Regional Profile

Kavango-Zambezi Transfrontier Conservation Area

Giraffe Conservation Status Report

May 2021

General statistics

Countries: Angola, Botswana, Namibia, Zambia, Zimbabwe

Size of area: 520,000 km^2

Size of protected areas / percentage protected area coverage: 371,394 km^2/71%

The Kavango-Zambezi Transfrontier Conservation Area (referred to as KAZA TFCA in this report) is the world's largest transfrontier conservation area, encompassing an area larger than Germany and Austria combined and nearly twice as large as the United Kingdom (Peace Parks Foundation, 2021). Located in the Kavango and Zambezi River basins it spans across Angola, Botswana, Namibia, Zambia and Zimbabwe.

Several key protected areas are part in the KAZA TFCA including the Okavango Delta, the world's largest inland delta, and the Victoria Falls, a World Heritage Site and one of the seven natural wonders of the world (KAZA TFCA 2021).

Species and subspecies

In 2016, the International Union for the Conservation of Nature (IUCN) completed the first detailed assessment of the conservation status of giraffe, revealing that they are in peril by listing them as *Vulnerable* on the IUCN Red List of Threatened Species™. Their plight was further emphasised when the majority of the IUCN recognised subspecies were assessed separately in 2018 – some as *Critically Endangered*. While this update further confirms the real threat to one of Africa's most charismatic megafauna, it also highlights a rather confusing aspect of giraffe conservation: how many species/subspecies of giraffe are there? The IUCN currently recognises one species (*Giraffa camelopardalis*) and nine subspecies of giraffe (Muller *et al*. 2018) historically based on outdated assessments of their morphological features and geographic ranges. The subspecies are thus divided: Angolan giraffe *(G. c. angolensis),* Kordofan giraffe *(G. c. antiquorum),* Masai giraffe (*G. c. tippelskirchi*), Nubian giraffe *(G. c. camelopardalis),* reticulated giraffe *(G. c. reticulata),* Rothschild's giraffe *(G. c. rothschildi),* South African giraffe (*G. c. giraffa),* Thornicroft's giraffe (*G. c. thornicrofti*) and West African giraffe *(G. c. peralta).*

However, the Giraffe Conservation Foundation (GCF) together with their partner Senckenberg Biodiversity and Climate Research Centre (BiK-F) performed the first-ever comprehensive DNA sampling and analysis (genomic, nuclear, and mitochondrial) of all major natural populations of giraffe throughout their range in Africa, which has resulted in an updated understanding of giraffe taxonomy. This study revealed that there are four species of giraffe and likely six subspecies (Winter *et al.* 2018; Fennessy *et al.* 2016, Coimbra et al. 2021). The four species are Masai giraffe (*G. tippelskirchi*), northern giraffe (*G. camelopardalis*), reticulated

giraffe (*G. reticulata*) and southern giraffe (*G. giraffa*). The northern giraffe has three subspecies: Nubian giraffe (*G. c. camelopardalis*), Kordofan giraffe (*G. c. antiquorum*), and West African giraffe (*G. c. peralta*). The southern giraffe has two subspecies: Angolan giraffe (*G. g. angolensis*) and South African giraffe (*G. g. giraffa*). Two of the former subspecies have been subsumed within other taxa as data support they are genetically identical: the Rothschild's giraffe (*G. c. rothschildi*) is synonymous with the Nubian giraffe (*G. c. camelopardalis*) and the Luangwa (or Thornicroft's) giraffe (*G. c. thornicrofti*) is likely a subspecies of the Masai giraffe (*G. c. tippelskirchi*) (Coimbra *et al.* 2021; Winter *et al.* 2018; Fennessy *et al.* 2016). Two of the former subspecies are raised to specific rank: *G. c. reticulata* is now the reticulated giraffe (*G. reticulata*) and *G. c. tippelskirchi* is now the Masai giraffe (*G. tippelskirchi*). Based on this research, GCF in all publications refers to the updated giraffe taxonomy of four species.

The following species and subspecies of giraffe are found in the KAZA TFCA:

Species: Southern giraffe: *Giraffa giraffa*

Subspecies: Angolan giraffe: *Giraffa giraffa angolensis*

South African giraffe: *Giraffa giraffa giraffa*

Taxonomic status of giraffe across KAZA TFCA

Angola supports both South African and Angolan subspecies of giraffe. South African giraffe are found in the Luengue-Luiana and Mavinga National Parks (NPs) where there is evidence of regular transboundary movements between Namibia's Bwabwata NP and Angola's Cuando Cubango Province (Funston *et al.* 2017). There are also several South African giraffe in the Luengue-Luiana NP which naturally re-populated the area. This population is monitored by the Angolan Ministry of Environment (Angola Press 2018). With respect to Angolan giraffe, several private game farms have (re-)introduced them into Angola from Namibia. There are also possibly some individuals on the western boundary of Luengue-Luiana NP.

In Botswana, Bock *et al.* (2014) reported that the South African giraffe in the northern counties including Chobe NP, Moremi Game Reserve (GR), the Okavango Delta, Makgadikgadi Pans and Nxai Pan NPs, and outside of protected areas across Ngamiland, were genetically different from the Angolan giraffe in the south. This distinction was further solidified with genetic analysis performed by Fennessy *et al.* (2016) and Winter *et al.* (2018). In the KAZA TFCA, Angolan giraffe are likely found in the unprotected (private) areas in the Ghanzi District.

In Namibia, South African giraffe occur naturally in the Susuwe area of Bwabwata NP in the Zambezi Region, and move transboundary into southeast Angola and historically south into northern Botswana. Angolan giraffe naturally occurs throughout Khaudum NP and surrounding conservancies, and were re-introduced into Mahango Game Park (Core Area). Additionally, Angolan giraffe were introduced into a number of conservancy areas across the eastern areas of the Zambezi Region, west of the Kwando River.

In Zambia, South African giraffe reside in Sioma Ngwesi and Mosi-oa-Tunya NPs located in the southwest, as well as on the Zambezi Sun property at Victoria Falls. An extralimital population of Angolan giraffe was introduced to Simalaha Community Conservancy in southwestern Zambia from Namibia.

In Zimbabwe, it is assumed that all giraffe in the KAZA TFCA are South African giraffe. Ongoing genetic sampling and future analysis will evaluate these hypotheses. As part of a preliminary assessment, Angolan giraffe (or hybrids) appear to be in the central and southern areas of Zimbabwe, outside of the KAZA TFCA.

Conservation Status

IUCN Red List:

Giraffa camelopardalis (as a species) – Vulnerable (Muller *et al.* 2018)

Giraffa giraffa (as a species) – Not Assessed

Giraffa giraffa giraffa – Not Assessed (also not assessed as a subspecies of *G. camelopardalis*)

Giraffa giraffa angolensis – Least Concern (Marais *et al*. 2018) (as a subspecies of *G. camelopardalis*)

CITES:

Giraffa camelopardalis (as a species) – Appendix II (first listed in 2019)

Legislation within the KAZA TFCA countries:

Within the five countries that make up the KAZA TFCA, giraffe are afforded different conservation status by various national legislation.

In Angola, giraffe are awarded full protection by the Combined Executive Decree No. 201/16 of 26 April 2016 (Governo de Angola 2016) issued by the Ministry of Agriculture and the Ministry of Finances. This decree was approved to provide an updated list of species (including giraffe) that cannot be hunted in the country and those that can be hunted during the hunting season and require an appropriate license. The Angolan Red List published in 2018 considers the Angolan giraffe as an Endangered species (Ministério do Ambiente 2018).

In Botswana, giraffe have been classified as a protected animal under Section 17 of The Wildlife Conservation and National Parks Act 1992 (Government of Botswana 1992). This legislation allows for the hunting and capture of giraffe under special circumstance and through a permit granted by the Director of the Department of Wildlife and National Parks (DWNP) within wildlife management areas. As of January 2014, new legislation made hunting laws more stringent and banned the hunting of all protected animals, with some exceptions allowing hunting under special permits (for disease control, property protection, research, etc.) on privately owned land (Government of Botswana 2014).

