cheetah and wild dogs are highly efficient hunters, able to survive in areas of comparatively low prey density. Nevertheless, loss of prey from some areas, due to hunting, illegal bushmeat harvesting, high livestock densities, habitat conversion or veterinary cordon fences may directly impact cheetah and wild dog populations. Prey loss can also have serious indirect effects, since predation on livestock may become more frequent where wild prey are depleted (Woodroffe *et al.*, 2005b), intensifying conflict with livestock farmers. Although often more severe outside of protected areas, prey loss (due largely to unsustainable bushmeat poaching), is also a significant threat inside many protected areas where cheetah and wild dog populations should be secure.

5.2.5 Accidental snaring (both species)

Although neither species is regularly targeted by snaring (but see Davies & Du Toit, 2004), both species may be captured accidentally in snares set for other species. Such accidental snaring is a major source of wild dog mortality in many parts of southern Africa (Woodroffe *et al.*, 2007a), both inside and outside of protected areas, and is the most serious threat to wild dog populations in several areas. While effects on cheetah populations are less well quantified, snared cheetah are reported occasionally and snaring may threaten some populations, including inside protected areas. In addition, as mentioned above, snaring can negatively impact wild dog and cheetah's prey populations as well. At the 2015 meeting, participants added that one major problem is the widespread availability of fence wire that is then used for snare wire (often inside and/or immediately adjacent to protected areas), as well as poor decision making about fencing placement and materials, and inadequate disposal of materials that can be used for killing wildlife (e.g. wire).

5.2.6 Road accidents (both species)

High speed roads represent a threat to both cheetah and wild dog populations. Wild dogs in particular use roads to travel and rest, and are therefore especially vulnerable to road accidents. This is a particular concern where paved roads or other fast, all-weather roads cross or adjoin major wildlife areas, such as the Lusaka-Mongu road which traverses Kafue National Park in Zambia, and

the Bulawayo-Victoria Falls road which traverses wild dog habitat close to Hwange National Park in Zimbabwe. As the region develops and more roads are tarred, this source of mortality could increase unless awareness programmes are instigated (e.g. in northern Mozambique).

5.2.7 Small population size (both species)

Participants identified small population size as a threat to the persistence of several wild dog and cheetah populations in southern Africa. Many of these populations have been reintroduced to small, fenced areas in South Africa and are intensively managed as part of nationwide metapopulation. Without such management few, if any, could be considered viable. However, several very small populations (especially cheetah populations) have persisted in unfenced areas; maintaining connectivity with other suitable habitat will be vital for the conservation of these populations.

5.2.8 Infectious disease (mainly wild dogs)

Infectious disease can have major impacts on wild dog populations. Rabies contributed to the extinction of the wild dog population in the Serengeti-Mara ecosystem in 1991 (Gascoyne *et al.*, 1993; Kat *et al.*, 1995), and there have been several outbreaks documented in southern Africa (for example see Hofmeyr *et al.*, 2000; Hofmeyr *et al.*, 2004). Canine distemper caused at least one whole-pack death in Botswana (Alexander *et al.*, 1996) and thwarted a reintroduction attempt at Tswalu in South Africa. More recently (2016), wild dogs in South Africa's Kruger National Park have also been impacted by distemper (EWT, pers. comm. 2016). Both rabies and canine distemper viruses are maintained within populations of domestic dogs (Cleaveland *et al.*, 2000; Cleaveland & Dye, 1995); hence disease risks are likely to be particularly high for wild dogs living outside protected areas. Disease probably represents a smaller threat to cheetah, although in some areas anthrax has caused substantial mortality (Lindeque, Brain & Turnbull, 1996).

5.2.9 Hunting for live trade and other uses (mainly cheetah)

Cheetah are rarely hunted for their fur, or for cultural uses, in southern Africa. However, illegal or badly regulated trade in live cheetah for the pet trade has been documented in Botswana, Namibia and South Africa and may be an increasing problem throughout the region. The main sink area for such trade is the captive breeding industry of South Africa. Cheetah are hunted legally within the hunting industry in Namibia; the smaller legal quotas to hunt the species in Zimbabwe and Botswana are rarely used. Wild dogs are occasionally taken for cultural uses (especially in Zimbabwe (Davies & Du Toit, 2004) and Malawi), but this is probably too uncommon to constitute a serious threat to population viability. The biggest threat to cheetah from the illegal pet trade is on those populations in the Horn of Africa (Kenya, Ethiopia, Somalia, South Sudan and Djibouti).

During the 2015 workshop, some additional threats were identified. These included:

5.2.10 Irresponsible tourism and den disturbances (mainly wild dogs)

Some participants felt that irresponsible tourism, particularly at wild dog dens, was an emergent threat to the future vigour of the impacted packs. Significant and regular den disturbances by unregulated tourists could pose a major threat to pup survival in the long term.

5.2.11 Increased use of poison (both species)

Although neither cheetah nor wild dogs scavenge often, the increased use of poison for 'silent poaching' is a potential threat, particularly where waterholes are poisoned. This was deemed an emerging threat for cheetah and wild dogs.

5.2.12 Poor coexistence with communities

Given that cheetah and wild dogs are living alongside some of the poorest people in the world, the lack of benefits to communities from cheetah and wild dogs, the lack of resilience in communities subject to impact of cheetah and wild dogs and the lack of alternative livelihoods all present a threat to the future of the species on communal lands. There was also a perception amongst participants that there had been a reduction in options for wildlife-based revenues for communities.

5.2.13 Detrimental land use policies

It was felt by participants in the 2015 meeting that certain issues regarding land use posed a direct and serious threat to wild dogs and cheetah. These included a lack of engagement with private sector in minimizing impacts of mining and resource extraction, a lack of coordination to speak with one voice to stop damaging large scale development and poor zonation or poor integration of land use programs. Also included here was the increasing amount of predator proof fencing for game management (which would block dispersals and heighten the risks from stochastic events like drought or disease outbreaks).

5.2.14 Insufficient political commitment

Lack of cross-sectoral coordination and cooperation at the political level was felt to be a threat to cheetah and wild dogs by hampering conservation efforts at the policy level. Related to this was a concern about the lack of power of environmental ministries and the lack of political integration of biodiversity conservation into other areas of policy and political engagement. Finally, an emerging threat is that of the diversion of resources towards elephant and rhinos. With a major poaching crisis currently underway, most attention, effort and resources are being diverted to rhino and elephant conservation programs, resulting in fewer resources and less time for cheetah and wild dog conservation issues at government level.

5.2.15 Other

Other threats determined by participants in the 2015 workshop, which although important, are largely beyond the ability of the participants to address, include:

- Land mines which restrict access by wildlife authorities and kill animals
- Corruption in law enforcement agencies
- Loss of resilience in cheetah and wild dog populations due to climate change

5.3 Constraints on alleviating threats

Conserving cheetah and wild dog populations requires mitigating the threats listed above, often on very large spatial scales. Workshop participants therefore identified the barriers to achieving this outcome. Again, results for cheetah and wild dogs were extremely similar and are discussed together.

Identified constraints included lack of political will to foster cheetah and wild dog conservation, political upheaval in some important wild dog and cheetah areas, insufficient funding, lack of capacity, inappropriate legislation, poor land management, and lack of awareness by both government and the public. These potentially mutable human constraints contrast with several biological constraints which are characteristic of wild dogs and cheetah and cannot be changed: these included the species' negative interactions with other large carnivores, and their ability to kill valuable "game" animals.

This summary of the problems facing wild dog and cheetah conservation was used to inform a problem analysis which was critical for the development of the strategic plan (see Chapter 6). In recent years, tools have been developed to address many of the proximate threats to wild dog and cheetah populations (e.g. Woodroffe *et al.*, 2005a), but the ultimate causes of these threats include problems such as human encroachment on wildlife areas, and lack of conservation capacity, which are common to many species in the region.

5.4 Conclusions

Both the proximate and ultimate threats faced by cheetah and wild dogs are very similar. Indeed, these threats are similar to those faced by all large carnivores in Africa. However wild dogs' and cheetah's extremely wide-ranging behaviour makes them acutely sensitive to these threats and means that the threats need to be mitigated over extremely large areas. The similarity in threats faced by the two species also means that, with very few exceptions, conservation activities implemented for either species are likely to benefit both.

It was the aim of the strategic review meeting to revise the strategic conservation plan to incorporate objectives, results and activities to address the identified threats.

CHAPTER 6

THE REGIONAL CONSERVATION STRATEGY FOR CHEETAH AND AFRICAN WILD DOGS IN SOUTHERN AFRICA (UPDATED AUGUST 2015)

6.1 Background

The first Southern Africa Cheetah and Wild Dog Conservation Strategy was produced in 2007. The structure and development of the strategic plan followed a process that had recently been developed by IUCN/SSC, and implemented in a similar planning exercise for cheetah and wild dogs in eastern Africa in 2007 (IUCN/SSC, 2008). This process was also illustrated by two previous species strategic plans in Africa: that for the West African Elephant (IUCN, 2005) and the African Lion (IUCN, 2006).

Information from previous action plans for cheetah and wild dogs – the Global Cheetah Conservation Action Plan (Bartels *et al.*, 2001, 2002) and the African Wild Dog Status Survey and Conservation Action Plan (Woodroffe *et al.*, 1997; Woodroffe, McNutt & Mills, 2004) – were also critical to the development of the process.

