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DRAFT REPORT OF THE MEETING OF THE INTERSESSIONAL WORKING GROUP ON THE CONSERVATION AND MANAGEMENT OF THE CHEETAH (ACINONYX JUBATUS) AND AFRICAN WILD DOG (LYCAON PICTUS)

(Prepared by the Secretariat)

Summary:

This document provides a report on the meeting of the Intersessional Working Group (IWG) on the Conservation and Management of the Cheetah (*Acinonyx jubatus*) and African Wild Dog (*Lycaon pictus*) that took place on Wednesday, 08 February 2023.

It is accompanied by two annexes:
1. Report on the Conservation status of the Cheetah populations of Botswana, Namibia and Zimbabwe and considerations for listing on CMS appendices.
2. IWG meeting participant list.

DRAFT REPORT OF THE MEETING OF THE INTERSESSIONAL WORKING GROUP ON THE CONSERVATION AND MANAGEMENT OF THE CHEETAH (ACINONYX JUBATUS) AND AFRICAN WILD DOG (LYCAON PICTUS)

Wednesday, 08 February 2023, 14.00-16.00hrs CET, online

Agenda

14.00 CET	**OPENING OF THE MEETING**	
14.00-14.05	**Opening of the Meeting and Housekeeping**	CMS Secretariat
14.05-14.15	**Short introduction to the work of the IWG and the objective for this Meeting**	Alfred OTENG-YEBOAH, Chair of the Intersessional Working Group
14.15-14.45	**Launch of the Report on the Conservation status of the cheetah populations of Botswana, Namibia and Zimbabwe and considerations for listing on CMS appendices**	Members of the IUCN SSC Cat Specialist Group
14.45-15.45	**Questions & Answers on the Report and deliberations of the Working Group will take place to review the conservation status of Cheetah populations of Botswana, Namibia and Zimbabwe and their potential inclusion in Appendix I of CMS**	All meeting participants
15.45-16.00	**Summary of the discussion and preliminary conclusions** **Way forward and next steps of this IWG**	Alfred OTENG-YEBOAH, Chair of the Intersessional Working Group
16.00	**END OF THE MEETING**	

Draft report of the meeting

1. Opening

The Secretariat of the Convention on Migratory Species (CMS) opened the meeting of the Intersessional Working Group on the Conservation and Management of the Cheetah (*Acinonyx jubatus*) and African Wild Dog (*Lycaon pictus*) with welcoming remarks and housekeeping instructions. The Secretariat informed the participants that Alfred Oteng-Yeboah, CMS Scientific Councilor for Terrestrial Mammals, had been selected as the Chair of the group and its meeting. The Chair welcomed the participants to the meeting and explained the background to the meeting and its procedure.

2. Background

2.1. Mandate of the Intersessional Working Group

The Cheetah was listed on Appendix I of CMS in 2009, except for the populations of Botswana, Namibia and Zimbabwe. Through Decision 13.94 on the Conservation and Management of the Cheetah (*Acinonyx jubatus*) and African Wild Dog (*Lycaon pictus*), the Conference of the Parties to CMS, at its 13th meeting (COP13, Gandhinagar, India, 2020), had requested that

> "*The Scientific Council should, after consultation with the respective Range States affected, make recommendations to the Conference of the Parties concerning possible amendments to the list of Cheetah populations presently excluded from CMS Appendix I to reflect the current conservation status and inform a Decision by the Conference of the Parties at its 14th meeting.*"

The CMS Scientific Council, at the Fifth Meeting of its Sessional Committee (ScC-SC5; June - July 2022, virtual), established an Intersessional Working Group (IWG) on the Conservation and Management of the Cheetah (*Acinonyx jubatus*) and African Wild Dog (*Lycaon pictus*) to conduct these consultations. The IWG was given the mandate to review the conservation status of Cheetah populations of Botswana, Namibia and Zimbabwe and their potential inclusion in Appendix I of CMS and to report to the Sessional Committee at its 6th meeting on its findings and to inform a Decision at COP14.

As mandated by the Sessional Committee, the Working Group consisted of representatives of the Range States concerned (Botswana, Namibia and Zimbabwe), as well as African regional representatives of the Sessional Committee, experts from the IUCN SSC Cat Specialist Group, and other experts invited by the Secretariat.

2.2. Objective of the meeting

The objective of this IWG meeting was to consult with the range states the conservation status outlined in an expert report on the *Conservation status of the Cheetah populations of Botswana, Namibia and Zimbabwe and considerations for listing on CMS appendices* (Annex 1), hereafter "Report", shared with the Range States on 27 January 2023 by the CMS Secretariat, and to discuss the potential inclusion of the Cheetah populations of Botswana, Namibia and Zimbabwe on CMS Appendix I, as well as formulate recommendations for submission to the Scientific Council's Sessional Committee at its 6th session.

The recommendations arising from this workshop would be reported to the Scientific Council, which would then formulate a recommendation for a Decision to the COP. At its 14th Meeting in October 2023, the COP would discuss the recommendations to decide which, if any, Decision to adopt.

3. Comments by Range States

The Chair asked whether the participants had questions regarding the meeting's procedure. Botswana requested a clarification regarding when and to whom the invitation to this meeting had been sent out. The CMS Secretariat clarified that the invitation to the meeting including the agenda and a note that the report would be shared soon had been sent out by the CMS Secretariat to the CMS national focal point of Zimbabwe, the CITES Scientific Authorities of Botswana, and (in absence of contact details for Scientific Authorities for Namibia), to the CITES Management Authorities of Namibia, as listed on the CITES website at the time, the national coordinators of Botswana Namibia and Zimbabwe, and all other members of the IWG on Monday, 16 January 2023. Botswana (Kenosi Nkape) and Zimbabwe (Roseline Mandisodza) had confirmed receipt of the invitation on the same day. The report and meeting link were shared by the CMS Secretariat on Friday, 27 January 2023 and receipt confirmed by Zimbabwe (Roseline Mandisodza) on the same day and by Botswana (Kenosi Nkape) on Monday 30 January 2023. In addition, to ensure participation from Namibia, the CMS Secretariat sent a direct invitation to several contacts at the Namibian government on 06 February 2023 and Namibia's attendance was confirmed on 07 February 2023 (by Elly Hamunyela and Uakendisa Muzuma).

Botswana and Namibia stated that they were joining the meeting as observers and had no intention to accede to CMS in the near future. Zimbabwe underlined that it was the only Range State Party to CMS and that while neither Namibia nor Botswana were bound to CMS decisions, it was important to include all Cheetah population Range States in the discussion.

4. Presentation of the Report on the Conservation status of the cheetah populations of Botswana, Namibia and Zimbabwe and considerations for listing on CMS appendices

The Chair gave the floor to experts, who proceeded to present the Report on the Conservation status of the cheetah populations of Botswana, Namibia and Zimbabwe and considerations for listing on CMS appendices (presentation shared with participants).

5. Questions & Answers on the Report and deliberations of the Working Group will take place to review the conservation status of Cheetah populations of Botswana, Namibia and Zimbabwe and their potential inclusion in Appendix I of CMS

All three Range States expressed their regrets that national governments had not been sufficiently consulted in the preparation of the report. They stressed the importance of circulation as a basis for acceptance and were disappointed that the draft had not been shared in time to give national authorities the opportunity to contribute to the report and provide comments.
According to Zimbabwe, some information presented in the report was outdated, e.g., data for 2012-2014 obtained through a questionnaire, where more recent data could have been provided by the national authority if asked. Some of the country's conservation efforts to recover and reintroduce the local Cheetah population had not been captured in the report. Also, the report referred to an erroneous CITES cheetah quota of 50 cheetahs per year, but Zimbabwe never harvested more than five cheetahs per year. Zimbabwe also underlined its participation and contribution to the Joint CITES-CMS African Carnivores Initiative, pointing out that the major challenge of the implementation of the Initiative's Programme of Work had always been lack of funding.

Botswana agreed with Zimbabwe that not having been involved during the compilation of the report weakened it through outdated or missing data. For example, substantial work done in the transboundary area with Zimbabwe was not mentioned in the report. Botswana also stated that its national authority would be willing to provide the missing data.

Namibia seconded Zimbabwe and Botswana and stated that the report should have been shared through the Secretariat to request a review and noted that some data were outdated or inaccurate, e.g., the cheetah population estimation, and that positive conservation outcomes were not stressed enough. Also, Namibia disagreed with the report's statement on unsustainable CITES quota and asked for a revision. In Namibia's opinion, a listing in Appendix I as recommended in the report might not have any positive impact on the Cheetah population, as Namibia had no intention of becoming a Party to CMS.

The Chair then invited the experts to respond to the Range States' comments.

The experts explained that the report had relied on published material and acknowledged the conservation efforts by the Range States, especially regarding sustainable hunting. They explained that government representatives had been included in e-mail exchanges with the CMS Secretariat since February 2022. However, they agreed that having shared the report with the Range States sooner before the IWG meeting could have been beneficial. They confirmed their willingness to include more recent data, if provided. In addition, they invited the participants to

keep in mind the larger picture for Cheetah conservation during the discussion and consider whether the listing would benefit the global Cheetah population and not only country-specific populations.

Namibia asked how the listing of Cheetah populations in the three countries would be beneficial on the ground.

The experts explained that the listing of Cheetah populations in Botswana, Namibia and Zimbabwe would be beneficial, as Cheetah's survival did not only depend on local conservation efforts, but also on transboundary cooperation.

The CMS Secretariat pointed out additional benefits of listing, such as a stronger focus on human-wildlife conflict and on habitat conservation, including removal and migration barriers, which would eliminate further threats to the Cheetah.

All three Range States expressed doubts regarding the benefits of listing to the Cheetah populations, especially considering that two Range States were not Parties to CMS. They emphasised that local conservation actions already in place were producing positive, tangible outcomes. They questioned the positive effects of listing in other countries where Cheetah populations were listed in Appendix I. They stressed that local governments needed capacity and resources on the ground.

To conclude, the three Range States neither favoured the inclusion of their Cheetah populations on Appendix I nor on Appendix II, stating that their current transboundary engagement and conservation measures were effective and that listings would not add value.

The Chair then gave the floor to observer organisations.

The CITES Secretariat clarified that the error in Zimbabwe's Cheetah quota had been fixed.

The NGO Born Free supported the inclusion of the Cheetah populations of Botswana, Namibia and Zimbabwe in both Appendix I and II. The representative explained that, as the Report highlighted, given that the Cheetah in these three countries made up almost half the global population of the species and faced the same key threats as all other populations, a cohesive and integrated approach was necessary to conserve the species. Listing the populations of Botswana, Namibia and Zimbabwe in Appendix I would render the entire continental Cheetah population on Appendix I and would eliminate any negative issues normally associated with split listings. Also, Born Free supported the inclusion of the populations of Angola, Botswana, Mozambique, Namibia, South Africa, Zambia and Zimbabwe in Appendix II. Given the species' transboundary movement across these seven countries in Southern Africa, the conservation of Cheetah in this metapopulation would greatly benefit from the listing by facilitating access to financial and capacity resources on the ground. While Born Free supported the concept of a revaluation of CITES quotas for Cheetah in Namibia and Zimbabwe as recommended in the Report, it urged Working Group members to go further and recommend a cessation of offtake under these quotas for all three countries.

6. Summary of the discussion and preliminary conclusions, and way forward and next steps of this IWG

The Chair summarized the main outcomes of the discussion as follows:

1. The three Range States considered the Report outdated with a need to be revised;

2. The Range States did not support listing the Cheetah populations of Botswana, Namibia and Zimbabwe on Appendices I and II, although all other Cheetah populations are listed.

The Chair suggested sharing the Report with the Range States for review and invited all Range States, including non-Parties to CMS, to provide their feedback and most recent data.

The CMS Secretariat, after thanking the Range States, experts, and Chair, agreed with the Chair's suggestions and agreed to share the report with the Range States to take their input into consideration and submit a revised report to the Scientific Council.

After thanking all involved in the organization of the meeting, the Chair closed the meeting at 16.30.