In Namibia, giraffe is one of ten species that are classified by the Ministry of Environment & Tourism (MET) as specially protected under Schedule 3 of No.4 of 1975 Nature Conservation Ordinance (Republic of Namibia 1975). This classification does not limit hunting of giraffe, but rather requires hunters to obtain specific hunting permits from the Namibian Government before a licence is granted.

In Zambia, the Department of National Parks and Wildlife (DNPW), a department of the Ministry of Tourism and Arts, and formerly the Zambia Wildlife Authority (ZAWA), is mandated under the Zambia Wildlife Act No. 14 of 2015 to manage and conserve Zambia's wildlife and under this act, the hunting of giraffe in Zambia is illegal (FAO 2021). Zambia has the second largest proportion of land under protected status in Southern Africa with 286,161 km^2 designated as protected areas (UNEP-WCMC & IUCN 2019). This accounts for a total of 635 protected areas, which include national parks (NP), game management areas (GMA), and forest/wildlife reserves (IUCN ESARO 2020). While the sustainable use of wildlife and its habitats is promoted in NPs through eco-tourism, both settlements and hunting are strictly prohibited in NPs (Mwanza 2006). However, GMAs in Zambia were established by government for sustainable use of wildlife and to control the hunting of game and protected animals through a licensing and monitoring system (FAO 2021).

In Zimbabwe, the Zimbabwe Parks and Wildlife Management Authority (PWMA), formerly known as the Department of National Parks and Wildlife Management, was established in June 2002 and operates under the Parks and Wildlife Act of 1975 (Auditor General 2003). The areas occupied by national parks (where wildlife are protected), safari areas (hunting is permitted but controlled through a quota system), recreational parks (centred around national dams or lakes), botanic reserves (small areas designed to protect particular plant species), botanic gardens (areas where indigenous and exotic plant species are protected and propagated) and sanctuaries (reservoirs of animal species that are threatened with extinction and are provided safe breeding habitats) are collectively called the 'Wildlife Estates' and total approximately 47,000 km^2, or 12.5% of the total land area (Muboko & Murindagomo 2014; Auditor General 2003). Wildlife Estates are the responsibility of the Ministry of Natural Resources and Tourism and managed by the PWMA which is also responsible for wildlife resources throughout the country, including commercial and communal areas, as well as Government and private land (P. Duncan, pers. comm.).

Giraffe are not a protected species in Zimbabwe and as such hunting, the removal of animals and animal products from a safari area, as well as the sale of animals and animal products is permitted. However, this is controlled and monitored by the PWMA under section 38 of the Parks and Wildlife Act of 1975. Each year interested stakeholders submit a quota off-take proposal for giraffe (and other wildlife), and a decision is then made by PWMA for each individual property based on the historical offtakes and updated ecological reports (Paragraph 5.7.3 the Zimbabwe Wildlife Policy stipulates that, "the setting of quotas is to be done on a scientific basis" and that "the Authority should carry out a detailed research before allocating quotas so as to have an insight into factors that may determine the setting of quotas in the requisite areas."). These reports are drafted by ecologists usually hired by the landowners either specifically for this purpose or form part of their permanent staff in order to conduct permanent monitoring (B. Leesmay pers. comm.). Other types of quotas issued are: concession area hunts (areas leased out to safari operators), and citizen hunts (also utilised through the bag system and sold by auction but to citizens only) which are categorised as sport hunting, capture and translocation or rations for staff members (Muir 1992).

Issues/threats

A key limitation to conservation of giraffe and their long-term sustainable future in the KAZA TFCA is the lack of knowledge of their distribution, their abundance, their habitat needs and their current conservation threats. To date, only limited long-term conservation research efforts have been conducted on giraffe throughout the area. While giraffe are currently 'relatively' common both inside and outside protected areas in the KAZA TFCA and their population in this area is considered to be one of few growing giraffe populations on the continent, their numbers are essentially unknown as no accurate or standardised estimate of giraffe abundance or population dynamics has ever been completed.

Angola

Angola was ravaged by protracted armed conflicts for more than four decades: 14 years of liberation struggle (1961-1974) were followed by 27 years of civil war (1975-2002; Central Intelligence Agency 2019; Russo *et al.* 2003). These extended periods of war have not only caused great suffering to people, but also severely impacted wildlife (The Wild Foundation 2013; Kumleben 1996). The widespread presence of landmines caused injury and death to humans and wildlife alike and inhibited access to land throughout much of the country (Russo *et al.* 2003). National parks were abandoned, invaded and occupied by local people from surrounding areas and, without adequate administration and management, infrastructure lapsed into a state of degradation (Kuedikuenda & Xavier 2009; NFRA 2009). Bush meat provided a critical source of food for

the poor and illegal hunting reached alarming proportions (The Wild Foundation 2013; NFRA 2009; NBSAP 2007). Although most of Angola's natural habitats remained relatively intact, wildlife populations were severely overexploited to the point of depletion, especially in the Cuando Cubango Province (Kuedikuenda & Xavier 2009; NFRA 2009; USAID 2008; Russo *et al.* 2003; Kumleben 1996), and giraffe were assumed to have gone extinct in the country (East 1999).

The overexploitation of resources and loss of habitat remain major threats to biodiversity in Angola (Kuedikuenda & Xavier 2009; Russo *et al.* 2003). There is excessive human pressure on natural resources in areas where large numbers of internally displaced people have settled (Russo *et al.* 2003). Most of the population lives below the poverty line and depends on natural resources for their livelihoods (NBSAP 2007). Logging for firewood, charcoal, wood production, uncontrolled bush burning, and illegal hunting have and continue to lead to biodiversity loss and environmental degradation (Sheeman & Yong 2010; Kuedikuenda & Xavier 2009; NBSAP 2007). Today, the impact of anthropogenic activities is notable in all national parks across Angola (Kuedikuenda & Xavier 2009; USAID 2008). Although the level of disturbance has not been fully evaluated , available evidence suggests wildlife populations have declined considerably and there is an urgent need to collect data on the status of the country's biodiversity (Kuedikuenda & Xavier 2009; NFRA 2009; USAID 2008; NBSAP 2007). Since the war ended, the Government of Angola has made a concerted effort to re-invigorate some of the national parks through infrastructure renovation, re-introduction of wildlife populations, and the training of managers and game guards (Kuedikuenda & Xavier 2009).

In Angola's southeast Cuando Cubango Province, giraffe have recently naturally re-populated the Luengue-Luiana and Mavinga NPs from Namibia (Funston *et al.* 2017). The largest threat posed to wildlife conservation within both parks, more so Mavinga NP, is the illegal bushmeat market and intense elephant poaching (Funston *et al.* 2017). Combined with a high degree of human encroachment into protected areas, illegal diamond mining and logging operations, both parks face significant challenges for conserving wildlife populations and ecosystem function (Funston *et al.* 2017; Torchia 2017).

Tourism remains an emerging prospect for both parks following the end of the conflict in 2002. Multiple areas within Luengue-Luiana MP have been identified for potential tourism markets (such as lodges, campsites, off road activities) (Funston *et al.* 2017). Mavinga NP has a higher density of human settlements, making for limited opportunities, but multiple sites have been proposed for possible tourist venues (Funston *et al.* 2017). However, the land in and around both parks still has large number of unexploded ordnance from the civil war, requiring continued de-mining operations to make the parks safe before serious tourism options can be explored (Torchia 2017).