The workshop process used in 2007, and largely followed again in 2015, included the following key components:

1. *Engagement of stakeholders:* Key individuals and institutions best able to implement the plan – including government authorities, species specialists and relevant NGOs – were all involved in the strategic planning process.
2. *Summary of knowledge:* The mapping process within the workshop established up-to-date information on the status and distribution of both species (see Chapters 3-4). This provided essential information for the development and updating of the strategic plan.
3. *Problem analysis:* A problem analysis was conducted to identify threats, gaps and constraints impacting participants' ability to conserve cheetah and wild dogs. The problem analysis provided information critical for the development of the objectives for the strategic plan. This was updated at the 2015 workshop, and fed into the new plan.
4. *Strategic plan:* A cascading plan was constructed, starting at a vision, proceeding to a goal, a series of objectives devised to meet the goal, and then a number of targets and activities to address each objective (Figure 6.1). At the 2015 meeting, this plan was revised from the objectives level down.

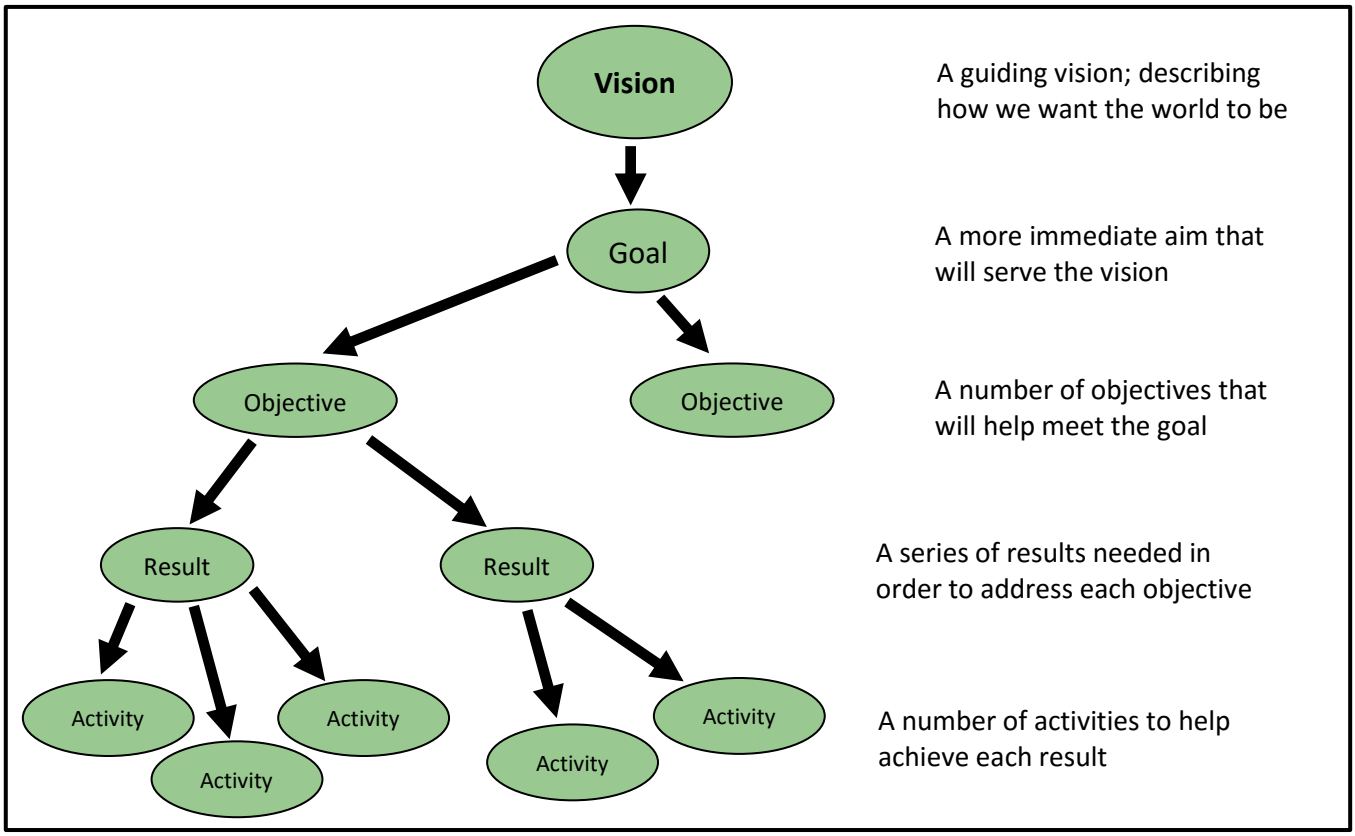


Figure 6.1 *The structure of the strategic plan developed in the 2007 and 2015 workshops. In the 2007 workshop, 'results' had been called 'targets' but these were updated to be 'results' in the 2015 workshop, to be in line with the IUCN/SSC strategic planning guidelines*

6.2 The Strategic Planning Process

The planning process is made up of six key stages:

1. The development of a vision
2. The development of a goal
3. A problem analysis
4. The development of a number of objectives which address the problems identified by the problem analysis
5. The development of a number of targets to address each objective
6. The development of a number of activities to address each target

The strategic planning process, both in 2007 and 2015, was participatory and consensus driven, with all stakeholders engaged in the development of the plans. The process was conducted in this way to ensure that the expertise and knowledge of all participants informed the plans, and also to ensure that the plans were jointly owned by relevant institutions and individuals, facilitating their implementation. The plans were intended to be realistic and, because they are regional, to be sufficiently general to allow an easy transfer to national level planning.

The original strategic plan was revised from objective level down in 2015. It included a revision of the problem tree and several more problems were identified and added (see Section 5.2).

6.3 The Review Process (2015)

The second regional workshop, with the aim of revising and updating the 2007 Regional Conservation Strategy, was held from the 9th to 13th August 2015, at Heia Safari Ranch, Johannesburg, South Africa. In total 48 participants attended, including 23 participants from field programs from all eight range states, 11 government wildlife authority representatives from seven range states (all excluding Zimbabwe), five participants of the RWCP, five participants from AZA, one from the Pan African AZA (PAAZA), one GIS expert, one representative of the Convention on the Conservation of Migratory Species (CMS), and the co-chair of the IUCN Cat Specialist Group.

The workshop included presentations by the seven governments present on the progress made by their respective wildlife authorities towards the objectives of the 2007 regional strategy (IUCN/SSC 2007), as well as presentations by the 18 field projects, outlining their progress towards achieving the strategy's objectives. Participants were very encouraged to see how much work had been done since 2007 and it set a very positive tone for the meeting, although the challenges were also clear. The presentations were followed by a session to update the southern African distribution maps for cheetah and African wild dogs; a process greatly benefitting from the wealth of expert knowledge present all together.

Prior to the workshop all project and government participants had been asked to fill out their progress against the logframe of the original 2007 Regional Strategy (IUCN/SSC 2007). This information was pulled together by the RWCP regional coordinator for southern Africa. This was an extremely informative and valuable exercise, and was summarised during the workshop simply by indicating against which activities an organisation had made progress, and then summarising these by objective (Table 6.1). This demonstrated clearly in which areas most progress had been made and where less progress was made, allowing for guidance of the revision process to make these difficult objectives more achievable. In particular, most progress was achieved in the themes covering knowledge and information, coexistence and national planning (once adding in the RWCP's contribution), fair progress in the capacity development, information transfer and policy and legislation. However, much less progress has been made in the challenging areas of addressing land use change and engaging political commitment.

***Table 6.1**: A summary of progress made by projects and government wildlife authorities against the progress of the Regional Conservation Strategy for the Cheetah and African Wild Dog in Southern Africa (IUCN/SSC 2007)*

Theme	Objective	Project Progress	Government Progress
Capacity Development	1. Develop capacity in all aspects of cheetah and wild dog conservation in southern Africa.	**43%**	**22%**
Knowledge & Information	2. Improve knowledge on the conservation biology of wild dogs and cheetah across southern Africa.	**63%**	**55%**
Information transfer	3. Develop and implement mechanisms for the transfer of information relevant to cheetah and wild dog conservation and ensure active commitment of stakeholders.	**47%**	**34%**
Coexistence	4 Minimise conflict and promote coexistence between cheetah, wild dogs and people across southern Africa	**50%**	**63%**
Land Use	5 Minimise adverse effects of land development and promote and implement best land use practice for cheetah and wild dog conservation.	**26%**	**13%**
Political commitment	6 Obtain political commitment to the conservation needs of cheetah and wild dogs	**6%**	**12%**
Policy & Legislation	7 Review and, where necessary, revise, international, national and local legislation, policies and protocols affecting cheetah and wild dog conservation.	**20%**	**49%**
National Planning	8 Facilitate the implementation of the regional strategy and develop and implement national action plans for the conservation of cheetah and wild dogs in all range states.	**28%**	**40%**

The remainder of the workshop was spent on a revision and update of the strategic logframe for the new strategy. While the goal and vision remained in place, the objectives, results and activities laid out the roadmap for achieving the goal, thus participants were asked to build on their experience to review and, where necessary, revise this roadmap to make it fit for purpose for another 7-8 years. To do this, participants were split into four working groups and each tackled two objectives. Final editing was conducted in plenary to reach a consensus on the final structure and wording of the strategy. Significant changes were made to the Land Use and Policy and Legislation Objectives which had proven difficult to implement from the last plan.

The whole process has demonstrated the immense value in workshops to review and revise such plans to keep them relevant, realistic and up to date. The revised strategy is substantially improved from the first version, as participants brought to bear their considerable experience in implementing the strategy in their revisions. The review workshop also demonstrated that the cheetah and wild dog strategy is a living, working document, and that not only is it meant to be implemented, but there would be follow up on progress.

6.4 The Updated Regional Strategy

6.4.1 The Vision and the Goal

Both the vision and goal of the original 2007 strategy were kept the same:

VISION: *Secure, viable cheetah and wild dog populations across a range of ecosystems that successfully coexist with, and are valued by, the people of southern Africa*

GOAL: *Improve the status of cheetah and wild dogs, and secure additional viable populations across their range in southern Africa*

6.4.2 The problem analysis

The problem tree developed in 2007 was detailed and comprehensive (Figure 6.2). However, at the 2015 workshop, a few more problems and threats were identified.