ANNEX 1

REPORT

CONSERVATION STATUS OF THE CHEETAH POPULATIONS OF BOTSWANA, NAMIBIA AND ZIMBABWE AND CONSIDERATIONS FOR LISTING ON CMS APPENDICES

CONSERVATION STATUS OF THE CHEETAH POPULATIONS OF BOTSWANA, NAMIBIA AND ZIMBABWE AND CONSIDERATIONS FOR LISTING ON CMS APPENDICES

CMS

Conservation status of the Cheetah populations of Botswana, Namibia and Zimbabwe and considerations for listing on CMS Appendices

Cover image: African Cheetah with cubs. Photo: Jim Zuckerman

Prepared for the Secretariat of the Convention on Migratory Species (CMS), January 2023.

Authors: Esther van der Meer[1], Michelle J.C. Kral[2,3], Jane Horgan[2], Rebecca Klein[2], Jörg Melzheimer[4,5], Rosemary Groom[6,7,8], Sarah M. Durant[6,8]

[1] Cheetah Conservation Project Zimbabwe, Box 111, Dete, Zimbabwe
[2] Cheetah Conservation Botswana, Gaborone, Botswana
[3] Wildlife Ecology & Conservation Group, Department of Environmental Sciences, Wageningen University, The Netherlands
[4] Leibniz Institute for Zoo- and Wildlife Research, Berlin, Germany
[5] Cheetah Research Project, Namibia
[6] Institute of Zoology, Zoological Society of London, London NW1 4RY, United Kingdom
[7] African Wildlife Conservation Fund, Save Valley Conservancy, Zimbabwe
[8] Africa Range-wide Cheetah Conservation Initiative, Institute of Zoology, Zoological Society of London, London NW1 4RY, United Kingdom

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Index

Executive summary

The global Cheetah *(Acinonyx jubatus)* population is estimated at ca. 6,517 mature individuals (7,100 adult and adolescent animals) distributed over 3,100,000 km^2 of land. Historically, the Cheetah was widespread across Africa and South-Western Asia, but the species is now known to occur in only 9% of its past distributional range. The global Cheetah population faces multiple threats, including increased pressures from habitat loss and fragmentation; widespread human-wildlife conflict; prey loss resulting from overhunting, wild meat ('bushmeat') harvesting, and grazing competition with livestock; and illegal trade. The fact that 67% of the Cheetah population is found on unprotected land makes the Cheetah particularly vulnerable to anthropogenic pressures.

The Cheetah *Acinonyx jubatus* is currently listed as Vulnerable (VU) by the International Union for Conservation of Nature and Natural Resources (IUCN) but may be close to qualifying as Endangered (EN) as per IUCN criteria. The reason for this is that the global Cheetah population is projected to decline by more than 50% over the next 15 years (or three Cheetah generations) if Cheetahs outside protected areas are subject to high threat levels. The Cheetah has been listed on Appendix I of the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1975. In 1992, in an attempt to reduce human-cheetah conflict, an annotation was added to allow the export of five (Botswana), 150 (Namibia) and 50 (Zimbabwe) live Cheetahs or hunting trophies of Cheetahs. The Cheetah was listed on Appendix I of the Convention on Migratory Species (CMS) in 2009, excluding the populations of Botswana, Namibia and Zimbabwe. At its Fifth meeting in September 2021, the Sessional Committee of the Scientific Council of CMS established an Intersessional Working Group on the Conservation and Management of the Cheetah (*Acinonyx jubatus*) and African Wild Dog (*Lycaon pictus*) with the mandate to review the conservation status of the Cheetah populations of Botswana, Namibia and Zimbabwe and make recommendations concerning possible amendments to the list of Cheetah populations presently excluded from CMS Appendix I.

The global Cheetah population is highly fragmented, with two remaining strongholds in Southern and Eastern Africa. The widest extent of Cheetah range in Southern Africa is found across Botswana and Namibia and the Cheetah populations in these countries represent 24% and 21% of the global Cheetah population respectively. Although a negative population trend is expected in future, within the past two decades, Botswana's Cheetah population has remained relatively stable and currently consists of ca. 1,694 adult and independent adolescent Cheetahs which reside in ca. 79% of the country. Over the past two decades, the Cheetah population of Namibia and the Cheetah population of Zimbabwe have experienced considerable declines. Between 1996 and 2017, Namibia's Cheetah population decreased by 48%, and as such, the Namibian Cheetah population would qualify as 'Endangered' under IUCN Red List criteria. Part of this decrease can be attributed to historic overestimation; however, there is an underlying negative population trend which is supported by range contractions and a decrease in legal offtake. At present, the Cheetah population of Namibia consists of ca. 1,498 adult and adolescent Cheetahs which reside in ca. 60% of the country. In Zimbabwe, since 2000, large scale land use change has resulted in a ca. 85% reduction of Cheetah numbers, therefore Zimbabwe's Cheetah population qualifies as Endangered under IUCN Red List criteria. The Cheetah population of Zimbabwe currently consists of ca. 150-170 adult and adolescent Cheetahs which reside in 12% of the country. While the majority (70-80%) of Botswana's and Namibia's Cheetah populations occur outside protected areas, Zimbabwe's Cheetahs now predominantly occur inside protected areas (66%) and conservancies (19%). Despite these variations in conservation dynamics, long-term Cheetah survival in all three countries largely depends on mitigation of human-cheetah conflict;

prevention of habitat loss, fragmentation and degradation; supporting prey populations; and securing of (transboundary) population links.

The conservation threats to the Cheetah populations of Botswana, Namibia and Zimbabwe largely overlap with conservation threats faced by the global Cheetah population and are expected to be exacerbated by climate change. However, the global Cheetah population is highly fragmented and there are several threats which ask for a regional approach. While illegal Cheetah trade in other parts of Africa is mostly related to an illegal market for Cheetah cubs, skins and parts, in Southern Africa, illegal Cheetah trade seems to be linked to supplying South Africa with wild-caught Cheetahs that are subsequently illegally exported as captive-bred. Furthermore, in Southern Africa, the Transfrontier Conservation Area concept, which seeks to improve connectivity between wildlife areas, is firmly embedded in conservation planning, while this is less so in Eastern, Central and Western Africa. Most (94%) of the ca. 4,297 Cheetahs in the Southern African Cheetah population are part of a single transboundary population stretching across Southern Angola, Botswana, South-Western Mozambique, Namibia, Northern South Africa, Southern Zambia, and South-Western Zimbabwe. Transfrontier Conservation Areas play an essential role in securing connectivity across this Cheetah landscape, yet Transfrontier Conservation agreements do not specifically address the Cheetah's conservation needs.

With most threats to Cheetah conservation being universal and the Cheetah populations of Botswana, Namibia and, to a lesser extent, Zimbabwe making up > 45% of the vulnerable global Cheetah population, there is a need for a unified approach to conserve the species. **We therefore recommend that the Cheetah populations of Botswana, Namibia and Zimbabwe be listed on CMS Appendix I**. However, it is only under CMS Appendix II that Range States are encouraged to take action to conclude agreements for geographically separate parts of the population of any species which periodically crosses one or more national jurisdictional boundaries. In addition to a CMS Appendix I listing of the global Cheetah population (including the populations of Botswana, Namibia and Zimbabwe), **we therefore recommend listing the Southern African Cheetah population on CMS Appendix II to facilitate a Cheetah conservation agreement between this population's range states (Angola, Botswana, Namibia, Mozambique, South Africa, Zambia and Zimbabwe) with a focus on, but not exclusive to, illegal taking and trade, and transboundary movement of Cheetahs.** If such a split listing is considered unfavourable, we strongly recommend encouraging the Range States of the Southern African Cheetah population to address transboundary connectivity and illegal taking and trade in Cheetahs through cooperation under the Joint CITES-CMS African Carnivores Initiative (ACI).

CMS Parties that are Range States of a migratory species listed on CMS Appendix I shall prohibit the taking of animals belonging to such species. Some exceptions may be made to this prohibition, provided they are precise with regard to content, limited in space and time, and do not operate to the disadvantage of the species (Article III, paragraph 5). Trophy hunting at low and sustainable levels can indirectly enhance the survival of Cheetahs by creating an incentive to take the species into account in land management and create favourable conditions for its survival at population level (see also IUCN SSC 2012b). Additionally, trophy hunting of Cheetahs can assist in reducing human-cheetah conflict by creating a financial incentive to tolerate the species. As such, the definition of exception b) of Article III (5) "the taking is for the purpose of enhancing the propagation or survival of the affected species […] provided that such exceptions are precise as to content and limited in space and time" and do "not operate to the disadvantage of the species" could, subject to interpretation by the Conference of the Parties (COP), be used to allow for taking of Cheetahs under CITES. Considering the reported unsustainable offtake due to human-cheetah conflict in Namibia, the considerable decline of the Cheetah population in Zimbabwe and the current CITES quotas accounting for more than the recommended 5% of the current populations, **we recommend the revaluation of Cheetah CITES-based quotas to allow for sustainable legal offtake in**

Namibia and Zimbabwe. This offtake should only take place in areas where Cheetah population estimates are based on sound scientific methods, and where offtake is associated with positive conservation outcomes for cheetah, and needs to be well monitored, regulated, and evaluated, and Parties need to provide monitoring that demonstrates that offtakes are sustainable.

Background and purpose of this document

The Cheetah was listed on Appendix I of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) in 2009, excluding the populations of Botswana, Namibia and Zimbabwe, as per a listing proposal (Document Proposal I / 4/Rev.1 Proposal for Inclusion of Species on the Appendices of the Convention on the Conservation of Migratory Species of Wild Animals) submitted by Algeria and the UNEP/CMS/COP9/REPORT Proceedings of the Ninth Meeting of the Conference of the Parties (Rome, Italy, 2008). At its Thirteenth Meeting (Ghandinagar, India, 2020), CMS COP adopted Decision 13.94 on the Conservation and Management of the Cheetah (*Acinonyx jubatus*) and African Wild Dog (*Lycaon pictus*) and directed that the Scientific Council should, after consultation with the respective Range States affected, make recommendations to the Conference of the Parties concerning possible amendments to the list of Cheetah populations presently excluded from CMS Appendix I to reflect the current conservation status and inform a Decision by the Conference of the Parties at its 14th meeting. To execute this task and obtain the relevant information for discussion at its next session, the Sessional Committee of the Scientific Council of CMS, at its Fifth Meeting in September 2021, established an Intersessional Working Group on the Conservation and Management of the Cheetah (*Acinonyx jubatus*) and African Wild Dog (*Lycaon pictus*) with the mandate to review the conservation status of Cheetah populations of Botswana, Namibia and Zimbabwe and the potential inclusion of these populations on Appendix I of CMS (as per its Terms of Reference; see UNEP/CMS/ScC-SC5/Outcome 8 Establishment of an Intersessional Working Group on the Conservation and Management of the Cheetah (*Acinonyx jubatus*) and African Wild Dog (*Lycaon pictus*)). This Working Group includes Party-appointed members of the Sessional Committee from the African region, representatives of the concerned Range States, the CMS Scientific Councillor for Terrestrial Mammals, experts from the IUCN Cat Specialist Group, and other relevant entities. The CMS Secretariat invited Cheetah experts from the IUCN Cat Specialist Group to prepare an assessment of the current situation of the Cheetah in Botswana, Namibia and Zimbabwe. The presented document reports on the findings of these Cheetah experts.

Acronyms

ACI	Joint CITES-CMS African Carnivores Initiative
AP	African Parks
AWF	African Wildlife Foundation
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CBD	Convention on Biodiversity
CCI	Africa Range-wide Cheetah Conservation Initiative
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
DNC	Department of Nature Conservation (Namibia)
DWNP	Department of Wildlife and National Parks (Botswana)
EU	European Union
FTLRP	Fast Track Land Reform Programme
GL TFCA	Great Limpopo Transfrontier Conservation Area
GM TFCA	Greater Mapungubwe Transfrontier Conservation Area
GPS	Global Positioning System
IUCN	International Union for Conservation of Nature and Natural Resources
IZW	Leibniz-Institute for Zoo and Wildlife Research
KAZA TFCA	Kavango-Zambezi Transfrontier Conservation Area
MEFT	Ministry of Forestry Environment and Tourism (Namibia)
NP	National Park
PA	Protected Area
RWCP	Range Wide Conservation Programme for Cheetah and African Wild Dogs (now known as the Africa Range-wide Cheetah Conservation Initiative, CCI)
SADC	Southern African Development Community
SSC	Species Survival Commission
TFCA	Transfrontier Conservation Area
WMA	Wildlife Management Area
WWF	World Wide Fund for Nature
ZWPMA	Zimbabwe Parks and Wildlife Management Authority

Definitions

Following the Africa Range-wide Cheetah Conservation Initiative (CCI; previously the Range Wide Conservation Programme for Cheetah and African Wild Dogs (RWCP)) guidelines used at the IUCN SSC Regional Conservation Strategy workshops and National Conservation Action planning workshops, the following range type definitions were used in this report:

Resident range: land where wild Cheetahs are known to still be resident.