Botswana

Botswana has four national parks and six game reserves, with giraffe occurring both within and outside of all these areas (DWNP 2012). Their habitats range from dry savannah to the wetlands of the Okavango Delta and Chobe NP which, along with wildlife areas in neighbouring countries, comprises one of the most valuable ranges of natural savanna and wetland habitats remaining in Africa (East 1999). Tourism accounts for the country's second largest source of income (Central Intelligence Agency 2017). Therefore, any potential loss of giraffe and other iconic species could result in the decreased income and negative economic consequences (Lindsey *et al.* 2011). Despite giraffe populations being relatively stable, persistent threats against giraffe need to be monitored and mitigated for the benefit of the species and the country long-term. Botswana has firm laws regarding the protection of wildlife, however they still face several major conservation issues. Main threats to giraffe in Botswana include illegal hunting (poaching), habitat loss and fragmentation as a result of expansion of agricultural activity and human development, climate change, and a general lack of education in wildlife conservation (Muller *et al.* 2018).

Illegal hunting (poaching) is one of the most severe threats to giraffe and other wildlife across Africa (Lindsey *et al.* 2012). In Botswana, giraffe are illegally hunted for their meat (Rogan *et al.* 2015), bones (Barbee 2015) and for body parts such as their hide, ears and tails (Muller 2008). Statistics Botswana (2015) reported that incidences of poaching increased from 2009 to 2013, with Rogan *et al.* (2015) estimating an annual average 98 giraffe are killed for the illegal bushmeat market. With increasing human populations, Pires & Moreto (2011) proposed that more livestock owners would turn to hunting, and deplete the resources that supply Botswana's tourism sector (i.e. wildlife), driven by personal gain, or the tragedy-of the-commons model of overexploitation.

In Botswana, the majority of the population generally perceive wildlife as a financial burden with little benefits seen for local communities. Despite the stringent laws about bushmeat hunting, poachers are rarely deterred as penalties are often far less severe than the profit of hunting e.g. reduced fines, suspended sentences, or no fine or prison sentence despite conviction (Rogan *et al.* 2015; Barnett 1997). Coupled with the fact that firearms are relatively easily accessible on the black market, there is little disincentive to deter poachers from hunting giraffe and other wildlife. Some poachers evade conviction all together, for example, during a 30-month period starting from 2009, 64 suspects were arrested for poaching in the NG26 Concession in northern Botswana but not one was convicted (Lindsey *et al.* 2013). However, to facilitate the government's goal of increasing wildlife numbers, Botswana's military police has unofficially adopted a "shoot-to-kill" policy towards suspected poachers. Patrolling for poachers has become more widespread, assisted with the introduction of surveillance aircraft in 2016. While anti-poaching efforts can have an impact on illegal hunting, the potential cost of legal punishment is low or non-existent and poaching is still not sufficiently discouraged. This is further bolstered by the fact that the personal investment of a poacher is very low.

Botswana has enjoyed economic growth and reduction in poverty over the last decade (The World Bank 2016b). Many people are moving to cities (Statistics Botswana 2015b), but still retain ties with rural areas. According to Lesetedi (2003), 91.9% of citizen migrants that moved to Botswana's capital Gaborone still own land elsewhere in the country, including 64.7% owning farmland. Despite a flourishing economy, many citizens still live under the poverty line and/or have no source of income other than crop farming, meat production or in increasingly fewer instances, dairy farming (Moreki & Tsopito 2013). In rural areas, cattle farming is the largest source of income. Increasing population and growing cattle production in Botswana has largely resulted in new farms encroaching on the habitat of giraffe and other wildlife. More than half of Botswana's households own livestock, and it is estimated that 45.9% of the land (as of 2014) is used for agriculture (The World Bank 2016a). This habitat encroachment has the potential to lead to increased human-wildlife conflict. For example, in other countries, perceived damages related to crop raiding by giraffe residing in agricultural areas resulted in negative attitudes of local farming community members (Leroy *et al.* 2009). In an attempt to prevent loss of wildlife and wildlife areas, the DWNP devised a plan in the early 1980s to designate certain areas of the country, particularly around parks and reserves, as "wildlife management areas" (Parry & Campbell 1990). The purpose was to create buffer zones with a primary focus on wildlife, but the land could still be used commercially at the same time, provided that this would not negatively impact wildlife conservation. These wildlife management areas were meant to boost the economy of rural areas by allowing local people to manage the wildlife and stimulate commercial activities such as photographic safaris and hunting. However, the plan was implemented without the participation of local stakeholders and consequently lacks the support of the people it was aimed to assist (Mbaiwa & Darkoh 2005). Furthermore, the wildlife management areas do not prevent fencing nor the allocation of land to livestock farming outside of "livestock free" zones (Government of Botswana, 1992).

Deforestation for commercial use also disrupts the connections between seasonal ranges of wildlife and fragments the ranges of large mammals. This habitat fragmentation threatens to decrease wildlife populations. Particularly in the upper western sections of the Okavango Delta, deforestation linked to increased grazing is destroying large tracts of land (DWNP 2010). The Okavango Delta is home to the largest numbers of giraffe in Botswana, and its system fills a very important ecological function by controlling microclimates. Additionally the Okavango Delta collects, stores, and distributes carbon and nutrients throughout the wetland system (Bradley *et al.* 2007). Key known threats to the biodiversity of Okavango Delta include fragmentation of habitats and reallocation of land, encroachment of human settlements, and pollution from chemicals used in agriculture (Hamandawana & Chanda 2010).

As an inland delta in a semi-arid desert, the Okavango Delta is sensitive to drought and upstream water extraction. Despite the negative downstream consequences, water is extracted from the Okavango Delta and its tributaries for agricultural use, in particular in Namibia, and plans exist for the construction of numerous dams upstream in Angola. If implemented, these development activities will greatly modify the flow and volume of water needed to sustain the delta and affect the species that depend on it (Hamandawana & Chanda 2010).

Another source of habitat fragmentation in Botswana is the veterinary fence line, which divides the country into northern and southern sections. This veterinary fence line was initially erected to prevent the spread of foot and mouth disease from wild animals to livestock. While the fences were detrimental to the population of wildebeest and zebra due to disruption of their migration, they did not cause the extensive loss of broader wildlife species that was predicted (East 1999). Furthermore, large parts of the fence line are now degraded, opening conduits for wildlife to traverse through. In an aerial survey of the Okavango Delta, 26 breaks were noted along the border fence with Namibia, which ranged from 3-40 m in length (Chase 2011), while a 35 km break in the Northern Buffalo Fence functions as an effective corridor for wildlife moving between the Okavango Delta and Angola via Namibia's Zambezi Region (Albertson 2010; Chase & Griffin 2009). Giraffe space use is influenced by seasonal availability of forage (McQualter *et al.* 2015), and as such fences might prevent their natural movement in heterogeneous environments. Furthermore, animals can become entangled in fences (Albertson 2010) and die from dehydration (Darkoh & Mbaiwa 2014), or fall victim to predators that use the fence for hunting.

Climate is another important factor that affects wildlife population numbers in Botswana. The country experienced a 20-year drought that started in the early 1980s and this offers a possible explanation for the decrease of multiple wildlife species, including giraffe in the northern Ngamiland and Moremi GR (Chase *et al*. 2015; Gifford 2013). As highlighted, the Okavango Delta is sensitive to drought and relies on rainfall in Angola, and to a lesser extent Namibia and Botswana, to supply the floodplains. The average rainfall and flood levels in the Okavango Delta continued to drop during the 1990s with the lowest annual flood level in 1996 (since recording started in the 1920s). Surprisingly, Chase *et al.* (2015) found that giraffe populations in Ngamiland were actually lower in years with greater flows, possibly a result of displacement.