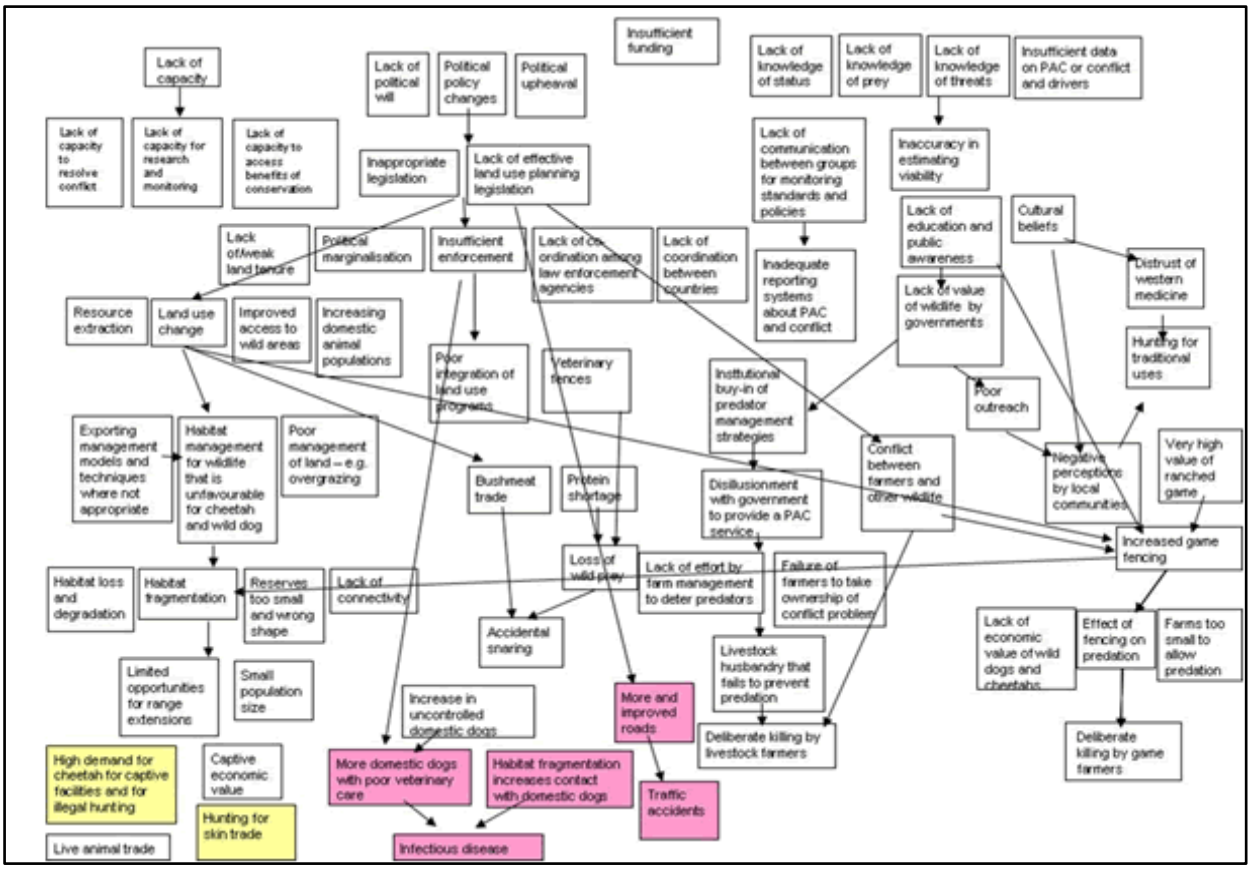


Figure 6.2 *A diagrammatic representation of the problem tree developed in 2007. This was added to in 2015. Yellow boxes refer to cheetah only, pink boxes refer to wild dogs only, and white boxes refer to both species.*

Additional problems identified in 2015, which were not identified as threats / problems in 2007 are listed below (and expanded on in Section 5.2)

6.4.2.1 Coexistence

Increased use of poison
Poisoning of waterholes
Den disturbance for wild dogs
Irresponsible tourism
Lack of benefits to communities from cheetah and wild dogs
Lack of resilience in communities subject to impact of cheetah and wild dogs
Lack of alternative livelihoods
Lack of gender empowerment (do we want to address this generally – or do we want gender empowerment to underlie our approach)

6.4.2.2 Land use

Increased predator proof fencing for game management
Availability of fence wire that is then used for snare wire/poor decision making about fencing placement
Inadequate disposal of materials that can be used for killing wildlife
Loss of resilience in cheetah and wild dog populations due to climate change
Lack of engagement with private sector in minimising impacts of mining/resource extraction
Lack of coordination to speak with one voice to stop damaging large scale development
Poor zonation/Poor integration of land use programs

6.4.2.3 Political Commitment

Lack of cross-sectoral coordination and cooperation
Lack of power of environmental ministries
Lack of political integration of biodiversity conservation
Diversion of resources into elephant and rhinos

6.4.2.4 Policy and legislation

Reduction in options for wildlife-based revenues

6.4.2.5 Other

Land mines restrict access by wildlife authorities and kills animals
Corruption in law enforcement agencies

6.4.3 The Revised Objectives

The original objectives were revised in the 2015 meeting. Although there was no fundamental change to meaning, the wording was improved (Table 6.2).

Table 6.2 *Original and revised objectives of the Southern African Regional Strategy for the Conservation of Cheetah and African Wild Dogs*

Theme	Original Objectives (2007)	Revised Objectives (2015)
Capacity Development	Develop capacity in all aspects of cheetah and wild dog conservation in southern Africa	To develop capacity in all aspects of cheetah and wild dog conservation in southern Africa.
Knowledge and Information	Improve knowledge on the conservation biology of cheetah and wild dog across southern Africa	To improve knowledge and generate information for the conservation of cheetah and wild dogs across southern Africa.

Information Transfer	Develop and implement mechanisms for the transfer of information relevant to cheetah and wild dog conservation and ensure active commitment of stakeholders	To increase active commitment of stakeholders and awareness of the wider public by transferring information relevant to cheetah and wild dog conservation
Coexistence	Minimise conflict and promote coexistence between cheetah, wild dog and people across southern Africa	To promote coexistence of people with cheetah and wild dogs across southern Africa
Land Use	Minimise adverse effects of land development and promote and implement best land use practice for cheetah and wild dog conservation	To promote best land use practice for cheetah and wild dog conservation and minimise adverse effects of land development
Political Commitment	Obtain political commitment to the conservation needs of cheetah and wild dogs	To advocate for increased political commitment to the conservation of cheetah and wild dogs
Policy and Legislation	Review, and where necessary revise, international, national and local legislation, policies and protocols affecting cheetah and wild dog conservation	To advocate for stronger international, national and local legislation, policies and protocols to support cheetah and wild dog conservation
National Planning	Facilitate the implementation of the regional strategy and develop and implement national actions plans for the conservation of cheetah and wild dogs in all range states	To maintain and implement up to date national action plans and utilise other relevant frameworks for the conservation of cheetah and wild dogs in all range states.

6.4.4 The Revised Results and Activities

The anticipated results, previously called targets, were extensively revised and updated, as were the activities necessary to achieve these results. These are laid out in the revised regional strategy below (and also in the logframe, Appendix 4)

6.4.5 The Revised Strategy

Revised Regional Strategy for the Conservation of Cheetah and African Wild Dogs in Southern Africa
August 2015

1. Capacity Development

Objective 1: To develop capacity in all aspects of cheetah and wild dog conservation in southern Africa.

1.1. Result: National gaps in capacity in all areas of cheetah and wild dog conservation in the region are identified and documented.
- **1.1.1. Activity:** Establish current situation and identify gaps for all capacity components (law enforcement, monitoring and research, education outreach, protected area management, political, etc.) in each country
- **1.1.2. Activity:** Integrate national reports into a regional synthesis

1.2. Result: A regional strategy is developed for capacity development (based on the regional synthesis report) across all levels
- **1.2.1. Activity:** Identify a committee member from each country to develop the regional capacity development strategy
- **1.2.2. Activity:** Develop the results and activities required for capacity development at the national and regional level, aligned where possible with international initiatives
- **1.2.3. Activity:** Identify and engage with appropriate training institutions
- **1.2.4. Activity:** Activate and source funds to implement the capacity development strategy at the national or regional level, wherever appropriate

1.3. Result: The Regional Capacity Development Strategy is implemented and evaluated
- **1.3.1. Activity:** Implement the activities identified by the Regional Capacity Development Strategy (in 1.2.2 above)
- **1.3.2. Activity:** Make use of the RWCP website to disseminate the Regional Capacity Development Strategy and relevant resources, and facilitate networking
- **1.3.3. Activity:** Establish mechanisms for evaluating effectiveness of Regional Capacity Development Strategy
- **1.3.4. Activity:** Evaluate the effectiveness of the Regional Capacity Development Strategy using the mechanisms established in 1.3.3.

2. Knowledge and information

Objective 2: To improve knowledge and generate information for the conservation of cheetah and wild dogs across southern Africa.

2.1. Result: A better understanding of the status, distribution, biology and ecology of African wild dogs and cheetah is acquired
- **2.1.1. Activity:** Continue field studies on dispersal in both species, including factors influencing dispersal success.

2.1.2. Activity: Continue studies on cheetah and wild dogs feeding ecology in different areas in relation to potential range.

2.1.3. Activity: Assess viability and connectivity of small wild dog and cheetah populations.

2.1.4. Activity: Continue to contribute to the ongoing cheetah and wild dog atlas

2.1.5. Activity: Continue to conduct surveys in unknown and possible range to assess population status and distribution for cheetah and wild dogs.

2.1.6. Activity: Assess recoverable range for factors likely to influence recolonization (natural or artificial) within two years.