Possible resident range: land where wild Cheetah may still be resident, but where residency has not been confirmed in the last 10 years.

Transient range: habitat used intermittently by Cheetah, but where the species are known not to be resident, and which does not connect to other resident ranges.

Connecting range: land where Cheetah is 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 'steppingstones' of habitat fragments.

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.

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.

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

Conservation status of the Cheetah populations of Botswana, Namibia and Zimbabwe

Status of the Cheetah populations of Botswana, Namibia and Zimbabwe

Botswana's Cheetah population consists of ca. 1,694 Cheetahs (adults and independent adolescents), with resident Cheetah range covering ca. 79% of the country's surface (ca. 459,567 km^2). Botswana's Cheetah population has remained relatively stable: between 2007 and 2015, the country's Cheetah population declined by approximately 4%, with a ca. 1.8% range contraction. Namibia's Cheetah population consists of ca. 1,498 Cheetahs (adults and independent adolescents), with resident Cheetah range covering ca. 60% of the country (ca. 506,970 km^2). In Namibia, between 1996 and 2017 the Cheetah population decreased by ca. 48%, with a range contraction of approximately 13% between 2013 and 2017. While part of this population decline can be attributed to historic overestimation, it indicates an underlying negative population trend that is supported by the observed range contraction, a decrease in legal offtake and anecdotical reports from farmers. Zimbabwe's Cheetah population consists of ca. 150-170 Cheetahs (adults and independent adolescents), with resident Cheetah range covering ca. 12% of the country's surface (ca. 47,000 km^2). In Zimbabwe, large scale land use change caused a ca. 85% reduction in Cheetah numbers and ca. 62% range contraction. The majority (70-80%) of Botswana's and Namibia's Cheetah populations occur outside protected areas, where human-Cheetah conflict is a major factor affecting Cheetah survival. Most of Zimbabwe's Cheetah population now occurs in protected areas (66%) or conservancies (19%), where human-Cheetah conflict is minimal. Despite these variations in conservation dynamics, long-term Cheetah survival in all three countries largely depends on mitigation of human-cheetah conflict; prevention of habitat loss, fragmentation and degradation; supporting prey populations; and securing of (transboundary) population links.

Global importance of the Cheetah populations of Botswana, Namibia and Zimbabwe

The Cheetah populations of Botswana, Namibia and Zimbabwe are part of a larger free-ranging Southern African Cheetah population which also includes the Cheetah populations of Angola, Mozambique, South Africa and Zambia (IUCN SSC 2015, Durant *et al.* 2017) (Fig. 1). This Southern African population is one of two global population strongholds (Fig. 1) and contains more than one half of the world's Cheetahs (Durant *et al.* 2017). In Southern Africa, the widest extent of Cheetah range is found across Botswana and Namibia and the Cheetah populations in these countries represent 24% and 21% of the global Cheetah population, respectively (IUCN SSC 2015, Durant *et al.* 2017).

The Cheetah populations of Botswana, Namibia and Zimbabwe, together with the Cheetah populations of Angola, Mozambique, South Africa and Zambia, are part of various TFCA initiatives (see section *Transboundary connections of Botswana's, Namibia's and Zimbabwe's cheetah populations* below). Although based on occurrence records the Southern African Cheetah population is linked across international boundaries (Weise *et al.* 2017), most of the Southern African Cheetah population is becoming increasingly fragmented and largely (ca. 72%) exists on unprotected land, where Cheetahs face high levels of persecution (IUCN SSC 2015, Durant *et al.* 2017, Weise *et al.* 2017). As such, there is concern that this stronghold is at risk of long-term decline and eventual extirpation (Durant *et al.* 2017, Weise *et al.* 2017). The situation for the Southern African Cheetah population is precarious and conservation efforts are needed to support the species (Durant *et al.* 2017, Weise *et al.* 2017).

The main conservation threats to the wide-ranging Cheetah are universal. The Regional Conservation Strategy for the Cheetah and African Wild Dogs in Southern Africa provided a framework in 2007, later revised in 2015, to alleviate these conservation threats and ensure the survival of Cheetah and African Wild Dogs in Southern Africa (IUCN SSC 2015). This

strategic plan 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) minimize conflict and promote coexistence between Cheetah, Wild Dog and people; (V) minimize 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 harmonize existing legislation and policy affecting Cheetah and Wild Dog conservation; and (VIII) facilitate the development and implementation of national conservation plans for both species (IUCN SSC 2015).

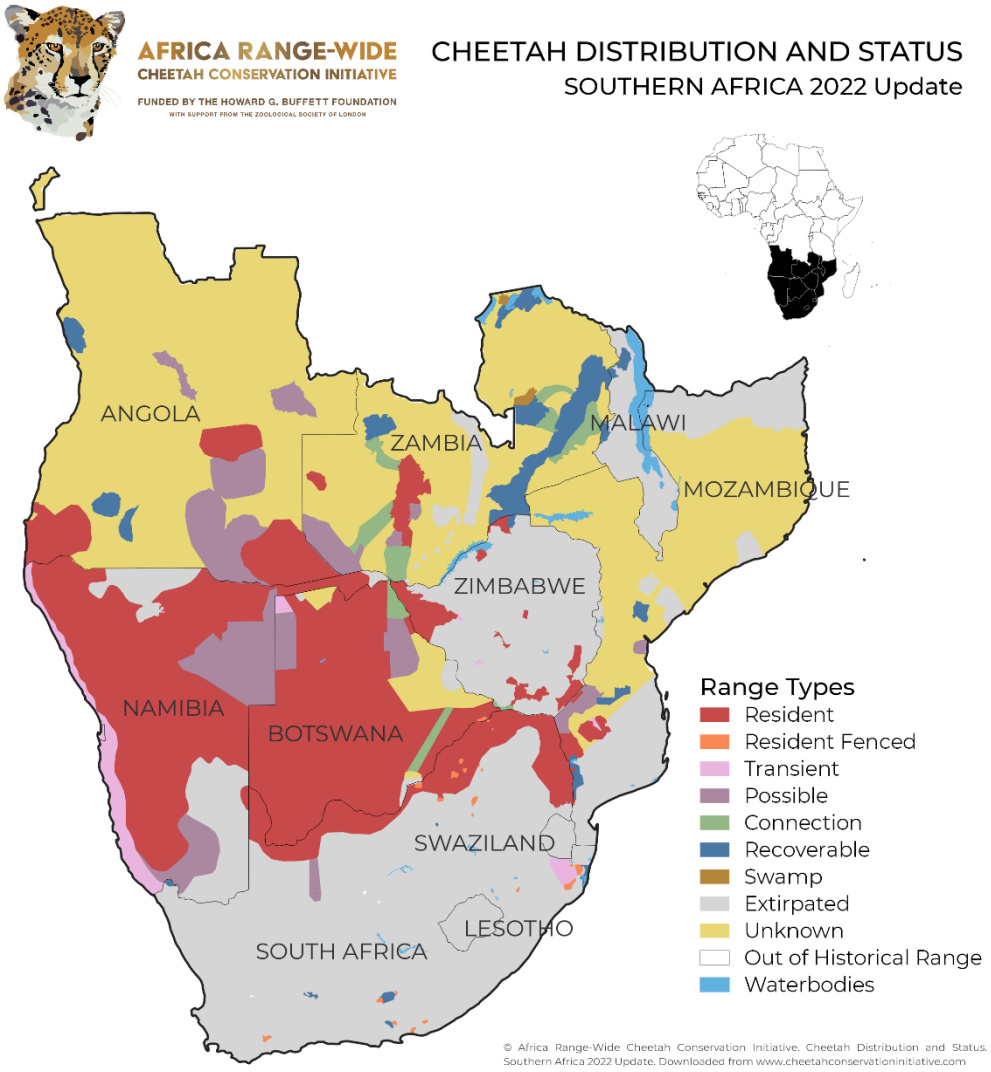

Figure 1. Distribution of Cheetah across Southern Africa as mapped by participants at the 2015 IUCN SSC Range Wide Conservation Planning Workshop for Cheetah and Wild Dogs (source: Africa Range-Wide Cheetah Conservation Initiative website, 2022).

Listing of Botswana's, Namibia's and Zimbabwe's Cheetah on CMS Appendix I or II

Context

Current listing status of the Cheetah on CMS Appendices

The Cheetah, including its subspecies in Africa and Asia, was listed on Appendix I of CMS in 2009 (CMS 2009), with implications mentioned above. However, the existence of CITES quotas for the international trade in wild Cheetah specimens for Botswana, Namibia and Zimbabwe resulted in exclusion of these populations from the listing altogether (CMS 2010, Nowell and Rosen 2018). In 2010, the Scientific Council of CMS considered including the Cheetah populations of Botswana, Namibia and Zimbabwe on CMS Appendix II (CMS 2010).

CMS status of Southern African Cheetah population Range States

The Southern African Cheetah population consists of free ranging Cheetah populations in Angola, Botswana, Mozambique, Namibia, South Africa, Zambia and Zimbabwe (IUCN SSC 2015, Durant *et al.* 2017) and are, thus, shared species among the Range States. While Angola, South-Africa, Mozambique and Zimbabwe have been Parties to CMS since 2006, 1991, 2009 and 2012 respectively, Botswana, Namibia and Zambia have remained non-Parties (https://www.cms.int/en/parties-range-states). The accession of Botswana, Namibia and Zambia as Parties to CMS would assist in promoting transboundary conservation of the Southern African Cheetah population, if accompanied by an Appendix II listing of Cheetah under CMS.

Implications of listing the Cheetah populations of Botswana, Namibia and Zimbabwe on CMS Appendix I or II for CITES quota

As per CMS Article XII paragraph 2, the provisions of the Convention on Migratory Species do in no way affect the rights or obligations of any Party deriving from any existing treaty, convention or agreement (CMS 1979). In theory, therefore, inclusion of the Cheetah populations of Botswana, Namibia and Zimbabwe in Appendix I of CMS does therefore not have to affect the number of Cheetah export tags each country receives under CITES (CITES 1992). However, there is a strong argument that Parties to both Conventions should respect their obligations under each Convention. Also relevant to the argument that a listing on Ap. I of CMS does not affect international trade could be that CMS COP never provided a detailed interpretation of the exceptions to the taking prohibition for Appendix-I listed species, set out in Article III, paragraph 5. It could, thus, be argued that trophy hunting at low and sustainable levels, could, indirectly enhance the survival of Cheetahs by creating an incentive to take the species into account in land management and create favourable conditions for its survival at population level (see also IUCN SSC 2012b). Additionally, trophy hunting of Cheetahs can assist in reducing human-cheetah conflict by creating a financial incentive to tolerate the species. As such, the definition of exception b) of Article III (5) "the taking is for the purpose of enhancing the propagation or survival of the affected species […] provided that such exceptions are precise as to content and limited in space and time" and do "not operate to the disadvantage of the species" could, subject to COP interpretation, be used. In 1992, Botswana was granted five export tags under CITES, Namibia 150 and Zimbabwe 50 (CITES 1992). Based on current population assessments, this corresponds with 0.3%, 10% and 30% of Botswana's, Namibia's and Zimbabwe's Cheetah population respectively. Provided population estimates are reliable and total offtake (incl. natural predation) does not exceed growth rate, it has been suggested that maximum sustainable total offtake of Cheetah is 10% of which trophy hunting should not exceed 5% (WWF 1997). Considering the reported unsustainable offtake due to human-cheetah conflict in Namibia (Weise *et al.* 2017), the considerable decline of the

Cheetah population in Zimbabwe (van der Meer 2018) and the current CITES quotas accounting for more than the recommended 5% of the current populations, revaluations of the Namibian and Zimbabwean CITES quotas for Cheetah is recommended.