Namibia

Although Namibia is one of the only countries in the world that addresses conservation as well as the protection of its natural resources directly in its constitution, conservation efforts in the country still face several challenges (Government of Namibia, 1990). Key threats to the successful conservation and management of biodiversity in Namibia include the impacts of continued population growth, consumption and production patterns, unsustainable land management practices, uncontrolled mining and prospecting, illegal hunting, human wildlife conflict and the effects of climate change (UNCBD 2010). The absence of adequate land use planning and the limited capacity of government threatens biodiversity and conservation

efforts throughout Namibia (USAID 2010). The implementation of Namibia's policies and laws pertaining to biodiversity conservation and sound natural resource management may be inadequate (USAID 2010). Consequently, there is increasing pressure on terrestrial habitats and resources (water, forests, and wildlife) from a growing human population experiencing increasing unemployment, poverty (especially in the rural areas) and the impacts of the HIV/AIDS epidemic (UNCBD 2010; USAID 2010). Poverty in Namibia's rural areas is linked to deforestation and land degradation (USAID 2010). Poor families use wood fuel, rely on wild foods (particularly during times of drought), and depend heavily on unpredictable rain-fed crops and livestock for their livelihoods (USAID 2010). The controls on wood harvesting and selling of wood products in Namibia are inadequate and, as a result, high rates of deforestation are damaging wooded areas (UNCBD 2010; USAID 2010). The biggest losses of natural woodland have occurred from clearing of land for crop cultivation, cutting of trees for firewood and construction, and the frequent burning of trees as a result of veld fires in the north-east (USAID 2010). This results in the degradation and destruction of wildlife habitat and food resources that is vital for the survival of large mammals such as giraffe. Griffin (1999) wrote that giraffe in Namibia are likely to become endangered if present threatening factors such as overexploitation, intensive destruction and fragmentation of habitat or other environmental disturbances persist.

Giraffe in Namibia face other key threats to their conservation. A combination of hunting pressure, human population expansion and disease led to the extinction of giraffe in some areas. The cumulative impacts of higher temperatures and evaporation rates combined with lower rainfall, all resulting from climate change, are predicted to result in increasing aridification across most of Namibia, lower primary production of rangelands and reduced carrying capacity for wildlife, including giraffe (USAID 2010). Furthermore, illegal local and regional trade in giraffe and giraffe products poses a currently unknown risk to giraffe. The threat of illegal trade in giraffe products requires further evaluation as increased numbers of giraffe bones have recently been observed as carved items at local tourism markets.

Zambia

Biodiversity in Zambia in general is increasingly coming under pressure from both human and natural factors, including resource conflicts, human settlement encroachment, habitat degradation, climate change, poaching, pollution, overexploitation of resources, deforestation, introduction of alien species into the ecosystem, and a lack of environmental education (IUCN ESARO 2020). Zambia is the second largest producer of copper in Africa, and the majority of its economy relies on mining exports (Hobson *et al.* 2020). However, Zambia remains one of the poorest countries in the world (AWF 2020).

The giraffe in Sioma Ngwezi NP in south-west Zambia were historically of unknown taxonomic identity, but recent studies indicate they are South African giraffe (Winter *et al.* 2018). Once an area teeming with biodiversity, wildlife populations in this protected area were decimated during the conflicts which have characterised the history of the region (Peace Parks Foundation 2013). The 25-year long Angolan Civil War and illegal hunting devastated wildlife populations in neighbouring Sioma Ngwezi NP (Chase & Griffin 2009; APN 2003; East 1999). The park's proximity to the Luiana Partial Reserve across the border in south-east Angola, the base of military operations for UNITA, exposed the wildlife of the park to extensive illegal hunting (Chase & Griffin 2009). Refugees also depended heavily on bush meat to survive, and poaching is difficult to control in these areas (WCS 2014; Chase & Griffin 2009). According to a 2003 report by the African Parks Network (APN), the destruction of wildlife in Sioma Ngwezi NP was far greater than originally realised (APN 2003). Located between the Luiana Partial Reserve in Angola and the Bwabwata NP in Namibia, the area plays an essential ecological role for wildlife movement along the Kwando and Zambezi Rivers. The Park and the surrounding area within the West Zambezi GMA have been earmarked for intensive wildlife recovery. Numerous wildlife species with distribution limited to the area west of the Zambezi formerly occurred in the

park and the wildlife recovery will include the restocking of these species – including giraffe (Peace Parks Foundation 2013; ZAWA per. comm.). However, the translocation of animals from elsewhere in Zambia has not been possible due to the limited wildlife populations together and logistical challenges associated with long distances and poor roads – and concerns have been raised over the genetic integrity of the animals being (re-)introduced (APN 2003).

Sioma Ngwezi NP is also highly susceptible to bush fires during the late dry season when neighbouring farmers burn their fields, thereby affecting the distribution and abundance of wildlife outside and inside the park (Chase & Griffin 2009). While previously the economic potential within the park was limited due to a lack of sufficient tourism infrastructure (Chase & Griffin 2009), efforts are currently in place to further develop the park under the support of the KAZA TFCA initiative (Peace Parks Foundation 2013). Additionally, the settlements of thousands of people along the Cuando River have cut off this vital water source from the park interior (APN 2003).

With the introduction of Angolan giraffe to Simalaha Community Conservancy in south-western Zambia, it is important to ensure appropriate conservation management practices are implemented to ensure limited movements of giraffe with other natural/introduced South African populations in nearby Sioma Ngwezi and Mosi-au-Tunya NPs.

Zimbabwe

Following the introduction of the Conservation Act of 1960, a wildlife philosophy based on economic incentives began in Zimbabwe. The country quickly became one of the leaders in Africa for wildlife conservation and management with protected areas of the State, rural community run wildlife management areas and private game ranches and reserves (Muboko & Murindagomo 2014). Growing political and economic instability has put unprecedented pressure on the country's environment. Deforestation, poaching and unsustainable resource exploitation are destroying what was once among the best-managed park system in Africa (Barbee *et al.* 2006).

National parks in Zimbabwe are increasingly being encroached upon by neighbouring communities and their agricultural developments (Dunham *et al.* 2001-2013). With erratic subsistence farming settlements of people on large areas of ranch land, giraffe along with other wildlife are disappearing (P. Johnstone pers. comm.). A United States-based elephant conservation group recently released a documentary exposing the possible involvement of high-level Zimbabwe African National Union – Patriotic Front (ZANU PF) members in the poaching of elephant and rhino in the Hwange NP. According to a statement, a crew from the production house 'When-Giants-Fall' spent six weeks in Zimbabwe in 2014, gathering information on the poaching from safari operators, conservationists and investigative journalists specialising in poaching (The Southern Eye 2015).

In addition, a 2003 Audit Report by the Auditor General on the Protection and Conservation of Wildlife by PWMA and Ministry of Environment and Tourism, noted that despite the Zimbabwean Wildlife Estates still existing combined with the PWMA and supporting legislation and policy still being in place, very little is done to implement laws protecting wildlife and resource usage. This is a result of limited human capacity and resources needed for patrols, policing and prosecuting. For giraffe in Zimbabwe, human encroachment and the associated poaching, habitat degradation and fragmentation are the biggest direct threats while mismanagement remains a large and unknown indirect factor moving forward.

Estimated population abundance and trends

Angola

Historic

Giraffe formerly occurred in the mopane and acacia savannas of southern Angola (East 1999). According to Crawford-Cabral & Verissimo (2005), the historic distribution of the species presented a discontinuous range with two, reputedly separated, populations. Initially Crawford-Cabral & Verissimo (2005) documented one of these populations, the eastern-most, to possibly represent the (sub)species *G. c. infumata*. However, Dagg's (1971) review of giraffe (sub)speciation showed that *G. c. infumata* was in fact synonymous with the Angolan giraffe, *G. g. angolensis*. Based on the recent genetic findings of Fennessy *et al.* (2016) and Winter *et al.* (2018), it is likely that Crawford-Cabral & Verissimo (2005) and Dagg's (1971) review were both inaccurate in such that the giraffe in eastern Angola were actually the South African giraffe subspecies (*G. g. giraffa*) which naturally move into and out of the area from neighbouring Namibia and Botswana. This new study suggests both subspecies (Angolan and South African) historically existed in Angola (Fennessy *et al.* 2016). The Okavango, Cuito and Kwando Rivers all acted as barriers for east-west movements of giraffe within Angola and the neighbouring countries. The eastern population occurred between the Cuito and Cuando Rivers, with larger numbers of records from the southeast corner of the former Mucusso GR (Crawford-Cabral & Verissimo 2005).