2.1.7. Activity: Maintain and expand long term monitoring programmes of cheetah and wild dog populations in resident range; ongoing.

2.1.8. Activity: Research, collate and make available best practice guidelines and ethical considerations for cheetah and wild dog research, conservation, tourism and reintroduction.

2.1.9. Activity: Continue research into new and improved ways to survey and monitor cheetah and wild dogs

2.2. Result: Standardised, quantitative knowledge of threats and their mitigation are generated and disseminated across southern Africa, including on poaching for bush-meat, habitat loss and fragmentation, illegal trade, captive management, climate change and irresponsible tourism, within two years.

2.2.1. Activity: Gather and disseminate information on the best practise for captive management of wild dog and cheetah to prevent illegal offtake from the wild and the associated illegal trade.

2.2.2. Activity: Gather and disseminate information on present and emerging threats to cheetah and wild dog conservation from the bush-meat trade.

2.2.3. Activity: Gather and disseminate information on present and emerging threats to cheetah and wild dog conservation from irresponsible tourism activities.

2.2.4. Activity: Gather and disseminate information on threats caused by game farming/ranching.

2.2.5. Activity: Gather and disseminate information on loss and fragmentation of cheetah and / or wild dog habitat.

2.2.6. Activity: Gather and disseminate information on conservancy models and illustrate the potential benefits of conservancies as an alternative to game farming/ranching.

2.2.7. Activity: Gather and disseminate information on meta-population management.

2.3. Result: Standardised, quantitative knowledge of human-carnivore conflict mitigation across southern Africa is generated and disseminated within two years.

2.3.1. Activity: Establish a technical working group incorporating all range states.

2.3.2. Activity: Technical working group to address all relevant regional NGO's, researchers and governments to ask for involvement and data/information to contribute to best practice manual for conflict mitigation for predators (by October 2015).

2.3.3. Activity: Regional NGO's, researchers and governments to compile available data and information on conflict issues and their mitigation solutions.

2.3.4. Activity: Technical working group to develop an interactive online database where information can be uploaded and compiled.

2.3.5. Activity: NGO's, researchers and governments to nationally collate their information and upload onto interactive database/or make it available to the technical working group (by March 2016).

2.3.6. Activity: Technical working group to work through information provided and create a practical, useful 'living' document to be delivered to the wider public (by June 2017). This will be completed through a workshop if funding can be sourced.

2.3.7. Activity: Technical working group to develop a strategy for delivery of the document to the wider public.

2.3.8. Activity: Technical working group to obtain letters of support from key stakeholders.

2.3.9. Activity: Market and deliver the document to the wider public (to be completed two years after start date).

3. Information transfer

Objective 3: To increase active commitment of stakeholders and awareness of the wider public by transferring information relevant to cheetah and wild dog conservation.

3.1. Result: Information about relevant benefits of cheetah and wild dogs to local communities, governments and landowners continues to be shared.

3.1.1. Activity: Hold meetings and workshops with communities, landowners and government, to exchange knowledge and information regarding relevant incentives and benefits; ongoing.

3.2. Result: Multimedia projects continue to be developed across all regional range states, building on the best existing material.

3.2.1. Activity: Continue to develop web-based, interactive reporting mechanisms for sightings, data, findings and activities relevant to cheetah and wild dog conservation.

3.2.2. Activity: Continue to develop and use posters, leaflets, radio, TV, video, pictures and theatre groups to disseminate information locally.

3.2.3. Activity: Ensure a minimum standard of data collection throughout the region, especially in areas where information gaps occur.

3.3. Result: Increased national awareness of local threats to cheetah and wild dogs across range states.

3.3.1. Activity: Continue to establish competitions, essays, etc. in schools and groups to enhance and highlight conservation education.

3.3.2. Activity: Continue to develop curricula regarding cheetah and wild dogs and integrate with activities of youth conservation clubs.

3.3.3. Activity: Continue to encourage sponsorship of sports teams, clubs and groups named after cheetah and wild dogs at all levels.

3.4. Result: National research symposiums promoted in all regional range states.

3.4.1. Activity: Promote workshops on cheetah and wild dogs at annual scientific symposiums.

3.4.2. Activity: Continue to participate in a wider range of meetings and stakeholder interest groups (i.e. those not directly concerned with conservation) to disseminate information about cheetah and wild dog conservation

3.5. Result: A greater awareness of issues related to cheetah and wild dog conservation among relevant stakeholders in all range states.

3.5.1. Activity: Continue to develop and disseminate education and awareness material, building on best existing material, for both adults and children in all range states.

3.5.2. Activity: Continue to create and implement multimedia programmes to raise awareness and understanding of cheetah and wild dog conservation in all range states.

3.5.3. Activity: Sensitise leaders to the value of cheetah and wild dog conservation; ongoing.

3.5.4. Activity: Link with existing initiatives and provide relevant information and interpretive materials to support judicial and law enforcement agencies.

4. Coexistence

Objective 4: To promote coexistence of people with cheetah and wild dogs across southern Africa.

4.1. Result: The deliberate killing of cheetah and wild dogs is reduced

4.1.1. Activity: Continue monitoring the extent of deliberate killing of cheetah and wild dogs in all range states, and collate data annually on a national level, and every three years for the region.

4.1.2. Activity: Clarify and advocate for enforcement of laws pertinent to killing of cheetah and wild dogs across range states, on an ongoing basis.

4.1.3. Activity: Identify conflict areas and clarify extent of actual versus perceived losses caused by cheetah and wild dogs, on an ongoing basis.

4.1.4. Activity: Sensitize relevant stakeholders about livestock husbandry practices proven to reduce depredation, on an ongoing basis.

4.1.5. Activity: Develop and implement national standard operating procedures on acceptable responses to conflict situations within one year and encourage exchange between range states (e.g. procedures on captures, translocation, lethal control etc).

4.1.6. Activity: Implement human-wildlife conflict rapid response teams to react quickly and effectively to conflict situations, across all range states within two years.

4.1.7. Activity: Initiate and continue programmes to combat negative perceptions of cheetah and wild dogs in all range states within one year.

4.2. Result: The levels of incidental mortality in cheetah and wild dogs are reduced in all range states as appropriate within five years.

4.2.1. Activity: Continue monitoring the extent of incidental mortality of cheetah and wild dogs in all range states, and collate data annually on a national level, and every three years for the region.

4.2.2. Activity: Reduce snaring mortality of cheetah and wild dogs through initiatives such as anti-poaching efforts, removal of snare wires, and integrated community based population, health and environment initiatives, on an ongoing basis.

4.2.3. Activity: Initiate programmes known to be effective at managing diseases that threaten cheetah and wild dog population viability, on an ongoing basis.

4.2.4. Activity: Implement targeted, enforceable programmes which reduce road mortality of cheetah and wild dog on an ongoing basis.

4.2.5. Activity: Substantially reduce poisoning mortality of cheetah and wild dogs through law enforcement and awareness campaigns.

4.3. Result*:* The perceived intrinsic and economic value of cheetah and wild dogs to all stakeholders are measurably increased within five years.

4.3.1. Activity: Quantify and monitor the perceived intrinsic and economic value of cheetah and wild dogs to all stakeholders; ongoing.

4.3.2. Activity: Promote wildlife based economic activities that promote cheetah and wild dog conservation and directly benefit communities and other stakeholders, in all range states within five years.

4.3.3. Activity: Investigate and highlight the cultural significance of cheetah and wild dogs across all range states; ongoing.

4.3.4. Activity: Develop self-sustaining community schemes that offset the costs of, and internalise the responsibilities for, conflict on an ongoing basis.

4.3.5. Activity: Develop income generation and capacity development projects linked to cheetah and wild dog conservation, on an ongoing basis.

4.4. Result: Socio-economic drivers to foster co-existence of land users with cheetah and wild dogs are addressed.

4.4.1. Activity: Identify and engage key stakeholders and experts to address socio economic threats to cheetah and wild dogs within 5 years.

4.4.2. Activity: Identify socio-economic factors relevant to cheetah and wild dog conservation within two years.

4.4.3. Activity: Develop strategies to address socio economic threats to cheetah and wild dogs within five years.

4.4.4. Activity: Encourage range states to develop a bio-economic strategy that promotes co-existence with cheetah and wild dogs.

5. Land use

Objective 5: To promote best land use practice for cheetah and wild dog conservation and minimise adverse effects of land development.

5.1. Result*:* Current, proposed and trends in land use are evaluated against the conservation needs of cheetah and wild dogs.

5.1.1. Activity: Build and maintain relationships with key regional stakeholders responsible for determining current and future land use strategies, within one year.

5.1.2. Activity: Collate guidelines based on case studies of land-use strategies associated with successful cheetah and wild dog conservation from each country in the region, within two years.

5.1.3. Activity: Engage constructively with industry, provide support in the form of best management practices and seek opportunity that will benefit cheetah and wild dog

5.2. Result: Integrated and innovative land-use management, planning and development aligned with cheetah and wild dog conservation is facilitated.

5.2.1. Activity: Identify and recommend guidelines in collaboration with government and private sector for social and environmental responsibility aligned with cheetah and wild dog conservation.

5.2.2. Activity: Coordinate cross sectorial communication among all key players including private sector to facilitate cooperation and collaborative initiatives that address cheetah and wild dog conservation, e.g. IUCN Global Business and Biodiversity Programme.

5.2.3. Activity: Promote cross sectorial participation in the Range Wide Conservation Program.

5.3. Result: The formation of landscape scale wildlife management units (e.g. conservancies, community parks etc.) is promoted by increasing awareness of the potential benefits of such land uses within two years.

5.3.1. Activity: Promote awareness of opportunities for partnerships for management of wildlife areas that benefit cheetah and wild dogs.

5.3.2. Activity: Monitor the development of landscape scale wildlife management units (e.g. large, multiple use areas that could encompass conservancies, parks and community

grazing areas) and their influence on cheetah and wild dog conservation, to enable adaptive management.