Experts' considerations and recommendations for the listing of the Cheetah populations of Botswana, Namibia and Zimbabwe on CMS Appendix I

CMS Appendix I

As per CMS Article III, Appendix I lists migratory species that are endangered, meaning the species is in danger of extinction throughout all or a significant portion of their range. CMS Article III, paragraph 4 provides that **'**Parties that are Range States of a migratory species listed on Appendix I shall endeavor: a) to conserve and, where feasible and appropriate, restore those habitats of the species which are of importance in removing the species from danger of extinction; b) to prevent, remove, compensate for or minimize, as appropriate, the adverse effects of activities or obstacles that seriously impede or prevent the migration of the species; and c) to the extent feasible and appropriate, to prevent, reduce or control factors that are endangering or are likely to further endanger the species, including strictly controlling the introduction of, or controlling or eliminating, already introduced exotic species'. Although CMS Parties that are Range States of a migratory species listed on CMS Appendix I shall prohibit the taking of animals belonging to such species, exceptions may be made to this prohibition if: a) the taking is for scientific purposes; b) the taking is for the purpose of enhancing the propagation or survival of the affected species; c) the taking is to accommodate the needs of traditional subsistence users of such species; or d) extraordinary circumstances so require; provided that such exceptions are precise as to content and limited in space and time and such taking does not operate to the disadvantage of the species (Article III, paragraph 5).

Through CMS Resolution 11.33 *Guidelines for assessing listing proposals to Appendices I and II of the Convention*, the term 'endangered' has been further interpreted as meaning 'facing a very high risk of extinction in the wild in the near future'. Resolution 11.33 also provides a taxon assessed as 'Extinct in the Wild', 'Critically Endangered', or 'Endangered' using the IUCN Red List criteria is eligible for consideration for listing on Appendix I. It further provides that a taxon assessed as 'Vulnerable' or 'Near Threatened' would not normally be considered for listing on Appendix I, unless there is substantive information subsequent to the IUCN Red List assessment that provides evidence of deteriorating conservation status, and information about the conservation benefits that an Appendix I listing would bring.

Considerations

Globally, the Cheetah is currently assessed as 'Vulnerable', with a high risk of qualifying as 'Endangered' in the near future (Durant *et al.* 2015). However, CMS Resolution 11.33 also provides that if it is proposed to include a population or geographically separate part of a population of any species on CMS Appendix I, then the Red List assessment used should be with respect to that population or part of that population. Although a negative population trend is expected in future, the Cheetah population of Botswana has remained relatively stable and currently does not meet the IUCN Red List criteria for classification as 'Endangered'. With its steep decline in range and numbers and current small population size, Zimbabwe's Cheetah population would qualify as 'Endangered' under IUCN Red List criteria A2, C1 and D (IUCN SSC 2012c). Namibia's Cheetah population has experienced a less dramatic decline than Zimbabwe's population, yet the decline of Namibia's Cheetah population is substantial and enough to be considered as 'Endangered' under IUCN Red List criteria C1 (IUCN SSC 2012c). It can therefore be argued that Zimbabwe's and Namibia's Cheetah populations should be included on Appendix I of CMS.

The widest extent of Cheetah range in Southern Africa is found across Botswana and Namibia and the Cheetah populations in these countries represent 24% and 21% of the global Cheetah population, respectively. As illustrated by the situation in Zimbabwe, for protection-reliant species like Cheetah, extinction risk increases markedly when the percentage of protected land is low and growth rates outside protected areas are suppressed by anthropogenic mortality (Durant *et al.* 2017). In Botswana and Namibia, Cheetahs predominantly occur outside protected areas where they face a high risk of anthropogenic mortality, herewith making the species vulnerable to rapid population declines (Durant *et al.* 2017). With the global Cheetah population facing increasing levels of anthropogenic threats and associated declines in distribution and numbers (Durant *et al.* 2017), it would be advisable to, in addition to inclusion of Zimbabwe's vulnerable remaining Cheetah population, take a proactive approach and include the world's key Cheetah populations in Botswana and Namibia on CMS Appendix I, to ensure a concerted effort to conserve Cheetah and Cheetah habitat.

Human-cheetah conflict over (perceived) livestock and farmed game depredation is a main threat to Cheetah survival, particularly so in Botswana and Namibia. Removal of problem Cheetahs does not necessarily result in a (perceived) decrease in depredation (Boast *et al.* 2015), and it is widely believed that human-wildlife conflict should be mitigated by promoting co-existence (Winterbach *et al.* 2013, Boast *et al.* 2018). Co-existence is promoted by reducing the costs but also by improving the benefits of living with carnivores (Lindsey *et al.* 2013; Dickman *et al.* 2018; Durant *et al.* 2022b). Reducing the costs of living with Cheetah can usually be achieved by reducing livestock depredation through improved husbandry practices and by securing sufficient natural prey base (Winterbach *et al.* 2013, 2014, Boast *et al.* 2016, Dickman *et al.* 2018). For game farmers especially, there is also a need to provide benefits to outweigh (perceived) costs of living with Cheetahs, for example through wildlife tourism or trophy hunting (Dickman *et al.* 2018).

Although benefits from living with wildlife are ideally realised through wildlife tourism, trophy hunting is less sensitive to political instability and can attract clients to areas that are too remote and undeveloped to be successful wildlife tourism destinations (Lindsey *et al.* 2006). Provided trophy hunting is sustainable and properly managed, this form of wildlife utilisation can assist conservation by creating economic incentives for the management and conservation of the target species and its habitat at population level, as well as revenue to support local livelihoods (IUCN SSC 2012b).

In Namibia and Zimbabwe, attitudes towards Cheetah are more positive on farms where farmers directly benefit from the presence of Cheetah through wildlife tourism or trophy hunting (Rust and Marker 2013, van der Meer 2018). A ban on trophy hunting of Cheetah could undermine support for Cheetah conservation, particularly in Namibia (see also Angula *et al.* 2018). In addition, there is a need for Cheetah offtake to be transparent to allow for monitoring, evaluation and regulation with the aim to sustainably utilise Cheetah. A ban on trophy hunting could result in an increase of unmonitored illegal offtake. Although offtake should be revaluated based on current Cheetah population estimates, at this point in time, the benefits of a complete ban on trophy hunting of Cheetah in Namibia and Zimbabwe is unlikely to outweigh the costs related to the loss of stakeholder support for Cheetah conservation and possible increase of unmonitored illegal offtake.

Recommendation

Land use change, habitat loss and fragmentation, human-cheetah conflict, depleting prey base and illegal trade are considered the main threats to the Cheetah populations of Botswana, Namibia and Zimbabwe. These threats are universal: habitat loss and fragmentation, conflict with livestock and game farmers, loss of prey from overhunting and bushmeat harvesting and illegal trade have also been identified as the main threats to the global Cheetah population (Durant *et al.* 2022a). Climate change is expected to further exacerbate these threats. Temperature increase driven by global warming is likely to alter Cheetah habitat, reduce water

and prey availability and increase competition for available resources herewith intensifying human-cheetah conflict (Nghikembua *et al.* 2018, Durant *et al.* 2022a). With the species facing a high risk of qualifying as 'Endangered' in the near future (Durant *et al.* 2015), there is an urgent need for a unified approach to conserve Cheetah and Cheetah habitat. **We therefore recommend adding the Cheetah populations of Botswana, Namibia and Zimbabwe to CMS Appendix I, arguing for the application of the exception under Article III(5)(b) to the prohibition of taking**.

At present, we assess that the conservation benefits of legal Cheetah offtake under CITES outweigh the costs related to the loss of stakeholder support for Cheetah conservation and possible increase in unmonitored illegal offtake if legal offtake would be banned. As a tool to create an economic incentive to conserve Cheetah and Cheetah habitat, **we therefore recommend the revaluation of Cheetah CITES-based quotas to allow for sustainable legal offtake in Namibia and Zimbabwe.** This offtake should only take place in areas where Cheetah population estimates are based on sound scientific methods, and where offtake is associated with positive conservation outcomes for cheetah. All offtake needs to be well monitored, regulated and evaluated, and Parties need to provide monitoring that demonstrates that offtakes are sustainable. We suggest that every three to five years, the CITES quota for the live capture and trophy hunting of Cheetah is evaluated and adjusted based on the most recent information on Cheetah range and population size.

Experts' considerations and recommendations for the listing of the Cheetah populations of Botswana, Namibia and Zimbabwe on CMS Appendix II

CMS Appendix II

As per CMS Article IV paragraph 1, CMS Appendix II lists migratory species that have an unfavourable conservation status, and that require international agreements for their conservation and management, as well as those that have a conservation status that would significantly benefit from the international co-operation that could be achieved by an international agreement. CMS Article IV paragraphs 3 and 4 provide that 'Parties that are Range States of migratory species listed on Appendix II shall endeavour to conclude Agreements where these should benefit the species and should give priority to those species in an unfavourable conservation status', and that 'Parties are encouraged to take action with a view to concluding agreements for any population or any geographically separate part of the population of any species or lower taxon of wild animals, members of which periodically cross one or more national jurisdiction boundaries'.

Considerations

Based on declines in range and numbers, the Cheetah populations of Namibia and Zimbabwe would qualify as 'Endangered' under IUCN Red List Criteria. In addition, because most of these populations are found outside protected areas where Cheetahs face high levels of anthropogenic mortality, the Cheetah populations of Botswana and Namibia are vulnerable to rapid population declines and therefore face a high extinction risk. The conservation status of the Cheetah populations of Botswana, Namibia and Zimbabwe can thus be considered unfavourable.

The global Cheetah population is highly fragmented, with two remaining strongholds of more than 1,000 mature Cheetahs in Eastern and Southern Africa (Durant *et al.* 2017). Other than the IUCN SSC's Southern African Conservation Strategy for Cheetah and African Wild Dog, there are currently no regional strategies that specifically address the conservation needs of the Southern African Cheetah population. Although the SADC has indirectly addressed regional threats to Cheetah conservation through its protocol on wildlife conservation and law enforcement, regional biodiversity strategy, and programme for Transfrontier Conservation

Areas, no strategy exists to specifically support Cheetah conservation. Therefore, at the regional conservation strategy workshop in 2015, incorporation of the revised IUCN SSC's Southern African Conservation Strategy for Cheetah and African Wild Dog into the SADC regional conservation plans was identified as an opportunity to strengthen international policies and protocols to support Cheetah (and Wild Dog) conservation in Southern Africa (IUCN SSC 2015). Despite this wish, until now, such an incorporation has not been realized.

Although the conservation threats faced by the Cheetah population in Southern Africa, overlap with global conservation threats, the framework in which some of these threats operate shows regional variation. For example, the drivers of illegal trade in Cheetahs show regional differences. Although illegal trade in Cheetah skins does take place in Eastern Africa, the illegal trade in Cheetahs in this region is mostly driven by the demand for exotic pets in the Middle East and predominantly entails smuggling of live Cheetah cubs (CITES 2014, Tricorache *et al.* 2018). In North, West and Central Africa, illegal trade in Cheetahs is related to a widespread illegal market for big cat skins and parts which are used for traditional ceremonies and medicinal purposes respectively (CITES 2014, Tricorache *et al.* 2018). In Southern Africa, illegal trade in Cheetahs might be linked to supplying South Africa, which is the world's largest exporter of captive-bred Cheetahs, with wild-caught Cheetahs, which are subsequently illegally exported as captive-bred (CITES 2014, Tricorache et al. 2018). In addition to regional differences in drivers of illegal Cheetah trade, there are also differences in conservation approach. The Transfrontier Conservation Area concept, which seeks to improve connectivity between wildlife areas, is firmly embedded in conservation planning in Southern Africa (see also SADC 2013), while this is less so in Eastern, Central and Western Africa (EU 2014).

Most (94%) of the ca. 4,297 Cheetahs in the Southern African Cheetah population are part of a single transboundary population stretching across Southern Angola, Botswana, South-Western Mozambique, Namibia, Northern South Africa, Southern Zambia, and South-Western Zimbabwe, with some additional isolated populations in central Angola, Mozambique, Zambia, and Zimbabwe (IUCN SSC 2015, Durant *et al.* 2015, Weise *et al.* 2017). Botswana's, Namibia's and, to a lesser extent, Zimbabwe's Cheetahs are at the core of the Southern African Cheetah population. All three national populations are considered part of the larger Southern African transboundary population and are included in several Transfrontier Conservation Initiatives in the region, most notably the Kavango-Zambezi TFCA. TFCA treaties between partner states aim to "facilitate and enhance the free movement of animals across international boundaries by joining fragmented wildlife habitats into a mosaic of protected areas and wildlife corridors through the provisioning of socio-economic benefits to stakeholders, and stakeholder involvement in planning, establishment, and management of TFCAs" (Peace Parks Foundation 2009). TFCA treaties do not specifically address the conservation needs of vulnerable species such as Cheetah.