Dagg (1962) reported that giraffe were relatively abundant between Mucusso and Luiana areas in the south-east. In the late 1960s, a few hundred giraffe reportedly survived in the Mucosso area in the south-east (East 1999). By the mid-1970s, giraffe populations had severely declined in numbers, with only approximately 50 individuals remaining in the Mucusso GR (Crawford-Cabral & Verissimo 2005). By the early 1980s giraffe had largely disappeared and by the late 1990s giraffe were assumed to be locally extinct in Angola (East 1999).

Current

A study conducted by Panthera in 2017 on the distribution of large carnivores throughout the Luengue-Luiana and Mavinga NPs revealed evidence of regular trans-boundary movements of South African giraffe between Namibia's Bwabwata NP and Angola's Cuando Cubango Province (Funston *et al*. 2017). There are also several South African giraffe in the Luengue-Luiana NP which re-populated the area naturally. This population is closely monitored by the Angolan Ministry of Environment Country Profile (Angola Press 2018). The South African giraffe population is currently estimated at <200 individuals throughout the Angolan portion of the KAZA TFCA (Marais *et al.* 2018; Funston *et al.* 2017).

Botswana

Historic

Botswana is a remarkably flat country, without mountains to geographically segregate the land. As giraffe take in most of their water through consumption of vegetation (Fennessy 2004), the dry environment has not deterred giraffe from spreading throughout the country. Giraffe formerly occurred abundantly throughout the savannahs of northern and central Botswana (East 1999), and rock paintings of giraffe in the Tsodilo Hills suggest that giraffe occurred in the far northwest. Krumbeigel (1939) proposed that *Giraffa giraffa angolensis* occurred historically in Botswana, as well as what was known as *Giraffa camelopardalis capensis* (now the South African giraffe *Giraffa giraffa giraffa*) at the time. Bryden (1891) suggested that giraffe were found heading from Shoshong to Lake Ngami, first encountered "in the bush and forest-region beyond Kanne (present day Tlabala)" in a waterless tract, likely referring to the Kalahari bush. He noted that between the Boteti River and halfway to Lake Ngami, the local leader, Khama (III), restricted hunting of giraffe to him and his people. Furthermore, he described their distribution stretching north from "Khama's country"

to Victoria Falls, and west towards Chobe and Mababe Rivers, as well as north of Lake Ngami in "Moremi's country", and down south from the Boteti into the central Kalahari. However, Bryden (1891) also mentioned that giraffe no longer occurred westward of Lake Ngami, stating that Namaqua hunters "were too active". Overall, this description of the distribution in 1891 roughly encompassed Botswana north of the Boteti River, and parts of the central Kalahari, and that hunting of giraffe was abundant and remarked on their rapid decline. Sidney (1965) reported that they were "fairly plentiful in the Ngamiland and Chobe districts" and also occurred south of "Lake Makarikari" (this probably refers to the Makgadikgadi Pans).

Since 1979, the DWNP has sporadically conducted aerial surveys of parts of Botswana to estimate the population sizes of large mammals and ostrich. The DWNP consider the estimates from aerial surveys before 1989 to be unreliable or incompatible with estimates from 1989 onward due to discrepancy in the estimation methodology (Murray 1997). The aerial surveys did not standardise the strata that were flown, and the country was not surveyed as a whole until 2003. However, progressively larger areas were covered on average since the surveys began, although estimates from particularly the early 1990's have a large degree of uncertainty.

Between 1989 and 1991, Statistics Botswana (2015a) estimated the entire giraffe population in Botswana at 11,706. In 1990, there were an estimated 9,312 giraffe in Botswana (Government of Botswana 2002). In 1996, the first aerial survey included all districts and protected areas. Following the historical trends observed, the majority of giraffe were South African giraffe counted in Ngamiland (10,608), and the Okavango Delta (7,627). South African giraffe were also relatively abundant in Chobe District (1,236), including 666 in Chobe NP. In 1998, giraffe still occupied a substantial part of their former range, with the largest numbers in the northern region. According to East (1999), there was an estimated stable population of 5,100 giraffe in protected areas, 30 on private lands, and a stable or increasing population size of 6,570 in other areas. Despite lacking estimates for districts or protected areas, East (1999) claimed that giraffe were still common throughout the north of the country, with high numbers of South African giraffe in Chobe NP, Makgadikgadi Pans and Nxai Pan NPs, Moremi GR and the Okavango Delta in general. The biggest proportion of giraffe were found outside of protected areas, and the largest numbers occurred in the Okavango Delta (Statistics Botswana 2015a).

In 2002, the National Wildlife Aerial Survey (DWNP 2002) included an explicit representation of the strata that were surveyed and showed that South African giraffe occurred throughout the north of the country (with the exception of the farmlands to the west of the Okavango Delta) in Ngamiland, Ghanzi, to Chobe along the northeastern border with Zimbabwe. The 2003 and 2004 surveys indicated the same (DWNP 2003 & 2004). In 2006, 1,379 giraffe were estimated in Chobe District, 6,763 in Ngamiland, and 129 in Makgadikgadi Pans and Nxai Pan NPs (data was absent for the other districts) (DWNP 2006).

Current

In 2010, Elephants without Borders/DWNP conducted an aerial survey of the north of the country. According to Chase (2011), the average sampling intensity of 14% was far greater than the previous 5% for the DWNP aerial surveys between 1993 and 2006. South African giraffe were observed throughout the north of the country, with the majority (3,676) occurring in Ngamiland. Furthermore, a statistically significant annual giraffe population decrease of 10% in the Okavango Delta was noted since 1993, with a 36% decrease in Moremi GR since 2004. An estimated 1,075 South African giraffe resided in Moremi GR, 3,676 in Ngamiland, and 1,245 in Chobe District including 770 in Chobe NP. The overall population in Ngamiland showed a slight decline since 1993, whilst those in Makgadikgadi Pans and Nxai Pan NPs, and Chobe District were stable.

In 2012, the DWNP survey highlighted similar results to Chase (2011) that South African giraffe populations had significantly decreased in Chobe NP, decreased slightly in Makgadikgadi Pans NP and increased in Moremi GR and Nxai Pan NP (DWNP 2012). This survey was the most comprehensive to date in terms of area

covered in Botswana, and showed that South African giraffe occurred throughout the north of the country (with the exception of the farmlands to the west of the Okavango Delta) with 1,075 in Chobe including 545 in Chobe NP, and 5,041 in Ngamiland including 1,047 in Moremi NP, 92 in Makgadikgadi Pans and Nxai Pan NPs, and an unknown number eastwards towards and along the Zimbabwean border.

Another aerial survey was performed in 2014 by Elephants Without Borders and DWNP for multiple species across northern Botswana in Moremi GR and Ngamiland as a whole, Chobe District, and a portion of Central District (Chase, 2015). In Ngamiland, South African giraffe were reported to have decreased since the 1990s, with an all-time low of 3,676 in 2010, but the 2014 survey indicated an increase (Chase, 2015). Abundance estimates for Moremi GR and Ngamiland were 1,353 and 6,532, respectively. Furthermore, the giraffe populations in Chobe District including the Chobe NP also showed increases, with an estimated 1,427 and 849 individuals, respectively (Chase 2015). This survey found giraffe as far east as the Zimbabwean border and the Tuli Block (Chase 2015).

The most recent giraffe population estimates are based off the 2018 aerial survey Elephants Without Borders and DWNP performed during the dry season across northern Botswana, covering the same areas surveyed in 2014 (Chase *et al.* 2018). A total population estimate of 8,343 was made for giraffe in northern Botswana, covering the Chobe, Central, and Ngamiland Districts, and therefore presumably all South African giraffe (Chase *et al.* 2018). It was noted that the slight decline seen from the 2014 survey results was non-significant and the giraffe population remains stable (Chase *et al.* 2018).