5.3.3. Activity: Optimise current resident range, maintain and recover corridors and connectivity and secure at least 20% of recoverable and possible range within five years to facilitate the expansion of cheetah and wild dog populations.

5.3.4. Activity: Promote wild dogs and cheetah as the flagship species of large landscape level habitat conservation initiatives, for protected area networks and corridors, including TFCA's.

5.4. Result: Cheetah and wild dog range is expanded within southern Africa through reintroductions of the species to appropriate areas of recoverable range.

5.4.1. Activity: Identify appropriate range.

5.4.2. Activity: Engage partner organisations and relevant government authority personnel in establishing reintroduction plans.

5.4.3. Activity: Ensure reintroduction plans follow IUCN Reintroduction guidelines.

5.4.4. Activity: Identify source populations of cheetah or wild dogs, including, where possible, through regional and international studbooks to identify populations of sound genetic viability.

5.4.5. Activity: Monitor reintroduction efforts and individual animals for at least five years post release.

5.5. Result: Wildlife based land uses and community participation in natural resource management are promoted in areas with potential for cheetah and wild dog conservation.

5.5.1. Activity: Identify and prioritize areas with potential for natural resource based land uses conducive to cheetah and wild dog conservation for each country annually.

5.5.2. Activity: Linking local capacity, resources, services and expertise to maximise partnership opportunities to enhance areas with potential for cheetah and wild dogs.

5.5.3. Activity: Evaluate the effectiveness of wildlife based land uses and their outcomes for cheetah and wild dog conservation to enable adaptive management.

5.5.4. Activity: Strengthen and increase (by 20%) buffer zones around areas with potential for cheetah and wild dog conservation through promoting community participation and partnership opportunities.

5.6. Result*:* Effective and appropriate livestock husbandry, range management and agriculture that is consistent with cheetah and wild dog conservation is promoted.

5.6.1. Activity: Promote and link agriculture and range management programmes to relevant areas.

5.6.2. Activity: Coordinate with the providers of training programmes to increase the capacity of agricultural communities to practice sustainable range management.

5.6.3. Activity: Assess the effectiveness of new and existing livestock husbandry and range management programmes against the conservation needs of cheetah and wild dogs and disseminate results annually to inform adaptive management strategies.

6. Political commitment

Objective 6: To advocate for increased political commitment to the conservation of cheetah and wild dogs.

6.1. Result*:* A regional agreement to collaborate in conserving cheetah and wild dogs across southern Africa is approved by all governments.

6.1.1. Activity: Link with local and international advocacy organisations, such as International Conservation Caucus Foundation ICCF, to achieve results outlined in this strategy.

6.1.2. Activity: Draw up an agreement, in collaboration with these advocacy organisations, for range state governments regarding commitment to conserve cheetah and wild dogs.

6.1.3. Activity: Present agreement to national agencies who will then take it to ministers, within six months of the agreement being drawn up.

6.1.4. Activity: Organise a regional state meeting where the agreement will be formally signed by the eight countries.

6.2. Result*:* Relevant transboundary agreements that will benefit the conservation of cheetah and wild dogs are promoted.

6.2.1. Activity: Develop and promote further agreements and strategies that will benefit cheetah and wild dogs.

6.2.2. Activity: Link and partner with local and international advocacy organisations, for example the ICCF, to achieve effective transboundary conservation efforts.

7. Policy and Legislation

Objective 7: To advocate for stronger international, national and local legislation, policies and protocols to support cheetah and wild dog conservation.

7.1. Result*:* The relevance and efficacy of current national, regional and international policies, protocols and legislation pertaining to the conservation of cheetah and wild dogs is assessed.

7.1.1. Activity: Identify existing international and national legislative frameworks that could help promote the conservation of cheetah and wild dog.

7.1.2. Activity: Range Wide Conservation Program to employ a consultant to carry out an assessment of the efficacy and suitability of these frameworks (identified in 7.1.1), and compile recommendations.

7.2. Result*:* Cheetah and wild dog conservation actions are aligned to existing national and international policies, protocols and legislation, and revision is lobbied for where appropriate.

7.2.1. Activity: Make use of consultant recommendations (7.1.2) to align regional actions to national and international initiatives.

7.2.2. Activity: Implement and enact these new and/or aligned policies, protocols and legislation.

7.2.3. Activity: Identify policies, protocols and legislation that will imminently be undergoing revision, and send representatives of the Range Wide Conservation Program to advocate for revision at these meetings.

7.2.4. Activity: For legislation that does not adequately address cheetah and wild dog conservation needs, and for which there is no planned revision, advocate for changes, including by making use of existing networks (e.g. IUCN SA members etc).

7.3. Result: Cheetah and wild dog range states encouraged to actively participate in biodiversity-related multilateral environmental agreements (MEAs, e.g. CMS, CBD, CITES, SADC protocols, WENSA) and other international processes.

7.3.1. Activity: Investigate how existing MEAs can facilitate cheetah and wild dog conservation, and make recommendations for action.

7.3.2. Activity: Adopt the recommendations identified in 7.3.1

7.3.3. Activity: Advocate for range states to become parties to the Convention on Migratory Species and other relevant conventions.

7.3.4. Activity: Investigate and obtain support for this strategy from CMS and other MEAs.

7.3.5. Activity: Develop and/or identify existing relevant motions for submission to the IUCN World Conservation Congress.

7.4. Result: This revised strategy for the conservation of cheetah and African wild dogs in southern Africa is incorporated into both the National and SADC Regional conservation plans by 2017.

7.4.1. Activity: At a regional level, to request that the Chair of SADC take the lead in ensuring that the Revised Strategy for the Conservation of Cheetah and African Wild Dogs is incorporated in the SADC Regional Biodiversity Strategy and Action Plan (RBSAP), by 2016.

7.4.2. Activity: At a national level, each SADC member state to incorporate their national conservation action plan for cheetah and African wild dogs into their respective National Biodiversity Strategies and Action plan (NBSAP) by 2017.

7.4.3. Activity: Encourage SADC countries to prioritize the conservation of cheetah and wild dogs in the implementation of the Programme of Work for Protected Areas (POWPA)

7.4.4. Activity: Encourage SADC member states to prioritise the conservation of cheetah and wild dogs in their Global Environmental Facility (GEF) allocations.

7.5. Result: The capacity of law enforcement and judicial agencies to implement legislation, policies and protocols relevant to cheetah and wild dog conservation is improved.

7.5.1. Activity: National agencies to identify and align with existing law enforcement networks, and prioritise capacity needs to enforce legislation, policies and protocols relevant to cheetah and wild dog conservation.

7.5.2. Activity: Secure resources required to improve capacity.

7.5.3. Activity: Develop capacity according to priorities set by national agencies (in 7.4.1).

7.5.4. Activity: Maintain ongoing engagement with existing networks dealing with, *inter alia*, issues of bushmeat poaching, law enforcement, illegal trade, problem animal control relevant to cheetah and wild dog conservation.

8. National Planning

Objective 8: To maintain and implement up to date national action plans and utilise other relevant frameworks for the conservation of cheetah and wild dogs in all range states.

8.1. Result*:* National Action Plans for each country are revised (or where necessary developed) to be S.M.A.R.T and in line with this strategy, within two years.

8.1.1. Activity: Identify key stakeholders to facilitate the revision process in each country within 6 months.

8.1.2. Activity: Revise the action plans in each state within two years.

8.2. Result*:* The implementation of the revised national action plans is facilitated within two years of the revision.

8.2.1. Activity: Identify appropriate mechanisms within each country for driving the implementation process within 6 months.

8.2.2. Activity: Identify constraints and where possible provide the means to ensure implementation of the revised national strategy within one year.

8.2.3. Activity: Encourage all stakeholders to use the revised national action plan to guide their conservation actions at all times.

8.2.4. Activity: Arrange a workshop between governments to exchange information on the implementation process of national action plan.

6.5 Conclusions and national planning

The regional strategic plan was developed, and has been updated, in a format that can be readily adapted for national implementation, through a national participatory workshop process engaging all national stakeholders, including those who attended the regional strategic workshop/s. In the southern African region, such national workshops have been held in Botswana (2007), Malawi (2011), Mozambique (2010), Namibia (2013), South Africa (2007), Zambia (2009) and Zimbabwe (2009). The national workshop for Angola is scheduled for October 2016.

The principal steps in translating the regional strategy into a national strategy are as follows:

- Present the regional strategy, along with background information, and request the mandate to use the regional strategy as a template for a national strategy.
- Add comments on the national interpretation of the vision, goal and objectives.
- Within each objective, take each target and activity, and decide whether to adopt or drop it, bearing in mind that some targets and activities may not be relevant to all countries.
- If the target or activity is adopted, then the wording may need to be adjusted where appropriate.
- Timelines, actors and verifiable indicators should be added to each activity.