Recommendation

The global Cheetah population is highly fragmented: the Southern African population is one of the two remaining strongholds, with at its core the Cheetah populations of Botswana and Namibia which represent 24% and 21% of the global Cheetah population respectively. This, in combination with regional differences in transboundary conservation and trade, hence the Southern African Cheetah population would benefit from a regional agreement between Range States which specifically addresses transboundary connectivity (e.g., through collaborative land use planning) and illegal trade in Cheetahs in relation to South Africa's export of captive bred Cheetahs. It is only under CMS Appendix II that Range States are encouraged to take action to conclude agreements for geographically separate parts of the population of any species which periodically crosses one or more national jurisdictional boundaries. If circumstances so warrant, a migratory species may be listed both on CMS Appendix I and CMS Appendix II (CMS Article IV paragraph 2). Therefore, **in addition to a CMS Appendix I listing of the global Cheetah population including the populations of Botswana, Namibia**

and Zimbabwe, we recommend an Appendix II listing of the Southern African Cheetah population which includes the Cheetah populations of Angola, Botswana, Namibia, Mozambique, South Africa, Zambia and Zimbabwe.

If such a split listing is considered unfavourable, we strongly recommend encouraging the Range States of the Southern African Cheetah population to address transboundary connectivity and illegal taking and trade in Cheetahs through cooperation under the Joint CITES-CMS African Carnivores Initiative (ACI). The ACI was established in 2017 to enhance the conservation, restoration and management of the African Wild Dog, Cheetah, Leopard and Lion, as well as their habitats and prey, by strengthening coordination and cooperation across the species' ranges in Africa, and build more coherence in the work that CMS, CITES, IUCN and partner organizations and stakeholders devote to the four species (Resolution 13.4: Joint CITES-CMS African Carnivore Initiative) (CMS 2020). The ACI promotes and facilitates activities that contribute to African Wild Dog, Cheetah, Leopard and Lion conservation, including conservation and connectivity of habitats.

Conclusion

The global Cheetah population is currently assessed as 'Vulnerable' but faces a high risk of qualifying as 'Endangered' in the near future (Durant *et al.* 2017). Consequently, with the exception of the Cheetah populations of Botswana, Namibia and Zimbabwe, the Cheetah is listed on CMS Appendix I. The Cheetah populations of Botswana, Namibia and, to a lesser extent, Zimbabwe, make up a large proportion of the global Cheetah population (> 45%). Furthermore, the Cheetah populations of Namibia and Zimbabwe have faced declines up to the point where these populations qualify as 'Endangered' under IUCN Red List criteria (IUCN SSC 2012c). The main threats to Cheetah conservation in Botswana, Namibia and Zimbabwe are similar to global conservation threats, which are expected to be further exacerbated by climate change. There is therefore an urgent need for a unified approach to conserve the global Cheetah population and **we recommend that:**

The Cheetah populations of Botswana, Namibia and Zimbabwe be listed on CMS Appendix I.

In 1992, Botswana, Namibia and Zimbabwe were granted five, 150, and 50 CITES tags respectively for the export of live Cheetah or hunting trophies (CITES 1992). Since 1992, the Cheetah populations of Namibia and Zimbabwe have decreased considerably and there is a need to adjust the quota accordingly. Considering the precarious conservation status of Cheetah, it would be advisable to evaluate and, where necessary, adjust the CITES quota for the live capture and trophy hunting of Cheetah more regularly (every 3-5 years). At present, we assess that the conservation benefits of legal Cheetah offtake under CITES outweigh the costs related to the loss of stakeholder support for Cheetah conservation and possible increase of unmonitored illegal offtake if legal offtake in Namibia and Zimbabwe would be banned.

We therefore recommend to:

Revaluate CITES-based Cheetah quotas to allow for sustainable legal offtake in Namibia and Zimbabwe, in areas where Cheetah population estimates are based on sound scientific methods and Parties provide monitoring that demonstrates that offtakes are sustainable.

The global Cheetah population is highly fragmented, with two remaining strongholds in Southern and Eastern Africa. There are considerable regional differences in transboundary conservation and drivers of illegal Cheetah trade, hence the Southern African Cheetah

population would benefit from a stronger collaboration between range states to conserve Cheetah and Cheetah habitat.

We therefore recommend to, in addition to a CMS Appendix I listing of the global Cheetah population (including the populations of Botswana, Namibia and Zimbabwe):

List the Southern African Cheetah population on CMS Appendix II to facilitate a Cheetah conservation agreement between this population's range states (Angola, Botswana, Namibia, Mozambique, South Africa, Zambia and Zimbabwe) with a focus on, but not exclusive to, illegal taking and trade, and transboundary movement of Cheetahs.

The Cheetah

Taxonomy

Formerly included in the subfamily Acinonychinae, which is a monophyletic group, (e.g., Wozencraft 1993), molecular evidence now clusters the Cheetah with the Puma (*Puma concolor*) and Jaguarundi (*Herpailurus yagouaroundi*) in the tribe Acinonychini, diverging some 6.9 million years ago (Johnson *et al.* 2006, O'Brien and Johnson 2007). The English name is derived from the Hindi Chita, meaning 'spotted one'. The generic name *Acinonyx* is a reference to its semi-retractile claws (Caro 1994).

Acinonyx jubatus – (Schreber 1775)

Animalia-Chordata-Mammalia-Felidae-Acinonyx-jubatus

Although further genetic analyses are needed to assess the validity of the existence of sub-species, currently four subspecies are recognized (Kitchener *et al*. 2017):

- *Acinonyx jubatus jubatus* (Schreber 1775) distributed across Southern and Eastern Africa. This subspecies combines two subspecies previously documented by Smithers (1975): *Acinonyx jubatus jubatus* (Schreber 1775) and *Acinonyx jubatus raineyi* (Heller 1913);
- *Acinonyx jubatus soemmeringii* (Fitzinger 1885) distributed across North-Eastern Africa;
- *Acinonyx jubatus venaticus* (Griffith 1821) currently only surviving in Iran; and
- *Acinonyx jubatus hecki* (Hilzheimer 1913) distributed across Western and North-Western Africa.

The countries of Botswana, Namibia and Zimbabwe, which are the focus of this report, hold the Southern African subspecies *A. j. jubatus*.

Cheetah ecology and habitat use

The Cheetah *(Acinonyx jubatus)* has a social organization that is unique among felids. Male Cheetahs are solitary or live in coalitions of two to four males, and either hold territories or remain 'floating' in large overlapping undefended home ranges (Caro 1994, Melzheimer *et al.* 2018, 2020). Territories are not adjacent to each other but spaced out in the landscape with an average distance of ca. 20 km (Caro 1994, Melzheimer *et al.* 2020). Females live alone or with dependent cubs in large overlapping home ranges, which encompass several male territories and overlap with home ranges of floating males (Caro 1994). Cheetahs give birth at two years of age to an average of 3-4 cubs, after a three-month gestation period (Caro 1994). Reproductive success of females increases with age until they are 7 years old, and then decreases again (Pettorelli and Durant 2007). When cubs are ca. 18 months old, they leave their mother, after which litter mates stay together for a further 6 months on average (Caro 1994). Sisters leave their siblings when they become sexually mature at 23-27 months of age, brothers generally stay together for life in a male coalition (Caro 1994). Cub survival from birth to independence varies from 4.8% (Laurenson 1994) to 35.7% (Mills and Mills 2014), depending on the density of competing large carnivores, prey availability and cover (Durant 2000a, Mills and Mills 2014). Wild Cheetahs can live up to 12-14 years; however, on average they reach 5-7 years old from adulthood (Caro 1994, Durant *et al.* 2004). Predation by larger carnivores and competition between Cheetah males seem to be the main causes of natural mortality (Caro 1994, Durant *et al.* 2004). In human dominated landscapes adult mortality is predominantly caused by human persecution (Marker *et al.* 2003a). In some areas, particularly where fast roads pass through protected areas, Cheetahs are killed in traffic collisions (Durant *et al.* 2022a).

In Africa, Cheetahs are found in a wide range of habitats and ecoregions, varying from dry forest and thick scrub to grassland and hyper arid deserts (IUCN SSC 2007, Durant *et al.* 2017). Cheetahs select home ranges based on prey availability and vegetation characteristics (Caro 1994, Broomhall *et al.* 2003, Marker *et al.* 2008a) and there is great variability in territoriality and the sizes of territories and home ranges across ecosystems. In Serengeti National Park in Tanzania, average size of male territories is ca. 48 km^2, with home ranges of floaters covering ca. 777 km^2 (Caro 1994), while in East-Central Namibia, territories are ca. 379 km^2 and home ranges of floaters ca. 1,595 km^2 (Melzheimer *et al.* 2018). Average home range size for females varies from 650 km^2 in East-Central Namibia (Melzheimer *et al.* 2020) to 833 km^2 in Serengeti National Park (Caro 1994) and 1,836 km^2 in North-Central Namibia (Marker *et al.* 2008a). Cheetahs are habitat generalists that are able to successfully hunt in open grassland and a range of bush, scrub and woodland habitats (Mills *et al.* 2004, Bissett and Bernard 2007, Wilson *et al.* 2013). The species rarely scavenges and generally predates on wild prey within a body mass range of 23-56 kg (Hayward *et al.* 2006). Although Cheetahs take a wide variety of prey, they show a significant preference for small to mid-sized ungulates such as impala *(Aepyceros melampus)*, springbok *(Antidorcas marsupialis)*, Thomson's gazelles *(Gazella thomsoni)*, Grant's gazelles *(Gazella granti)* and blesbok *(Damaliscus dorcas phillipsi)* (Hayward *et al.* 2006). Cheetahs are usually primarily active during the day but have been observed to hunt during (moonlit) nights (Cozzi *et al.* 2012, Wilson *et al.* 2013). However, in some areas Cheetahs have been reported as being predominantly nocturnal, including on South African farmlands and the Sahara (Marnewick *et al.* 2006, Belbachir *et al.* 2015), which indicates some plasticity in this aspect of their behaviour perhaps in response to lower nocturnal competitor densities or high levels of diurnal human activity.

Cheetahs have low competitive ability and suffer from competition with lion *(Panthera leo)*, leopard *(Panthera pardus)* and spotted hyaena *(Crocuta crocuta)* (Caro 1994, Durant 2000b, Mills *et al.* 2004, Hunter *et al.* 2007). Predation by these larger carnivores is the main cause of Cheetah cub mortality (Laurenson 1994, Mills and Mills 2014). Especially within the first four months after birth, cub mortality due to predation can be as high as 56.9-88.9% (Laurenson 1994, Mills *et al.* 2004), and reproductive success of Cheetah females has been found to decrease with an increase in lion and spotted hyaena densities (Durant 2000a). Furthermore, between 3.3% and 13.1% of the Cheetah's kills are stolen by lions and spotted hyaenas (Mills *et al.* 2004, Bissett and Bernard 2007, Hunter *et al.* 2007), the likelihood of a kill being stolen seems higher in open habitats (Mills *et al.* 2004, Bissett and Bernard 2007). Despite these risks, Cheetahs have been found to utilize areas with relatively high lion densities (Swanson *et al.* 2014) and do not consistently avoid areas with a high long-term risk of encountering lions and spotted hyaenas (Durant 1998, Broekhuis *et al.* 2013). Cheetah home ranges have been found to overlap with home ranges of lion and leopard (Vanak *et al.* 2013). To avoid encounters with larger competitors, Cheetahs have developed several behavioural adaptations: they minimize overlap in their activity pattern with lion, leopard and spotted hyaena (Cozzi *et al.* 2012), show fine scaled spatial avoidance of these larger predators (Durant 1998, 2000b, Broekhuis *et al.* 2013, Vanak *et al.* 2013) and elevated levels of vigilance at kill sites (Hunter *et al.* 2007).