Summary

The last country-wide survey of giraffe in northern Botswana occurred in 2018 estimating a total of 8,343 individuals (Chase *et al.* 2018). Based on the data from northern Botswana from the most recent aerial survey (Chase *et al.* 2018), it is estimated that around 8,000 South African giraffe are in the region of Botswana encompassed by KAZA TFCA. Based on data since 1989, it is estimated that populations within the protected areas are stable or increasing in recent years after an initial decline.

Namibia

Historic

Although the first recorded accounts of giraffe in Namibia date to the travels of Captain Hendrik Hop, who ventured north of the Orange River in 1761 (Scheepers 1990), giraffe have likely roamed Namibia for hundreds of thousands of years – or more. Petroglyphs, rock paintings and engravings of giraffe adorn many rock faces throughout the country, and their importance as a ceremonial animal for the region's early inhabitants has also been reported (Fennessy 2004; Sherr 1997).

According to Skinner and Chimimba (2005) giraffe formerly occurred in the north-eastern parts of Namibia, ranging south to about 20° south on the Botswana border westwards. Lydekker (1904) reported that the Kunene and Kavango Rivers form a natural barrier between the Angolan and Namibian giraffe populations, thus effectively separating the ranges of *G. c. angolensis*, *G. c. infumata* (east) and *G. c. capensis* (south) (the latter synom. with *G. c. giraffa*). However, Dagg's (1971) review showed that *G. c. infumata* was in fact synonymous with *G. c. angolensis*, while both Dagg & Foster (1982) and Seymour (2002) identified that *G. c. angolensis* range extends south and eastwards to the Kwando River, Caprivi, Namibia.

Shortridge (1934) observed giraffe ranging throughout the former SouthWest Africa, including east of the Kavango River. Furthermore, Shortridge (1934) postulated that less than 100 giraffe occurred across the Caprivi Region. By the early 1950s, L. Green estimated at least 1,000 giraffe in the Kaokoveld area (Cunningham 2014).

Records of giraffe distribution in Namibia in the mid-1950s to mid-1960s correlate with those of Shortridge (1934). At the time, giraffe were still widespread and occurred northwards to the Okavango River, and eastwards into the Caprivi (Dagg 1962; Bigalke 1958; Sidney 1956).

Current

Aerial surveys of north-eastern Namibia were conducted in 2004 (Kolberg 2004; Stander 2004a). The surveys covered an area of 55,247 km² and estimated a population of 883 giraffe (Kolberg 2004; Stander 2004a). Of these, 419 occurred in Khaudum Game Park, 101 in #Na-Jaqna Conservancy, 89 in Nyae Nyae Conservancy and 40 in Bwabwata NP (21 in Mahango Core Area and 19 in Susuwe) (Kolberg 2004; Stander 2004a). An aerial wildlife census of the Caprivi River systems in northeast Namibia was also conducted in 2004 (Stander 2004b). During this total count, which concentrated on the water bodies and floodplains of the Caprivi and Kavango perennial river systems (Kavango, Kwandu, Linyanti, Chobe and Zambezi Rivers), 21 giraffe were recorded: eight occurred in the Linyanti/Chobe survey stratum and 13 in Nkasa Rupara (formerly Mamili) NP (Stander 2004b). Another survey of north-eastern Namibia (not including Mangetti NP) was conducted in 2008 (Kolberg 2008): 118 giraffe were counted in Khaudum Game Park, two giraffe in East Caprivi, one in Kavango, two in Mahango Core Area, 12 in #Na Jaqna Conservancy, seven in Nyae Nyae Conservancy and one in Susuwe (Kolberg 2008). However, estimates were not calculated for these areas as the number of observations were too low and considered a possible undercount (Kolberg 2008). It is important to note that recent genetic research has shown that the giraffe in the Susuwe area of Bwabwata NP are South African giraffe, while all other giraffe in Namibia's portion of KAZA TFCA are Angolan giraffe (Coimbra *et al*. 2021; Winter *et al*., 2018; Fennessy *et al.,* 2016).

In 2013, aerial surveys of wildlife and domestic livestock of the Caprivi were conducted. A total area of 16,733 km^2 was sampled and included Bwabwata, Mudumu and Nkasa Rupara NPs, as well as adjacent areas (Craig & Gibson 2013). 324 giraffe were estimated to populate the region, of which 100 individuals were estimated to occur in Eastern Caprivi North, 81 in Eastern Caprivi South, 45 in Linyanti, 54 in Buffalo/Mahango, 15 in Kwando and 30 in Susuwe (Craig & Gibson 2013). The species have been introduced to some conservancies, but they are not numerous and appear to be concentrated in protected areas (Craig & Gibson 2013). In the same year, an aerial sample count of Khaudum NP estimated a giraffe population of 698 individuals (K. /Uiseb pers comm.). Fourteen giraffe were observed during a total aerial count of wildlife in Mangetti NP in 2014 (K. /Uiseb pers comm.).

Summary

KAZA associated areas in northeastern Namibia support large, stable populations of both subspecies of southern giraffe. The Kavango East Regions support approximately 750 Angolan giraffe, and Kavango West supports approximately Angolan 20 giraffe. The Khaudum NP and surrounding conservancies support approximately 1066 Angolan giraffe. The Zambezi region support approximately 50 Angolan giraffe and 100 South African giraffe.

Zambia

Historic

At the end of the 19th century, giraffe in Zambia were limited to two isolated regions: one in Barotseland, and the other in the Luangwa Valley (Sidney 1965). Previously it was doubted that giraffe historically existed in any other parts of the country (Sidney 1965; Ansell 1952), however, evidence indicates that giraffe were present (migratory) in Kafue NP from a letter sent by Mr J. Loewen to Mr P. de. V. Moss in 1974, who reported seeing three giraffe within the park. However, much debate still surrounds the anecdotal records of giraffe in this region (Lines *et al*. 2018). More investigation is required in order to confirm the historical presence of giraffe within the Kafue NP and neighbouring areas.

The South African giraffe population in Barotseland (western Zambezi) roamed the western parts of the region, between the Zambezi and Mashi Rivers in the 1960s (Dagg 1962). Referred to as Barotse giraffe (*G. c. infumata*), at the time, these animals occurred on the Siluana Plain and on the borders of the Mashi River in west Barotseland (Sidney 1965). In 1952, the Carp Expedition estimated that there were between 150 and 200 individuals in the region (Sidney 1965). In 1965, the estimated number of giraffe in Barotseland remained the same at 150-200 individuals (Sidney 1965). According to East (1999) only a small number of these giraffe (taxonomically lumped in with the 'Southern giraffe' at the time) survived in south-western Zambia by the late 1990s, all inhabiting Sioma Ngwezi NP.

In 2004 and 2005, aerial surveys of Sioma Ngwezi NP estimated 211 giraffe in the area (Chase & Griffin 2009). In 2008, an aerial survey of Mosi-oa-Tunya NP, Kazungula and the Sioma Complex (which comprises Sioma Ngwezi NP and West Zambezi GMA) was conducted. During this survey, 161 giraffe were estimated in the Lower West Zambezi and 420 in Sioma Ngwezi NP, while 11 giraffe were observed in Mosi-oa-Tunya NP, giving a total of 581 giraffe for the region (Simukonda 2009). Uncertainty remains with regards to the origin of the giraffe population in Mosi-oa-Tunya although they were likely a (re-)introduced population (M. Nyirenda pers. comm., F. Willems pers. comm.). Anecdotal sources from the former ZAWA suggest that they could have come from Sioma Ngwesi NP, while others indicate they may be from north-eastern Zimbabwe (M. Nyirenda pers. comm.). However, both are now proven to be South African giraffe (Winter *et al*., 2018; Fennessy *et al.,* 2016).