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APPENDIX 1

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APPENDIX 2

Agenda

HEIA SAFARI RANCH - 9TH TO 13TH AUGUST 2015

Sunday 9th August 2015

All arrive at Heia Safari Ranch
(Shuttles to depart JNB International Airport at various times throughout the day)

18:30 Icebreaker Drinks at the bar
All participants

19:30 DINNER

Monday, 10th August

8:45 Official welcome and opening remarks
Christine Breitenmoser

9:00 Welcome from workshop hosts (Heia Safari Ranch)
Venue staff

9:05 Brief welcome and introduction from RWCP
Sarah Durant

9:15 Introduction to AZA and SAFE – including the organizational and operation details of the cooperative species management program
AZA team

9:30 Introductions
All participants

9:50 Background Presentation – The Regional Conservation Strategy for Cheetah and Wild Dogs, and the need for review; to include aims and objectives of the meeting
Sarah Durant

10:10 TEA BREAK

Presentations from country wildlife authorities on progress made against objectives of Regional Strategy *Country Wildlife Authority Representatives x8 (15 minutes per presentation)*

10:45 Botswana
Michael Flyman

11:00 Mozambique
Abel Nhabanga & Pedro Periera & Oraca Cuambe

11:15 Malawi
Chiza Manda

11:30 Angola
Iracelma Machado

11:45 Namibia
Ortwin Aschenborn & Uakedisa Muzuma

12:00 Zimbabwe
Colum Zhuwau

12:15 Zambia
Clive Chifunte & Chuma Simukonda

12:30 Conservation across borders: CMS and its relevance to cheetah and wild dogs
Nopasika Malta Qwathekana

12:45 LUNCH BREAK

Project Presentations: (*10 minutes per presentation*)

14:00 Endangered Wildlife Trust (South Africa)
Kelly Marnewick / Harriet Davies-Mostert

14:10 Cheetah Outreach (South Africa)
Deon Cilliers

14:20 Cheetah Conservation Fund (Namibia)
Laurie Marker / Anne Schmidt-Küntzel

14:30 Naankuse (Namibia) – Namibian Wild Dog Project
Rudie van Vuuren

14:40 IZW (Namibia)
Joerg Melzheimer

14:50 Caprivi Carnivore Project (Namibia)
Lise Hansen

15:00 Angola Carnivore Survey (Angola)
Paul Funston

15:10 Angolan Carnivore Project (Angola)
Ezequiel Fabiano

15:20 Botswana Predator Conservation Trust (Botswana)
Tico McNutt

15:30 Cheetah Conservation Botswana (Botswana)
Jane Horgan

15:40 Panthera (Zambia / KAZA)
Kim Overton

15:50 Zambian Carnivore Program (Zambia)
Johnathan Merkle

16:00 Conservation Lower Zambezi (Zambia)
Ian Stevenson

16:10 TEA BREAK

16:40 African Wildlife Conservation Fund (Zimbabwe)
Jessica Watermeyer

16:50 Painted Dog Conservation (Zimbabwe)
Hilary Madzikanda

17:00 Cheetah Conservation Project Zimbabwe (Zimbabwe)
Esther van der Meer

17:10 Painted Dog Research Trust (Zimbabwe)
Greg Rasmussen

17:20 Limpopo Transfrontier Predator Project (Mozambique)
Leah Everatt

17:30 Malawi Wild Dog Project (Malawi)
Emma Stone

17:40 Summary of the day
Sarah Durant and Christine Breitenmoser

18:00 END OF DAY 1

18:30 Drinks Reception

19:30 DINNER

Tuesday, 11th August

8:30 Plan for the day
Sarah Durant and Christine Breitenmoser

8:45 South Africa
Angela Gaylard & Charlene Bissett

9:00 The illegal trade in cheetah
Nick Mitchell

9:10 **Maps** - Presentation of Regional Cheetah and Wild Dog Maps (both updated in 2014 / early 2015)
Lizanne Roxburgh

9:30 Working groups: One cheetah and one wild dog working group to discuss any changes or updates to the two maps
Lizanne Roxburgh / Nick Mitchell

10:30 TEA BREAK (informal)

11:00 Continue discussions on changes and updates to maps – finalise by lunch

12:30 LUNCH BREAK

14:00 **Summary of Progress against Regional Strategy so far** (compilation of data from log frames – and achievements to date)
Rosemary Groom

14:40 **An examination of the problem tree – is it still valid?**
Presentation and explanation of the problems identified in the first regional meeting. Summary of continuing and new barriers and obstacles to cheetah and wild dog conservation

Plenary discussion: Does the problem tree continue to address all the problems confronting cheetah and wild dog conservation? Are there new problems that need to be addressed?
Facilitated by Christine Breitenmoser and Sarah Durant

15:40 **Reviewing the 2007 regional strategy: Plenary review of Objectives.** Are they still valid or do they need changes?
Facilitated by Christine Breitenmoser and Sarah Durant

16:00 TEA BREAK

16:30 **Reviewing the 2007 regional strategy: Targets and activities**
Working Groups – Review the targets and activities under each of the 8 objectives of the Regional Strategy to update and change where necessary *(each working group (x4) takes two themes)*
Facilitated by Christine Breitenmoser and Sarah Durant

17:30 FINISH

19:00 DINNER

19:45 Climate change and its relevance to cheetah and wild dogs
Rosie Woodroffe

20:05 Human Wildlife Conflict Toolkit
Nick Mitchell

20:15 END OF DAY 2

Wednesday, 12th August

8:15 Plan for the day
Sarah Durant and Christine Breitenmoser

8:30 Continue in working groups to update targets and activities of regional strategy

10:30 TEA BREAK (informal)

11:00 **Plenary** - ***each working group to present on their suggested updates to the targets and activities of the log frame of the Regional Strategy***
Facilitated by Christine Breitenmoser and Sarah Durant

13:00 LUNCH BREAK

14:00 **Plenary** (cont.)

15:00 **Return to working groups to revise and update targets and activities according to plenary discussion**

16:00 TEA BREAK

16:30 **Working groups** (cont.)
Groups hand in revised targets and activities to facilitators

17:30 END OF DAY 3

19:00 DINNER

Thursday 13th August

8:15 Plan for the day
Sarah Durant and Christine Breitenmoser

8:30 **Plenary** – **presentation and review of finalised distribution maps**
Facilitated by Rosemary Groom

9:20 **Plenary** – **presentation and review of updated log frame of regional strategy**
Facilitated by Christine Breitenmoser and Sarah Durant

11:00 Wrap up of meeting and way forward

11:45 Closing remarks

12:00 END OF MEETING and LUNCH

13:45 & 15:00 Shuttles depart for OR Tambo International Airport

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APPENDIX 3

Mapping Methodology and Definitions of Range Categories

Range maps were produced during the 2007 Regional Workshop and have been subsequently updated after each National Action Planning Workshop. During the 2015 workshop, both cheetah and wild dogs were once again thoroughly revised and updated, making the most of the wealth of species experts from throughout the region, all in the same room. Both the range polygons and the associated metadata tables were updated at the workshop and have subsequently been scrutinised by participants on a country by country basis to ensure they are as accurate as possible. The maps presented in this document thus represent the best available distribution maps for both wild dogs and cheetah in 2015.

A3.1 Update of Range Category Definitions

After extensive plenary discussions, the range categories were eventually updated to the following:

(1) ***Resident range:***
Land where the species was known to still be resident. This recognised the knowledge that both cheetah and wild dogs have excellent dispersal abilities, meaning that not every point location indicates the presence of a resident population; some may indicate transient dispersing animals. Resident range was defined as areas where (i) the species has been regularly detected over a period of several years; (ii) there was evidence of breeding (e.g. young cheetah cubs sighted, or wild dog pups or dens recorded); and (iii) for wild dogs, there were sightings of complete packs (groups containing members of both sexes, usually >3 animals) rather than small groups (≤3 animals), or single-sex groups, which are likely to be dispersal groups.

(2) ***Possible Resident Range****:
Land where the species may still be resident, but where residency had not been confirmed in the last 10 years. Usually these would be areas which contain suitable habitat and prey, but which have had little or no ground-based surveying in recent years (aerial surveys are unlikely to detect either species). Some areas were considered to constitute possible range because only unconfirmed reports (e.g. reports from inexperienced observers), or only sparse, irregular sightings were available or there were only reports of transient individuals or groups. This also includes once off surveys that have detected presence but not breeding behaviour.

* *In the attribute table, it is made clear whether the range is possible resident with presence recorded (i.e. from a once off survey or sporadic sightings, excluding pups or cubs) or where presence has not been recorded, but expert opinion is of the consensus there would be wild dogs or cheetah resident there (due to suitable habitat and prey availability)*

(3) ***Transient Range****:
Habitat used intermittently by wild dogs or cheetah, but known not to be used regularly, providing no connection to areas of resident, possible or unknown range, and unlikely to be

made suitable for use by resident wild dog or cheetah populations through any reasonable form of management. Such areas are likely to be natural habitats that are only marginally suitable for cheetah or wild dogs (e.g. desert), or heavily modified / human impacted areas. Transient range also includes areas which have been used sporadically by dispersing animals (e.g. from collar data).

* *The transient range category was newly defined in the 2015 workshop, but is a variation on the 'marginal' range category described for wild dogs only in 2007.*

(4) ***Connecting range:***
Land where the species is known not to be resident, but which dispersing animals may use to either move between occupied areas, or to recolonise extirpated range. Such connections might take the form of 'corridors' of continuous habitat or 'stepping stones' of habitat fragments.

(5) ***Recoverable range****:
Land where cheetah and wild dogs are currently known to be extirpated, but where habitat and prey remain over sufficiently large areas that either natural or assisted recovery of the species might be possible within the next 10 years if reasonable conservation action were to be taken.

** In designating areas of recoverable range, participants were asked to bear in mind that both species live at low densities and travel very widely, so they would rarely be recoverable in small areas (<3,000km^2) unless very intensive management (e.g. predator-proof fencing and active population management) could be implemented.*

(6) ***Extirpated range***:
Land where the species is currently extinct, and where habitat has been so heavily modified or fragmented (e.g. by cultivation or urbanisation) as to be uninhabitable by resident animals for the foreseeable future.

(7) ***Unknown range***: land where the species' status is currently unknown and cannot be inferred using knowledge of the local status of habitat and prey.

A3.2 Using the Maps

These maps are useful in a number of ways.

- They are the recognised basis for the IUCN red list updates for distribution and numbers of both cheetah and African wild dogs across Africa
- They provide a documented history of changes in range of the two species over time
- They can be used to prioritise different types of conservation intervention

In principle, conservation activities for these species (e.g. management interventions, surveys, monitoring) might be conducted in any of these types of geographic range. Even in unrecoverable (extirpated) range, outreach and education activities may be vital for long-term conservation efforts on neighbouring lands.