Population numbers, distribution and threats

Cheetahs have vanished from most of their historic range across Africa and Asia and now occur in only 9% of their past distributional range (Fig. 2a, b) (Durant *et al.* 2017). The global Cheetah population is estimated at ca. 6,517 mature individuals (7,100 adult and adolescent animals) covering 3,100,000 km^2. This Cheetah population is highly fragmented into 33 subpopulations, only two of which have an estimated size of more than 1,000 mature individuals (Durant *et al.* 2017). In Asia, the Cheetah has been extirpated from nearly all of its range (Fig. 2b) (Durant *et al.* 2017). In Africa, the Cheetah has shown a particularly steep decline across Western Central and Northern Africa (IUCN SSC 2012a, Durant *et al.* 2017, Brugiere *et al.* 2015) with strongholds remaining in Eastern and Southern Africa (Fig. 2a) (Durant *et al.* 2017). Most (94%) of the tentatively estimated 4,297 Cheetahs in Southern Africa are part of a single transboundary population stretching across Southern Angola, Botswana,

South-Western Mozambique, Namibia, Northern-South Africa, Southern Zambia and South-Western Zimbabwe, with some additional isolated populations in Central Angola, Mozambique, Zambia, and Zimbabwe (IUCN SSC 2015, Durant *et al.* 2015, Weise *et al.* 2017).

The global Cheetah population faces multiple threats, including increased pressures from habitat loss and fragmentation; widespread human-wildlife conflict; prey loss resulting from overhunting and bushmeat harvesting; and illegal trade (IUCN SSC 2007, 2012a, 2015). Most of the world's known Cheetah range (77%) and Cheetah population (67%) is found on unprotected land where Cheetahs are particularly vulnerable to anthropogenic pressures (Fig. 2a, b) (Durant *et al.* 2017). In addition, protected areas (PAs) are usually not large enough to maintain viable populations of Cheetahs (Durant *et al.* 2017) and wide-ranging carnivores like Cheetahs frequently come into conflict with people as soon as they range across the borders of PAs (Woodroffe and Ginsberg 2008). The human population in sub-Saharan Africa has increased from 220 million in 1950 to 800 million at the turn of the century and is expected to reach 2.1 billion by 2050 (EU 2014). This human population increase is associated with habitat loss and fragmentation as new land is claimed for subsistence and commercial agriculture, and mining (EU 2014). The erection of game fences further fragments existing habitats (EU 2014). In addition, extreme poverty in rural areas results in overexploitation of wildlife and other natural resources, and high levels of human-wildlife conflict (EU 2014). As a result, wildlife is increasingly confined to isolated patches of protected habitat (EU 2014). A sensitivity analysis for the Cheetah showed that population growth rates within PAs must be very high if they are to compensate for declines outside PAs (Durant *et al.* 2017). However, high levels of predation from larger predators (Laurenson *et al.* 1994, Durant *et al.* 2004) and limitations in prey availability usually prevent such high Cheetah growth rates (Durant *et al.* 2017).

Acinonyx jubatus is currently listed as 'Vulnerable' by the International Union for the Conservation of Nature (Durant *et al.* 2022a). However, population projections show that if Cheetahs outside PAs are subject to high levels of threat, then the global Cheetah population may decline by more than 50% over the next 15 years, or three Cheetah generations, and thus the Cheetah may be close to qualifying as 'Endangered' (Durant *et al.* 2017). The subspecies *Acinonyx jubatus hecki* and *Acinonyx jubatus venaticus* are both classified as 'Critically Endangered' (Belbachir 2008, Jowkar *et al.* 2008).

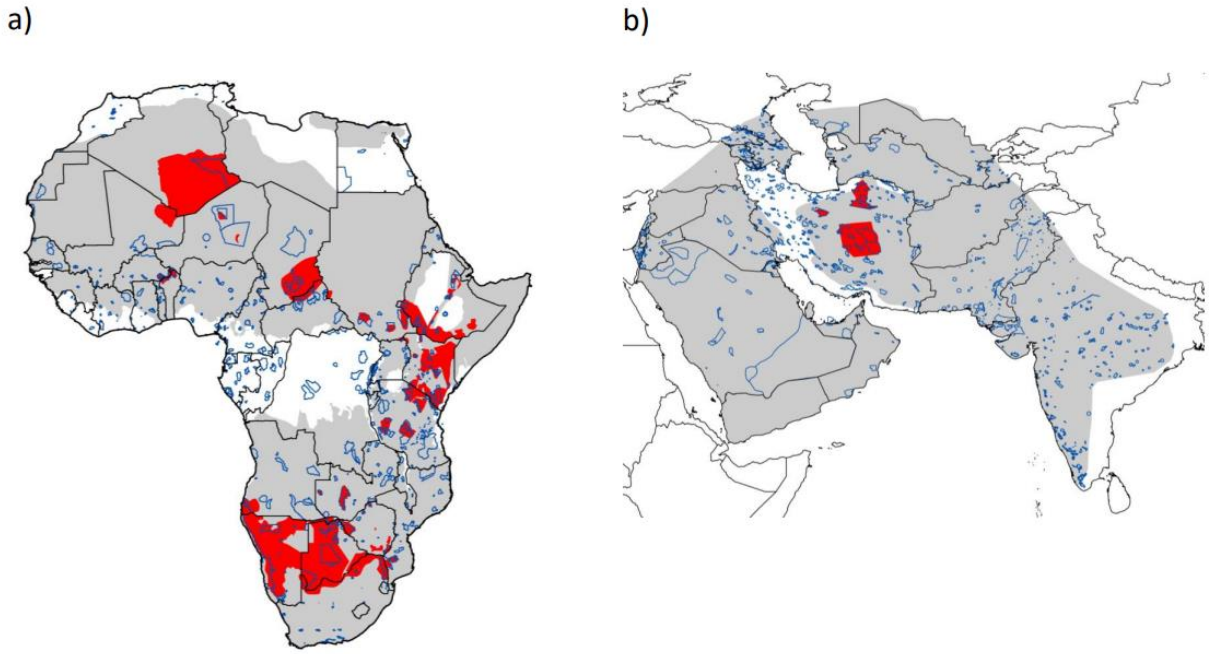

Figure 2. Known Cheetah distribution in (a) Africa and (b) Asia. Gray shading denotes historical range, and red shading shows the range where Cheetah is known to be resident. Boundaries of PAs under IUCN categories I–IV are marked in blue (copied from Durant *et al.* 2017)

Cheetah *(Acinonyx jubatus)* population status and distribution Botswana

Background

Botswana covers an area of 582,000 km^2 and has a growing human population of about 2.3 million people mostly concentrated in large cities, towns or villages in the Eastern part of the country (Statistics Botswana 2014). Roughly 40% of the country's land area is protected for wildlife conservation in some way: with 17% of this land comprising of national parks and game reserves and 23% being classified as Wildlife Management Areas (WMAs) - dual purpose land that allows for limited human settlements but are designated primarily for the purpose of wildlife conservation and act as buffer zones and corridors to support the natural ecological functions of game reserves and national parks (Statistics Botswana 2013a). Most of the remainder of the country is used for livestock and crop farming on communal, leasehold or freehold land (National Resource Services 2002). The national cattle herd was once larger than the human population; however, in 2017, it was recorded at 1,153 000 animals (Statistics Botswana 2017). Forty-six percent of rural households in Botswana rely on income derived from agriculture (Statistics Botswana 2013b). A large portion of the country is taken up by the largely flat, sandy, semi-arid Kalahari region where annual rainfall ranges from 282 mm per year in the Southwest of the country (Tsabong average 2002-2012) to 612 mm in the Northeast (Kasane average 2002-2012, Statistics Botswana 2013a).

Current population estimate and range

The Cheetah is widespread at low densities throughout Botswana (Botswana National Predator Strategy 2002, Klein 2007, IUCN SSC 2015, DWNP 2018). The country hosts 24% of the global Cheetah population, comprising an estimated 1,694 individuals (adults and independent adolescents) (IUCN SSC 2015). Cheetahs are widespread across Botswana (Fig. 3) and relatively abundant; with their current resident range covering ca. 459,567 km^2 (ca. 79% of the country). However, ca. 76.9% of the national Cheetah population survives outside of formally protected areas on communal and commercial farmlands. Botswana's Cheetah population is connected to Cheetah populations in all of Botswana's neighbouring countries (Namibia, South Africa and Zimbabwe) and therefore forms a critical component and potential source for the entire Southern African population. Fragmentation of Botswana's Cheetah population and the Southern African population at large could result in genetic inbreeding, which could further threaten the viability of the species. Therefore, successful conservation of a viable, wild Cheetah population in Botswana and further afield in Southern Africa is dependent on people living alongside Cheetahs across the vast swathes of unprotected land in between national parks and reserves.

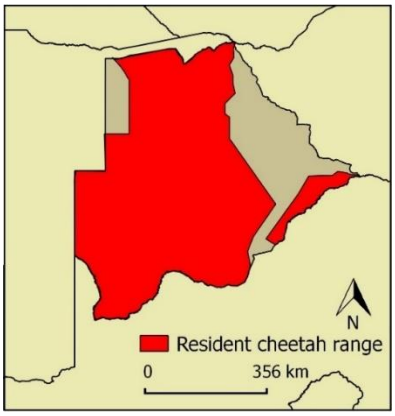

Figure 3. Current resident Cheetah range in Botswana (Adapted from Durant *et al.* 2017)

Population and distribution trends

One of the earliest attempts to estimate Cheetah population size originates from Meyers (1975), who made extensive stakeholder inquiries in 38 sub-Saharan African countries to evaluate the status of the Cheetah. Although he felt such a figure was inclining toward the optimistic, Meyers estimated Botswana's Cheetah population at ca. 2,000 individuals (range 1 000-3 000) (Meyers 1975).

In 1992, Botswana's Cheetah population was estimated to range between 1,000-2,500 individuals (CITES 1992) (Fig. 4). Several assessments on national Cheetah populations took place over recent years through spoor and camera trap surveys in key habitats, then extrapolated for similar areas that were data-deficient (Fig. 4) (Botswana National Predator Strategy 2002, Klein 2007, IUCN SSC 2015, DWNP 2018).

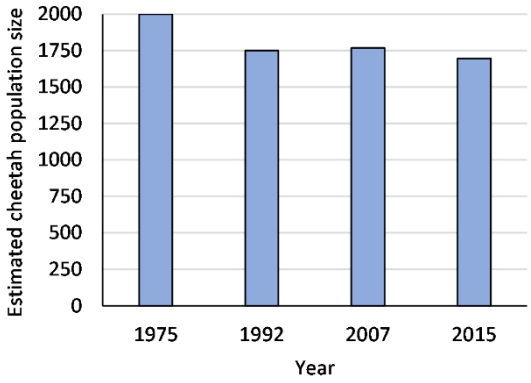

Figure 4. Overview of estimates of Cheetah population size for Botswana (Data source: Meyers 1975, CITES 1992, Klein 2007, IUCN SSC 2015).

In both 2009 and 2015, assessments and estimations of Cheetah range status for Botswana were undertaken through extensive consultation with wildlife practitioners by the CCI (previously the RWCP), based on spoor and camera trap survey data, DWNP Problem Animal Control data (livestock predation incidents reported for government compensation payment) and direct sightings. Updates from this group were added in 2018, particularly in the Eastern part of the country, and the Northwest corner (Fig. 5). The main changes between 2009 and 2018 were to the area in the East of the country, including communal farming lands in the North of the Central district, and along the main A1 highway North of the capital, Gaborone, which were previously designated as possible and resident Cheetah range (Fig. 5). This area in the East of Botswana was reclassified in 2018 as some resident, unknown and connecting Cheetah range, as well as extirpated for some areas with high human population densities around the major cities of Francistown and Gaborone (Fig. 5) (DWNP 2018).