Current

An aerial survey of elephant and other wildlife in Sioma Ngwezi NP was conducted in 2013 (Chase *et al.* 2013). A total of 232 giraffe were estimated: 44 in Sioma Ngwezi NP West and 188 in Sioma Ngwezi NP East (Chase *et al.* 2013). The giraffe population in Sioma Ngwezi NP has remained stable, with an estimate of around 200 individuals noted in the park in 2020 (Pelc 2020). A maximum of 250 giraffe is currently estimated in the park (S. Mayes pers. comm.).

The giraffe population in Mosi-oa-Tunya NP has grown slowly, increasing to 13 individuals by 2015 and now numbering a maximum of 30 individuals as of 2020 (J. Katampi pers. comm.).

In 2015 as part of a larger conservation effort to rewild Simalaha Community Conservancy, PPF reintroduced an extralimital population of eight Angolan giraffe from the Salambala Conservancy in the Zambezi Region of Namibia (Peace Parks Foundation 2015). This population has been doing well and has since increased to 35 individuals (G. Homer pers. comm.).

Summary

An estimated population of <280 South African giraffe resides in southwestern Zambia, approximately 250 South African giraffe in Sioma Ngwesi NP, 30 South African giraffe in Mosi-oa-Tunya NP, 20 South African giraffe on properties neighbouring/close to Mosi-oa-Tunya NP, 35 Angolan giraffe as an extra limital population in Simalaha Community Conservancy, and four on the property of Zambezi Sun (J. Katampi pers. comm.).

Zimbabwe

Historic

Giraffe were found throughout Zimbabwe, not just in national parks, however, the highest concentrations have historically been in the Wildlife Estates and on private land. According to the African Antelope Database 1998 (East 1998), giraffe estimates were 26,276: Hwange NP – 14,651 (1996), Matetsi SA Complex – 3,295 (1995), Kazuma Pan – 561 (1995), Zambezi NP – 543 (1995), and Forestry areas – 2,344 (1995). Since these

estimates were reported, all data is based on aerial survey reports conducted in a number of areas across Zimbabwe.

During the same time period giraffe numbers in northwest Matabeleland (including Hwange NP, Zambesi NP, Kazuma Pan NP, Matetsi Safari Area and Denka Safari Area) were estimated at 3,437 (Lenton 2004; Dunham *et al.* 2002b; Dunham 2001). In the Sebungwe Region and the Zambezi Valley (Chizarira & Matusandona NPs, Chete & Chirisa Safari Area, and Binga, Ngokwe and Nyaminyama communal areas), no giraffe were recorded (Mackie 2001).

Current

Recent aerial surveys (2014) across Zimbabwe were undertaken with the support of the Great Elephant Census (Dunham & van der Westhuizen 2015); 1,568 giraffe in north west Matabeleland (including Hwange NP, Zambezi NP, Kazuma Pan NP, Matetsi Safari Area and Denka Safari Area) (Dunham *et al.* 2015).

Summary

In total, there is an estimated minimum of 1,568 South African giraffe in KAZA associated areas of northwest Zimbabwe.

KAZA TFCA

Current

Data from the latest numbers from all KAZA country areas estimates a total of 12,073 giraffe – of which the majority (10,148) are assumed South African giraffe and 1,925 are Angolan giraffe (Table 1).

Table 1. Summary of current population estimates for both subspecies in KAZA TFCA associated areas for all range states

Subspecies	Country	Area	Population Estimate
Angolan giraffe (*G. g. angolensis*)	Namibia	Kavango East Region	750
		Kavango West Region	20
		Kahaudum NP and Conservancies	1,066
		Zambezi	50
	Zambia	Simalaha Community Conservancy	35
		Zambezi Sun Property	4
		Total Angolan giraffe in KAZA TFCA	**1,925**
South African giraffe (*G. g. giraffa*)	Angola	Luengue-Luiana and Mavinga NP	<200
	Botswana	Northern otswana including Chobe District and Chobe NP, Moremi Game Reserve Okavango Delta, and Ngamiland	8,000
	Namibia	Bwabwata NP	100
	Zambia	Sioma Ngwesi NP	250
		Mosi-oa-Tunya NP	30
	Zimbabwe	Northwest Matabeleland	1,568
		Total South African giraffe in KAZA TFCA	**10,148**
		TOTAL GIRAFFE IN KAZA TFCA	**12,073**

Proposed KAZA TFCA Conservation Management

The following are proposed conservation management options for giraffe in the KAZA TFCA:

- Development of KAZA Giraffe Strategy and Action Plan;
- Development of individual National Giraffe Strategy and Action Plans for each KAZA country, as appropriate;
- Greater understanding of and updated giraffe population numbers, range, genetics and conservation status across KAZA TFCA, including (sub)speciation;
- Assessment of (re-)introductions and/or supplementations of appropriate southern giraffe;
- GPS satellite tagging of key giraffe populations, including transboundary populations, to help with monitoring, understanding spatial ecology and anti-poaching support;
- Support to dedicated giraffe conservation, habitat protection, anti-poaching, education and awareness initiatives (government, NGO and academic); and
- Ongoing long-term conservation research and monitoring on giraffe populations on key populations.

Acknowledgements

We would like to thank the Governments of Angola, Botswana, Namibia, Zambia and Zimbabwe, and their various Environment or Wildlife Departments/Authorities/Ministries. Additionally, we thank Matthew Becker, Bruce Bennet, Peter Blinston, Rachel Brand, Ivan Carter, Kerryn Carter, Michael Chase, Simukonda Chuma, Bruce Clegg, Jessica Dawson, Ian duPreez, Patrick Duncan, Kevin Dunham, Colin Edwards, Pete Fick, Chris Foggin, Herve Fritz, Paul Funston, Roland Goetz, David Goosen, Great Elephant Census, Liza Hansen, Eliza Hoffman, Jabulani Safaris, Peter Johnstone, Juliet Johnstone, Holger Kolberg, Blondie Leatham, Brent Leesmay, Sean Lenton, Andy Loveridge, Andri Marais, Moses Nyirenda, Nicky Pegg, Fay Robertson, Ian Rutledge, Lovelater Sebele, Peter Seeber, Reilly Travers, Paul Trethown, Kennneth /Uiseb, Hugo Valls , Marion Valeix and Esther van der Meer, Pedro Vaz Pinto, Vulcan and the numerous land owners and managers for their valuable input.

The development of the KAZA TFCA Regional Profile was financially supported by the Giraffe Conservation Foundation and its supporters.