In order to improve our understanding of both cheetah and wild dogs' distribution and abundance, surveys should be prioritised in areas currently designated as unknown or possible range. Direct conservation efforts should be focussed in and around areas of resident range and areas of connecting range. Work in areas designated as recoverable range should focus on identifying and eliminating or mitigating the factors that caused the local extirpation of the species, with a view to eventual population recovery.

APPENDIX 4

The Strategic Logframe of the Revised and Updated 2015 Regional Conservation Strategy for the Cheetah and African Wild Dog in Southern Africa

VISION: ***Secure, viable cheetah and wild dog populations across a range of ecosystems that successfully coexist with, and are valued by, the people of southern Africa***
GOAL: ***Improve the status of cheetah and wild dogs, and secure additional viable populations across their range in southern Africa***

Theme	Objective	Results	Activities
Capacity Development	1. To develop capacity in all aspects of cheetah and wild dog conservation in southern Africa.	1.1 National gaps in capacity in all areas of cheetah and wild dog conservation in the region are identified and documented.	1.1.1 Establish current situation and identify gaps for all capacity components (law enforcement, monitoring and research, education outreach, protected area management, political, etc.) in each country
			1.1.2 Integrate national reports into a regional synthesis
		1.2 A regional strategy is developed for capacity development (based on the regional synthesis report) across all levels	1.2.1 Identify a committee member from each country to develop the regional capacity development strategy
			1.2.2 Develop the results and activities required for capacity development at the national and regional level, aligned where possible with international initiatives
			1.2.3 Identify and engage with appropriate training institutions
			1.2.4 Activate and source funds to implement the capacity development strategy at the national or regional level, wherever appropriate
		1.3 The Regional Capacity Development Strategy is implemented and evaluated	1.3.1 Implement the activities identified by the Regional Capacity Development Strategy (in 1.2.2 above)
			1.3.2 Make use of the RWCP website to disseminate the Regional Capacity Development Strategy and relevant resources, and facilitate networking
			1.3.3 Establish mechanisms for evaluating effectiveness of Regional Capacity Development Strategy
			1.3.4 Evaluate the effectiveness of the Regional Capacity Development Strategy using the mechanisms established in 1.3.3.
Knowledge and	2. To improve knowledge and	2.1 A better understanding of the status, distribution, biology and ecology of	2.1.1 Continue field studies on dispersal in both species, including factors influencing dispersal success.

Information	generate information for the conservation of cheetah and wild dogs across southern Africa.	African wild dogs and cheetahs is acquired	2.1.2 Continue studies on cheetah and wild dogs feeding ecology in different areas in relation to potential range.
			2.1.3 Assess viability and connectivity of small wild dog and cheetah populations.
			2.1.4 Continue to contribute to the ongoing cheetah and wild dog atlas
			2.1.5 Continue to conduct surveys in unknown and possible range to assess population status and distribution for cheetah and wild dogs.
			2.1.6 Assess recoverable range for factors likely to influence recolonization (natural or artificial) within two years.
			2.1.7 Maintain and expand long term monitoring programmes of cheetah and wild dog populations in resident range; ongoing.
			2.1.8 Research, collate and make available best practice guidelines and ethical considerations for cheetah and wild dog research, conservation, tourism and reintroduction.
			2.1.9 Continue research into new and improved ways to survey and monitor cheetah and wild dogs
		2.2 Standardised, quantitative knowledge of threats and their mitigation are generated and disseminated across southern Africa, including on poaching for bush-meat, habitat loss and fragmentation, illegal trade, captive management, climate change and irresponsible tourism, within two years.	2.2.1 Gather and disseminate information on the best practise for captive management of wild dog and cheetahs to prevent illegal offtake from the wild and the associated illegal trade.
			2.2.2 Gather and disseminate information on present and emerging threats to cheetah and wild dog conservation from the bush-meat trade.
			2.2.3 Gather and disseminate information on present and emerging threats to cheetah and wild dog conservation from irresponsible tourism activities.
			2.2.4 Gather and disseminate information on threats caused by game farming/ranching.
			2.2.5 Gather and disseminate information on loss and fragmentation of cheetah and / or wild dog habitat.
			2.2.6 Gather and disseminate information on conservancy models and illustrate the potential benefits of conservancies as an alternative to game farming/ranching.
			2.2.7 Gather and disseminate information on meta-population management.
		2.3 Standardised, quantitative knowledge of human-carnivore conflict mitigation across southern Africa is generated and disseminated within two years.	2.3.1 Establish a technical working group incorporating all range states.
			2.3.2 Technical working group to address all relevant regional NGO's, researchers and governments to ask for involvement and data/information to contribute to best practice manual for conflict mitigation for predators (by October 2015).
			2.3.3 Regional NGO's, researchers and governments to compile available data and information on conflict issues and their mitigation solutions.
			2.3.4 Technical working group to develop an interactive online database where information can be uploaded and compiled.
			2.3.5 NGO's, researchers and governments to nationally collate their information and upload onto interactive database/or make it available to the technical working group (by

			March 2016).
			2.3.6 Technical working group to work through information provided and create a practical, useful 'living' document to be delivered to the wider public (by June 2017). This will be completed through a workshop if funding can be sourced.
			2.3.7 Technical working group to develop a strategy for delivery of the document to the wider public.
			2.3.8 Technical working group to obtain letters of support from key stakeholders.
			2.3.9 Market and deliver the document to the wider public (to be completed two years after start date).
Information transfer	3. To increase active commitment of stakeholders and awareness of the wider public by transferring information relevant to cheetah and wild dog conservation	3.1 Information about relevant benefits of cheetah and wild dogs to local communities, governments and landowners continues to be shared	3.1.1 Hold meetings and workshops with communities, landowners and government, to exchange knowledge and information regarding relevant incentives and benefits; ongoing.
		3.2 Multimedia projects continue to be developed across all regional range states, building on the best existing material.	3.2.1 Continue to develop web-based, interactive reporting mechanisms for sightings, data, findings and activities relevant to cheetah and wild dog conservation.
			3.2.2 Continue to develop and use posters, leaflets, radio, TV, video, pictures and theatre groups to disseminate information locally.
			3.2.3 Ensure a minimum standard of data collection throughout the region, especially in areas where information gaps occur.
		3.3 Increased national awareness of local threats to cheetah and wild dogs across range states.	3.3.1 Continue to establish competitions, essays, etc. in schools and groups to enhance and highlight conservation education.
			3.3.2 Continue to develop curricula regarding cheetah and wild dogs and integrate with activities of youth conservation clubs.
			3.3.3 Continue to encourage sponsorship of sports teams, clubs and groups named after cheetah and wild dogs at all levels.
		3.4 National research symposiums promoted in all regional range states.	3.4.1 Promote workshops on cheetah and wild dogs at annual scientific symposiums.
			3.4.2 Continue to participate in a wider range of meetings and stakeholder interest groups (i.e. those not directly concerned with conservation) to disseminate information about cheetah and wild dog conservation
		3.5 A greater awareness of issues related to cheetah and wild dog conservation among relevant stakeholders in all range states.	3.5.1 Continue to develop and disseminate education and awareness material, building on best existing material, for both adults and children in all range states.
			3.5.2 Continue to create and implement multimedia programmes to raise awareness and understanding of cheetah and wild dog conservation in all range states.
			3.5.3 Sensitise leaders to the value of cheetah and wild dog conservation; ongoing.
			3.5.4 Link with existing initiatives and provide relevant information and interpretive materials to support judicial and law enforcement agencies.
Coexistence	4. To promote coexistence of people	4.1 The deliberate killing of cheetah and wild dogs is reduced	4.1.1 Continue monitoring the extent of deliberate killing of cheetah and wild dogs in all range states, and collate data annually on a national level, and every three years for the

	with cheetah and wild dogs across southern Africa		region.
			4.1.2 Clarify and advocate for enforcement of laws pertinent to killing of cheetah and wild dogs across range states, on an ongoing basis.
			4.1.3 Identify conflict areas and clarify extent of actual versus perceived losses caused by cheetah and wild dogs, on an ongoing basis.
			4.1.4 Sensitize relevant stakeholders about livestock husbandry practices proven to reduce depredation, on an ongoing basis.
			4.1.5 Develop and implement national standard operating procedures on acceptable responses to conflict situations within one year and encourage exchange between range states (e.g. procedures on captures, translocation, lethal control etc).
			4.1.6 Implement human-wildlife conflict rapid response teams to react quickly and effectively to conflict situations, across all range states within two years.
			4.1.7 Initiate and continue programmes to combat negative perceptions of cheetah and wild dogs in all range states within one year.
		4.2 The levels of incidental mortality in cheetah and wild dogs are reduced in all range states as appropriate within five years.	4.2.1 Continue monitoring the extent of incidental mortality of cheetah and wild dogs in all range states, and collate data annually on a national level, and every three years for the region.
			4.2.2 Reduce snaring mortality of cheetah and wild dogs through initiatives such as anti-poaching efforts, removal of snare wires, and integrated community based population, health and environment initiatives, on an ongoing basis.
			4.2.3 Initiate programmes known to be effective at managing diseases that threaten cheetah and wild dog population viability, on an ongoing basis.
			4.2.4 Implement targeted, enforceable programmes which reduce road mortality of cheetah and wild dog on an ongoing basis.
			4.2.5 Substantially reduce poisoning mortality of cheetah and wild dogs through law enforcement and awareness campaigns.
		4.3 The perceived intrinsic and economic value of cheetah and wild dogs to all stakeholders are measurably increased within five years.	4.3.1 Quantify and monitor the perceived intrinsic and economic value of cheetah and wild dogs to all stakeholders; ongoing.
			4.3.2 Promote wildlife based economic activities that promote cheetah and wild dog conservation and directly benefit communities and other stakeholders, in all range states within five years.
			4.3.3 Investigate and highlight the cultural significance of cheetah and wild dogs across all range states; ongoing.
			4.3.4 Develop self-sustaining community schemes that offset the costs of, and internalise the responsibilities for, conflict on an ongoing basis. 4.3.5 Develop income generation and capacity development projects linked to cheetah and wild dog conservation, on an ongoing basis.
		4.4 Socio-economic drivers to foster co-	4.4.1 Identify and engage key stakeholders and experts to address socio economic