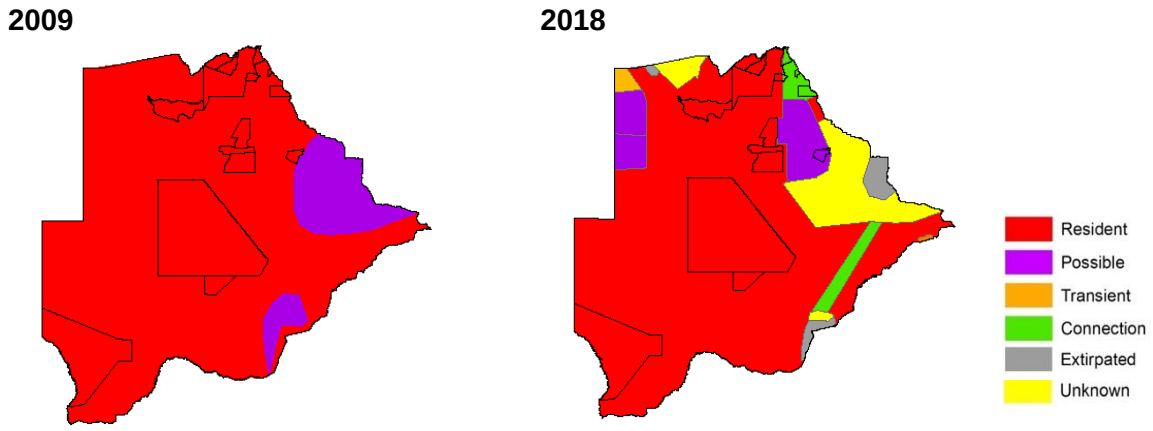

Figure 5. Cheetah range in Botswana in 2009 (on the left) compared to 2018 (on the right) (copied from DWNP 2018).

Most of the loss in Cheetah range was in the Northwest and Eastern parts of the country, with 1.8% of the country being newly designated as extirpated Cheetah range (Table 1). There have been small increases in various other range categories, including connecting, transient and unknown range (Table 1). It is likely that the decrease in resident range largely represents better knowledge rather than a real loss of 11.4% of Cheetah range (DWNP 2018). A recent national study by Van der Weyde *et al.* (2021) based on 31 reliable datasets showed that Cheetah occupancy declined between 2010-2016 in the North of Botswana (Van der Weyde *et al.* 2021) but remained stable for the rest of the country.

Table 1. Range description of Cheetahs in Botswana (2009-2018) (Copied from DWNP 2018).

	Distribution of national Cheetah range (%)		
Range type[1]	**2009**	**2018**	**% Change**
Resident	90.4	79.0	-11.4
Possible resident	9.6	6.7	-2.9
Connecting	-	2.7	+2.7
Transient (Marginal)	-	0.5	+0.5
Recoverable	-	-	-
Extirpated	-	1.8	+1.8
Unknown	-	9.3	+9.3
Total	**100%**	**100%**	

National population estimates are 1,768 Cheetahs in total in 2007 (Klein 2007) and 1,694 adult and independent adolescents in 2015 (IUCN SSC 2015). Density estimates from the various studies are provided in Table 2.

Table 2. Summary of Cheetah density estimates per 100 km^2 per region in Botswana.

Region	Density (cheetahs / 100 km^2)	Source
Ghanzi District WMAs (GH10, GH11)	0.17	Gielen 2022 (*unpublished data*)
Pandamatenga (CH9, CH10)	0.35	Extracted from IUCN/SSN 2015
Northern Tuli Game Reserve	0.61	Brassine 2014
Ghanzi Agricultural Block (GH1)	0.21	Boast and Houser 2012
Central Kalahari Game Reserve & Khutse Game Reserve	0.25	Maude 2014 (*unpublished data*)
Kgalagadi Transfrontier Park & Western Kalahari Conservation Corridor (KD1, KD2, KD4, KD5, KD12)	0.9	Keeping 2014
Okavango	0.35	Winterbach 2003
Dry North	0.36	Winterbach 2003
Kwando / Chobe	0.35	Winterbach 2003
Makgadikgadi Pans (CT9)	0.20	Ngaka and Maude 2014
Central Agricultural	0.09	Winterbach 2003
Ngamiland Agricultural	0.35	Winterbach 2003
Kgalagadi Agricultural	0.35	Winterbach 2003
Kgalagadi WMA's	0.41	Winterbach 2003

National policy and legislation

In Botswana, the Cheetah has historically always been classified as Royal game or conserved animals under the different game laws in Botswana and has therefore been protected from hunting since 1968 (Klein 2007). Botswana's wildlife is protected through powers derived from the Wildlife Conservation and National Parks Act (Act No. 28 of 1992). In this Act, Cheetahs are recognised as protected species, stipulated as follows: 'Predators in this category may be hunted or captured only under and in accordance with the terms and conditions set out in the Directors permit except in defence of human life or where such an animal caused, is causing or threatens to cause damage to any livestock, crops, water installation or fence anywhere outside a National Park or Game Reserve. Animals killed under the latter two conditions must be reported and the trophies delivered to the nearest wildlife officer or police station within seven days'. This law is officially superseded by a more recent Statutory Instrument, the Wildlife Act's Killing Suspension Order for Cheetahs (DWNP 2005) which prevents the killing of Cheetahs for any reason, with fines of USD 85 or a 1-year prison sentence. However, it should be noted that due to remote areas, large distances and limited manpower, such laws are difficult to enforce. Fines for illegal possession of Cheetah specimen range between USD 79-972 with a 1-7-year prison sentence (SC66 Doc 32.5 Annex) (CITES 2015). A National Carnivore Coordinator within the Department of Wildlife and National Parks (DWNP) oversees all aspects of Cheetah conservation for the country.

The Botswana National Predator Strategy was developed in 2002 to ensure the long-term conservation of large carnivores in Botswana by securing viable populations in ways that gain enduring public support. In 2009, DWNP, under the guidance of the CCI (previously RWCP), developed a National Action Plan to guide conservation efforts for Cheetah and wild dogs specifically. While this plan served to inform conservation activities across the country, it was never ratified by the Government. Assisted by the CCI, a revised and updated National Conservation Action Plan for Cheetahs and wild dogs was completed by DWNP in 2018. The goal and vision of this plan is to 'secure viable Cheetah and wild dog populations across different land uses that successfully coexist with, and are valued by, the people of Botswana and to improve the status of Cheetahs and wild dogs and maintain viable populations' (DWNP 2018).

As large carnivores face common threats, conservation strategies can overlap between species. To streamline conservation and research endeavours and to improve communications between

conservation practitioners and Government officials, the Botswana Carnivore Forum was founded in 2015 as a collaborative group of researchers, conservationists, individuals, and government representatives. The Botswana Carnivore Forum works together to develop and implement solutions to benefit wildlife conservation to promote carnivore coexistence country wide.

The CITES quota for exporting live specimens and trophies (i.e., skins and skulls) from Botswana has been set at five individuals for Cheetah in 2022 (CITES 2022). However, based on the exporter reported quantities as reported in the CITES trade database (trade.cites.org), Botswana has not exported any live Cheetahs or hunting trophies in the past decade.

Cheetah *(Acinonyx jubatus)* population status and distribution Namibia

Background

Namibia is an arid to semi-arid country with vast open landscapes stretching over approx. 850,000 km². Its population is estimated at around 2.5 million people, resulting in an average density of 3.2 people/km², one of the lowest population densities in the world. More than 42% of Namibia's surface is under some sort of conservation management, including National Parks, Communal Conservancies and freehold farms within 'Commercial Conservancies'. Consumptive utilisation, including trophy hunting, plays a major role in the management of the latter two.

Cheetahs are widely distributed throughout Namibia, from the evergreen woodlands of the Zambezi region to the super-arid areas of the Namib Desert (Portas *et al.* 2017). Highest densities have been reported for the central parts of the country (Marker-Kraus *et al.* 1996, Marker *et al.* 2003b, Portas *et al*. 2017). Here, the greatest proportion of the Namibian Cheetah population occurs on commercial farmlands, where the Cheetah's largest natural competitors (lion and spotted hyena) are extinct or at low densities. In the past years, several cases of leopards killing Cheetahs have been reported in central Namibia (Krengel and Wachter pers. obs. 2010, Marker pers. obs. 2016), which may indicate an increase in natural competitive pressure on Cheetahs outside PAs.

In Namibia, water and prey are abundant throughout the year, but a large number of Cheetahs are killed every year due to human-wildlife conflict. Conflict with humans, fragmentation derived from the erection of game fences, and intensive farm management practices such as predator and prey removal and high densities of livestock threaten the Cheetah's survival (Marker *et al.* 1996, IUCN SSC 2015). Considering the spatial organisation of Cheetahs (Melzheimer *et al.* 2020), a small number of farmers killing a large number of Cheetahs can have a huge impact on the population and affect conservation efforts across a wide area (Weise *et al.* 2017).

Within the tourism and wildlife sector, the Cheetah plays a key role for marketing as a unique selling point for Namibia. It is widely known that Namibia plays a very important role in the world to ensure the long-term survival of the species.

Current population estimate and range

Namibia hosts 21% of the global Cheetah population, comprising ca. 1,500 adult and adolescent individuals. This estimate is based on an extensive Namibian Cheetah survey carried out in collaboration between the Ministry of Environment, Forestry and Tourism of Namibia (MEFT) and the Leibniz Institute for Zoo and Wildlife Research. The survey is still ongoing (status; June 2022), but methods and results are published in reports and fed into meta studies such as Weise *et al.* 2017, Durant *et al.* 2017, but also IUCN SSC 2015. In this approach, eight regions across Namibia were, and are, surveyed, covering a total of more than 100,000 km², using a spatial-mark-recapture approach based on movement data of GPS-tracked individuals. Data analyses took into account the spatial organisation of Cheetahs (Edwards *et al.* 2017, Melzheimer *et al.* 2018, Melzheimer *et al.* 2020), resulting in a set of very precise regional density estimates ranging from 0.1 to 1.1 Cheetahs/100 km² (Portas *et al.* 2017; see Table 3). Densities were lower than previously expected but range was larger than previously known. Cheetahs were found throughout all natural terrestrial habitats within Namibia, covering an area of ca. 506,970 km^2 (resident range; Fig 6).

Table 3. Cheetah densities across various regions of Namibia (Copied from Portas *et al.*, 2017).

Map ID[1]	Region	Habitat type	Density estimate (Cheetahs / 100 km²)
1	Kaokoland	Desert, stone and sand	0.1 - 0.25
2	Etosha Conservancy	Mopane woodland	0.4 - 0.6
3	East Central Namibia	Farmland, thornbush savannah	1.0 - 1.2
4	Khomas Highland	Semi-arid, bushland	0.1 - 0.3
5	Central Namib	Desert, sand	0.2 - 0.4
6	Southern Namib	Desert, sand and stone	0.2 - 0.4

[1]See Figure 6 for geographic location in Namibia

In summary, central Namibia –largely the Khomas, Omaheke, Otjozondjupa and Eastern parts of Erongo and Kunene Regions– has the highest Cheetah densities of the country (Marker *et al.* 2008b, Portas *et al.* 2017, Weise *et al.* 2017), whereas densities are lowest in the South and the Northwest of Namibia (IUCN SSC 2015, Portas *et al.* 2017). Over 80% of Namibia's Cheetah population occurs outside protected areas (Marker *et al.* 2018).

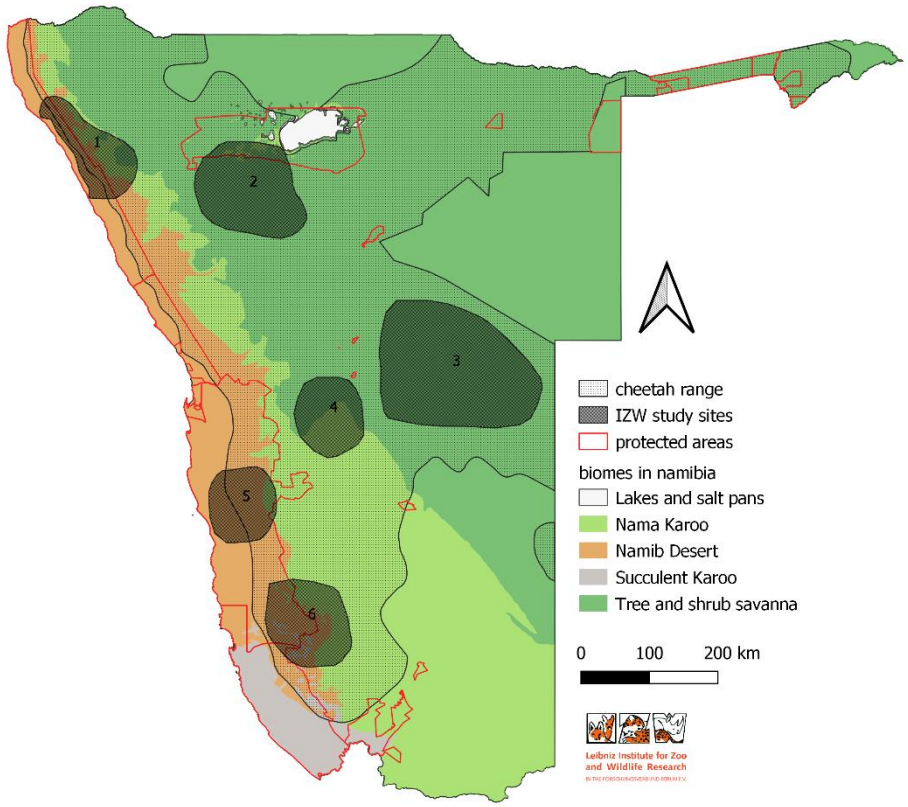

Figure 6. Current resident Cheetah range in Namibia, dark grey areas mark the study sites of the recent Namibian Cheetah survey (see also Table 3) (Data source: IZW)

Population and distribution trends

Previous population estimates for Namibia were vague and ranged from 1,500 to 8,000 Cheetahs (Myers 1975, Joubert and Mostert 1975, Morsbach 1987, Hanssen and Stander

2004, Purchase *et al.* 2007, MEFT 2013), with the latest estimate being ca. 1,498 adults and sub-adults (IUCN SSC 2015).