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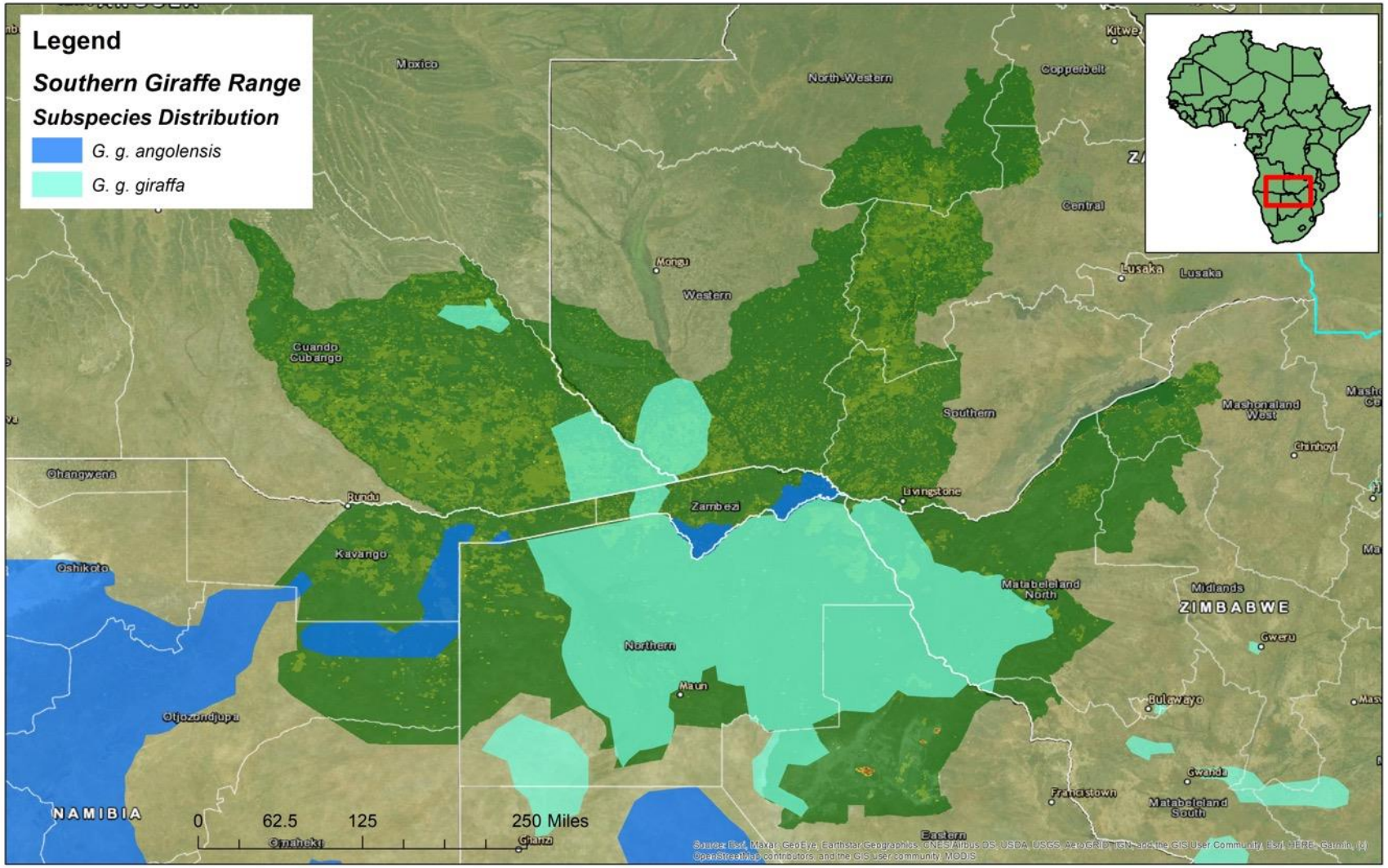
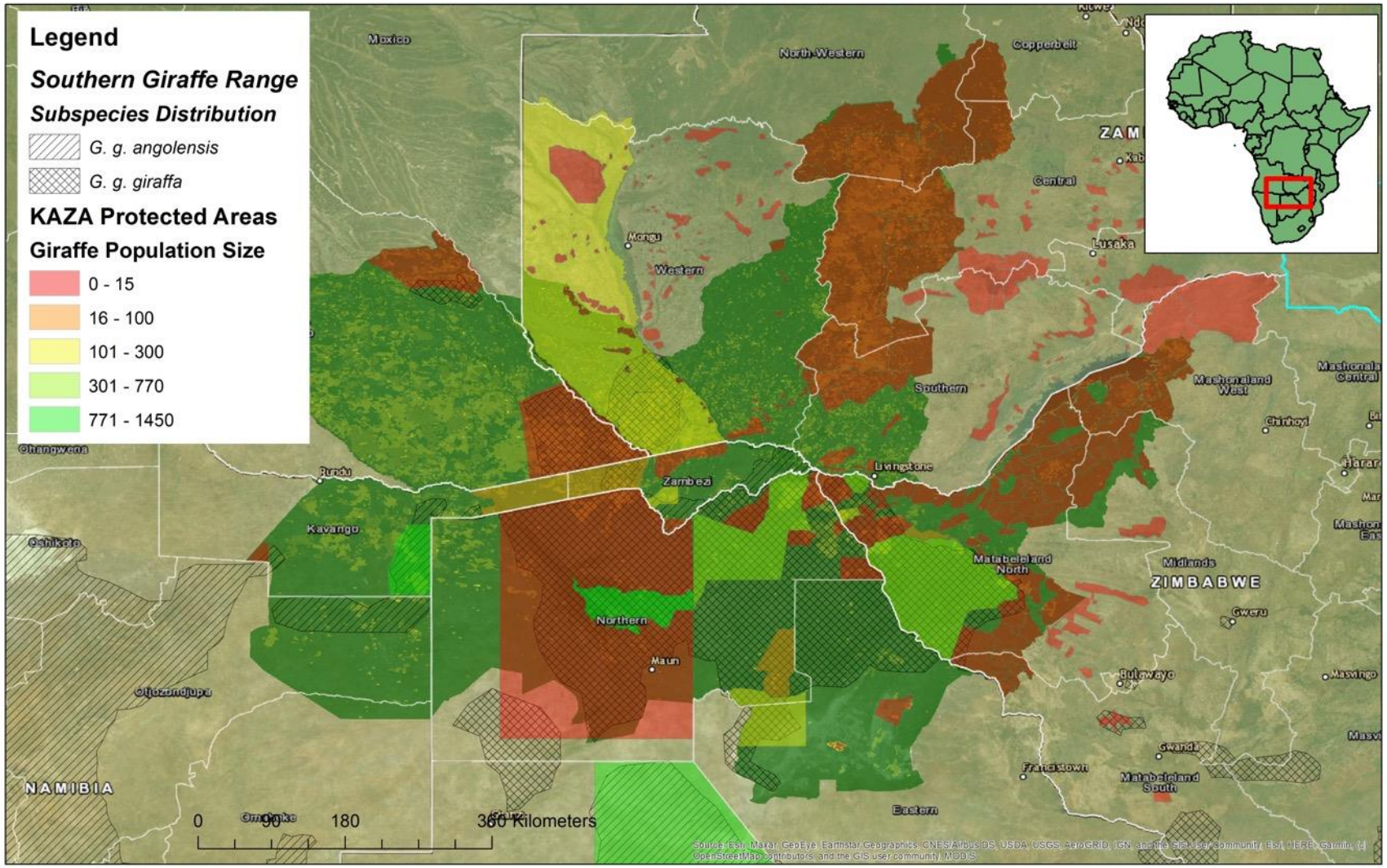
Citation

Fennessy, J., Ferguson, S., Brown, M. & Fennessy, S. 2021. *Regional Profile: A rapid assessment of the giraffe conservation status in the Kavango-Zambezi Transfrontier Conservation Area (KAZA TFCA)*. Giraffe Conservation Foundation. Windhoek, Namibia.

Maps


Legend
Southern Giraffe Range
Subspecies Distribution
G. g. angolensis
G. g. giraffa
Moxico
North-Western
Copperbelt
Central
Mongu
Western
Lusaka
Lusaka
Guando Cubango
Southern
Mashonaland West
Chirhoyi
Ohangwena
Rundu
Zambezi
Livingstone
Kavango
Oshikoto
Matabeleland North
Midlands
ZIMBABWE
Northern
Maun
Gweru
Bulawayo
Otjozondjupa
Gwanda
Matabeleland South
NAMIBIA
0
62.5
125
250 Miles
Eastern


Legend
Southern Giraffe Range
Subspecies Distribution
G. g. angolensis
G. g. giraffa
KAZA Protected Areas
Giraffe Population Size
0 - 15
16 - 100
101 - 300
301 - 770
771 - 1450
Mexico
North-Western
Copperbelt
ZAM
Central
Lusaka
Mongu
Western
Southern
Mashonaland West
Mashonaland Central
Chinhoyi
Harare
Ohangwena
Rundu
Zambezi
Livingstone
Kavango
Oshikoto
Matabeleland North
Midlands
ZIMBABWE
Gweru
Northern
Maun
Bulawayo
Masvingo
Otjozondjupa
Gwanda
Francistown
Matabeleland South
NAMIBIA
Eastern
0
90
180
360 Kilometers