		existence of land users with cheetah and wild dogs are addressed.	threats to cheetah and wild dogs within 5 years.
			4.4.2 Identify socio-economic factors relevant to cheetah and wild dog conservation within two years.
			4.4.3 Develop strategies to address socio economic threats to cheetah and wild dogs within five years.
			4.4.4 Encourage range states to develop a bio-economic strategy that promotes co-existence with cheetah and wild dogs.
Land Use	5. To promote best land use practice for cheetah and wild dog conservation and minimise adverse effects of land development	5.1 Current, proposed and trends in land use are evaluated against the conservation needs of cheetah and wild dog	5.1.1 Build and maintain relationships with key regional stakeholders responsible for determining current and future land use strategies, within one year.
			5.1.2 Collate guidelines based on case studies of land-use strategies associated with successful cheetah and wild dog conservation from each country in the region, within two years.
			5.1.3 Engage constructively with industry, provide support in the form of best management practices and seek opportunity that will benefit cheetah and wild dog
		5.2 Integrated and innovative land-use management, planning and development aligned with cheetah and wild dog conservation is facilitated.	5.2.1 Identify and recommend guidelines in collaboration with government and private sector for social and environmental responsibility aligned with cheetah and wild dog conservation, e.g. IUCN Global Business and Biodiversity Programme.
			5.2.2 Coordinate cross sectorial communication among all key players including private sector to facilitate cooperation and collaborative initiatives that address cheetah and wild dog
			5.2.3 Promote cross sectorial participation in the Range Wide Conservation Program
		5.3 The formation of landscape scale wildlife management units (e.g. conservancies, community parks etc.) is promoted by increasing awareness of the potential benefits of such land uses within two years.	5.3.1 Promote awareness of opportunities for partnerships for management of wildlife areas that benefit cheetah and wild dogs
			5.3.2 Monitor the development of landscape scale wildlife management units (e.g. large, multiple use areas that could encompass conservancies, parks and community grazing areas) and their influence on cheetah and wild dog conservation, to enable adaptive management
			5.3.3 Optimise current resident range, maintain and recover corridors and connectivity and secure at least 20% of recoverable and possible range within five years to facilitate the expansion of cheetah and wild dog populations.
			5.3.4 Promote wild dogs and cheetah as the flagship species of large landscape level habitat conservation initiatives, for protected area networks and corridors, including TFCA's.
		5.4 Cheetah and wild dog range is expanded within southern Africa through reintroductions of the species to appropriate areas of recoverable range	5.4.1 Identify appropriate range.
			5.4.2 Engage partner organisations and relevant government authority personnel in establishing reintroduction plans.
			5.4.3 Ensure reintroduction plans follow IUCN Reintroduction guidelines.
			5.4.4 Identify source populations of cheetah or wild dogs, including, where possible,

			through regional and international studbooks to identify populations of sound genetic viability.
			5.4.5 Monitor reintroduction efforts and individual animals for at least five years post release.
		5.5 Wildlife based land uses and community participation in natural resource management are promoted in areas with potential for cheetah and wild dog conservation.	5.5.1 Identify and prioritize areas with potential for natural resource based land uses conducive to cheetah and wild dog conservation for each country annually.
			5.5.2 Linking local capacity, resources, services and expertise to maximise partnership opportunities to enhance areas with potential for cheetah and wild dogs.
			5.5.3 Evaluate the effectiveness of wildlife based land uses and their outcomes for cheetah and wild dog conservation to enable adaptive management.
			5.5.4 Strengthen and increase (by 20%) buffer zones around areas with potential for cheetah and wild dog conservation through promoting community participation and partnership opportunities.
		5.6 Effective and appropriate livestock husbandry, range management and agriculture that is consistent with cheetah and wild dog conservation is promoted.	5.6.1 Promote and link agriculture and range management programmes to relevant areas.
			5.6.2 Coordinate with the providers of training programmes to increase the capacity of agricultural communities to practice sustainable range management.
			5.6.3 Assess the effectiveness of new and existing livestock husbandry and range management programmes against the conservation needs of cheetah and wild dogs and disseminate results annually to inform adaptive management strategies.
Political Commitment	6. To advocate for increased political commitment to the conservation of cheetah and wild dogs	6.1 A regional agreement to collaborate in conserving cheetah and wild dogs across southern Africa is approved by all governments	6.1.1 Link with local and international advocacy organisations, such as International Conservation Caucus Foundation ICCF, to achieve results outlined in this strategy
			6.1.2 Draw up an agreement, in collaboration with these advocacy organisations, for range state governments regarding commitment to conserve cheetah and wild dogs.
			6.1.3 Present agreement to national agencies who will then take it to ministers, within six months of the agreement being drawn up.
			6.1.4 Organise a regional state meeting where the agreement will be formally signed by the eight countries.
		6.2 Relevant transboundary agreements that will benefit the conservation of cheetah and wild dogs are promoted.	6.2.1 Develop and promote further agreements and strategies that will benefit cheetah and wild dog.
			6.2.2 Link and partner with local and international advocacy organisations, for example the ICCF, to achieve effective transboundary conservation efforts.
Policy and Legislation	7. To advocate for stronger international, national and local legislation, policies and protocols to support cheetah and wild dog	7.1 The relevance and efficacy of current national, regional and international policies, protocols and legislation pertaining to the conservation of cheetah and wild dogs is assessed.	7.1.1 Identify existing international and national legislative frameworks that could help promote the conservation of cheetah and wild dog.
			7.1.2 Range Wide Conservation Program to employ a consultant to carry out an assessment of the efficacy and suitability of these frameworks (identified in 7.1.1), and compile recommendations.
		7.2 Cheetah and wild dog conservation	7.2.1 Make use of consultant recommendations (7.1.2) to align regional actions to

	conservation	actions are aligned to existing national and international policies, protocols and legislation, and revision is lobbied for where appropriate.	national and international initiatives
			7.2.2 Implement and enact these new and/or aligned policies, protocols and legislation
			7.2.3 Identify policies, protocols and legislation that will imminently be undergoing revision, and send representatives of the Range Wide Conservation Program to advocate for revision at these meetings
			7.2.4 For legislation that does not adequately address cheetah and wild dog conservation needs, and for which there is no planned revision, advocate for changes, including by making use of existing networks (e.g. IUCN SA members etc).
		7.3 Cheetah and wild dog range states encouraged to actively participate in biodiversity-related multilateral environmental agreements (MEAs, e.g. CMS, CBD, CITES, SADC protocols, WENSA) and other international processes.	7.3.1 Investigate how existing MEAs can facilitate cheetah and wild dog conservation, and make recommendations for action.
			7.3.2 Adopt the recommendations identified in 7.3.1
			7.3.3 Advocate for range states to become parties to the Convention on Migratory Species and other relevant conventions.
			7.3.4 Investigate and obtain support for this strategy from CMS and other MEAs.
			7.3.5 Develop and/or identify existing relevant motions for submission to the IUCN World Conservation Congress.
		7.4 This revised strategy for the conservation of cheetah and African wild dogs in southern Africa is incorporated into both the National and SADC Regional conservation plans by 2017	7.4.1 At a regional level, to request that the Chair of SADC take the lead in ensuring that the Revised Strategy for the Conservation of Cheetah and African wild dog is incorporated in the SADC Regional Biodiversity Strategy and Action Plan (RBSAP), by 2016
			7.4.2 At a national level, each SADC member state to incorporate their national conservation action plan for cheetah and African wild dogs into their respective National Biodiversity Strategies and Action plan (NBSAP) by 2017
			7.4.3 Encourage SADC countries to prioritize the conservation of cheetah and wild dogs in the implementation of the Programme of Work for Protected Areas (POWPA)
			7.4.4 Encourage SADC member states to prioritise the conservation of cheetah and wild dogs in their Global Environmental Facility (GEF) allocations
		7.5 The capacity of law enforcement and judicial agencies to implement legislation, policies and protocols relevant to cheetah and wild dog conservation is improved.	7.5.1 National agencies to identify and align with existing law enforcement networks, and prioritise capacity needs to enforce legislation, policies and protocols relevant to cheetah and wild dog conservation.
			7.5.2 Secure resources required to improve capacity.
			7.5.3 Develop capacity according to priorities set by national agencies (in 7.4.1).
			7.5.4 Maintain ongoing engagement with existing networks dealing with, *inter alia*, issues of bushmeat poaching, law enforcement, illegal trade, problem animal control relevant to cheetah and wild dog conservation
National Planning	8. To maintain and implement up to date national action plans	8.1 National Action Plans for each country are revised (or where necessary developed) to be S.M.A.R.T and in line	8.1.1 Identify key stakeholders to facilitate the revision process in each country within 6 months.
			8.1.2 Revise the action plans in each state within two years.

	and utilise other relevant frameworks for the conservation of cheetah and wild dogs in all range states.	with this strategy, within two years	
		8.2 The implementation of the revised national action plans is facilitated within two years of the revision.	8.2.1 Identify appropriate mechanisms within each country for driving the implementation process within 6 months.
			8.2.2 Identify constraints and where possible provide the means to ensure implementation of the revised national strategy within one year.
			8.2.3 Encourage all stakeholders to use the revised national action plan to guide their conservation actions at all times.
			8.2.4 Arrange a workshop between governments to exchange information on the implementation process of national action plan.