According to Meyers (1975), in 1975, Namibia's Cheetah population consisted of ca. 1,500 individuals (range 1,000-3,000) (Fig. 7). Meyers (1975) tended towards the lower figure, which was based on extrapolation of densities derived through discussion with stakeholders and offtake figures for Namibia's Cheetah control programme, however, he added 'it is of course possible that the total population exceeds 1,500, although it is hard to believe that the figure could be as high as 3,000'. In the same year, the Namibian Department of Nature Conservation (DNC), now the Ministry of Environment, Forestry and Tourism (MEFT), conducted a nationwide questionnaire survey of commercial farmers and estimated the Cheetah population to be 5,000-6,000 individuals (Fig. 7) (Nowell 1996). However, this number seems to be overestimated, possibly due to the inclusion of cubs (Nowell 1996). In addition, large home ranges of most Cheetahs (females and non-territorial males) lead to overestimation of Cheetah numbers as farmers might count the same individuals multiple times (Edwards *et al.* 2017). In the mid-1980s, the DNC conducted a radio-telemetry study on Cheetahs on freehold farmland East of Windhoek, where high levels of conflict with farmers were reported, and extrapolated the number of Cheetahs for the entire country to be 2,000 – 3,000 (Fig. 7) (Morsbach 1987). The survey indicated that the population was declining due to the high level of Cheetah removals by farmers. In 1992, a second nationwide questionnaire-based farm survey resulted in a population estimate of 4,688 Cheetahs (Fig. 7) (Nowell 1996). However, as in the first survey farmers were not specifically asked to only count adult Cheetahs (Nowell 1996) and may have double counted individuals (Edwards *et al.* 2017). An assessment done in the 1990s combined the information provided by a farm survey and research projects in Etosha National Park and the region formerly known as Bushmanland to obtain a maximum population of 2,905 adult and sub-adult Cheetahs (Fig. 7) (Nowell 1996).

In 2013, Namibia's Cheetah population was assumed at best increasing or at worst stable, while parts of the Cheetah range in the North and South of the country were reclassified as extirpated instead of transient or possible range (Fig. 8) (MEFT 2013). However, more recent data suggest a decrease in Cheetah numbers (Fig. 7). Within the last two decades, the country's Cheetah population seems to have declined by ca. 48% (Fig. 7). Although part of this decline can probably be attributed to methodological differences and historic overestimation, a negative population trend can be assumed. This assumption is supported by a decrease of conflict related legal offtake, as documented by MEFT, from an average annual removal of 827 Cheetahs between 1978 and 1985, to an annual average of 297 Cheetahs between 1986 and 1995, to an annual average offtake of 118 Cheetahs between 1998 and 2000 (Nowell 1996, Marker et al. 2003a). Nowadays, even livestock farmers are increasingly concerned about the status of Namibia's Cheetah population (*personal observations* J. Melzheimer). Compared to 2013, resident Cheetah range showed a decrease by ca. 74,508 km^2 (Fig. 8).

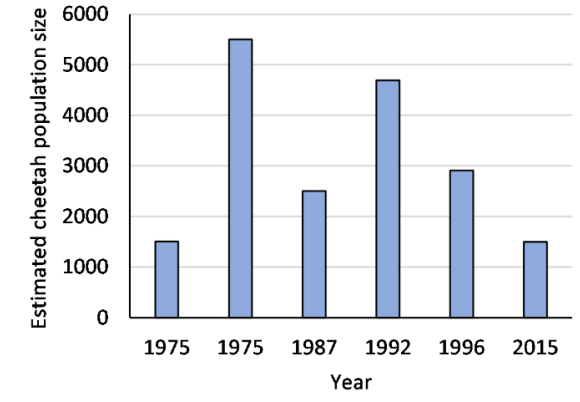

Figure 7. Overview of estimates of Cheetah population size for Namibia, the first 1975 estimate may have been underestimated, whereas the second 1975 and the 1992 estimates were probably overestimated (Data source: Meyers 1975, CITES 1992, Nowell 1996, IUCN SSC 2015).

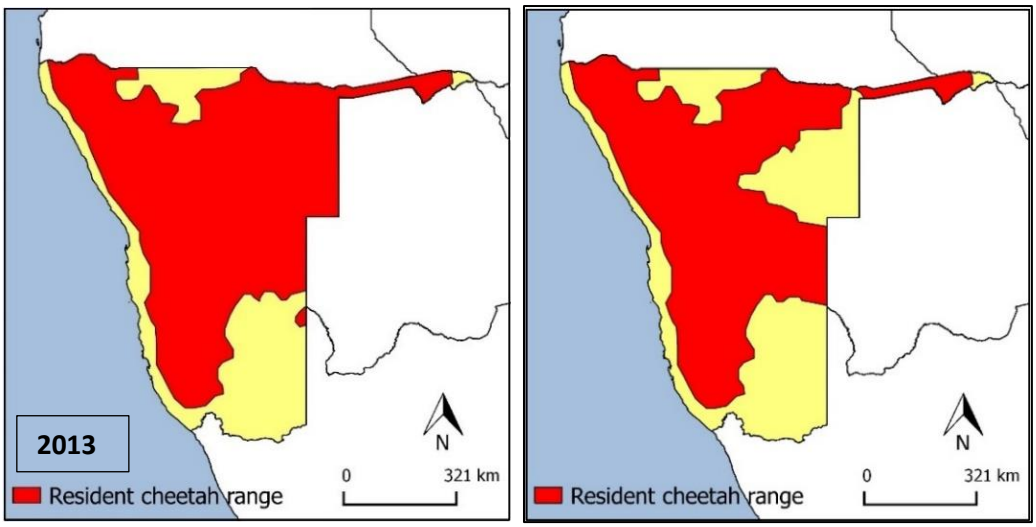

Figure 8. Resident Cheetah range in Namibia in 2013 as compared to 2017 (Adapted from: MEFT 2013, Durant *et al.* 2017).

National Policy and Legislation

The Cheetah is classified as 'protected' in Namibia according to the main body of legislation pertaining to wildlife, the Nature Conservation Ordinance of 1975. Removal is allowed if human life or livelihoods are affected (problem animals). According to Article 27.1, protected game species may not be hunted without a permit from MEFT. However, there is an important exception relevant to predators, and particularly the Cheetah [Article 27.5(a-c)]:

"(a) No provision contained in this section shall prohibit the owner or lessee of land or the occupier of communal land from killing protected game on such land in defence of a human life or to prevent a human being from being injured or protect the life of any livestock, poultry or domestic animal of such owner, lessee or occupier whilst the life of such livestock, poultry or domestic animal is actually being threatened.

(b) Any person who kills protected game in terms of the provision of this subsection shall report it in writing to the nearest nature conservator or at the nearest police office within ten days thereafter".

The minimum imprisonment for poaching, illegally trading or illegally possessing a Cheetah is twenty years, while the maximum fine is USD 15,052 (SC66 Doc 32.5 Annex) (CITES 2015). The Cheetah's protected status would appear to rule out trophy hunting, but in 1982 it was decided to allow trophy hunting of both Cheetah and leopard (also a protected species in Namibia) because of the wide extent of the livestock predation problem, and in the hope that an increase in the value of the Cheetah would encourage farmers to stop killing so many (C.J.V. Roché, Secretary Dept. Agriculture and Nature Conservation in litt. to R. Jachowski, Chief, Office of the Scientific Authority, U.S. Fish and Wildlife Service, 1983). The MEFT has discouraged the export of live Cheetahs from Namibia to reduce indiscriminate trapping, and consequently, trade in live Cheetahs is minimal (Marker *et al.* 2007).

In 1996, the MEFT adopted the Namibian Cheetah Conservation Strategy, which was aimed at conserving a viable Cheetah population in the country (Nowell 1996). In 2013, under the guidance of the CCI (previously RWCP), MEFT developed a National Conservation Action Plan for Cheetahs in Namibia (MEFT 2013). The goal of this plan is to improve the status of Cheetahs and secure the current population in Namibia (MEFT 2013).

For 2022, the CITES quota for exporting live specimens and trophies (i.e., skins and skulls) from Namibia has been set at 150 (CITES 2022). Based on the exporter reported quantities as reported in the CITES trade database (trade.cites.org), in the past decade, Namibia has exported a maximum of one (1) live Cheetah and 38 hunting trophies annually.

Cheetah *(Acinonyx jubatus)* population status and distribution Zimbabwe

Background

Zimbabwe is a landlocked country with a total surface 391,000 km^2 of land (Ministry of Environment Water and Climate 2020). A large part of Zimbabwe is elevated on a central plateau (the Highveld) which stretches from the Southwest to the Northwest at between 1,200 and 1,600 m, while the East of Zimbabwe is mountainous. The Lowveld, which is below 900 m, makes up ca. 20% of the country. Approximately three quarters of Zimbabwe is semi-arid with low and sporadic rainfall. Mean annual rainfall averages at 675 mm, with a rainy season between November and March (Ministry of Environment Water and Climate 2020). Zimbabwe's protected area network constitutes 28% of the total land and consists of national parks, wildlife estates and gazetted forests (14.9%), conservancies (1.9%) and Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) areas (11.2%) (Ministry of Environment Water and Climate 2020). In the 1980s, the government of Zimbabwe introduced CAMPFIRE, a programme which enables rural communities to manage and benefit from wildlife resources (Ministry of Environment Water and Climate 2020). The programme ran into difficulties through the concentration of power in Rural District Councils, but the essential model of decentralization and devolution of administrative powers and responsibilities for communal natural resources still provides an important framework to encourage biodiversity conservation and co-existence (EU 2014, van der Meer 2018).

Zimbabwe's human population reached 14 million in 2013 and is projected to reach 26 million by 2050 (EU 2014). Income poverty in Zimbabwe is > 70%, with 92% of the extremely poor and 80% of the poor population residing in rural areas (Ministry of Environment, Water and Climate 2020). Most (68%) of Zimbabwe's population is rural, with limited livelihood opportunities other than subsistence farming (Ministry of Environment, Water and Climate 2020). Despite efforts to promote the sustainable use of natural resources on communal land, pressure on biodiversity in most rural areas remains high (Ministry of Environment, Water and Climate 2020). In combination with a fast-track land reform programme which resulted in rapid large-scale changes in land use (du Toit 2004, AWF 2011, van der Meer 2018), biodiversity loss in Zimbabwe has been accelerated by urban housing construction, expansion in agriculture and mining, unsustainable exploitation of natural resources, deforestation, invasive alien species, climate change and high dependence on the natural capital for human development (Ministry of Environment, Water and Climate 2020). In recent years, Zimbabwe has intensified biodiversity conservation efforts through participation in six established, emerging or conceptual transfrontier conservation areas (Ministry of Environment, Water and Climate 2020); however, resources for wildlife management are limited (ZPWMA 2015).

Current population estimate and range

Zimbabwe's Cheetah population consists of ca. 150-170 adult and adolescent Cheetahs. Most of this population (83%) resides on parastatal[1] wildlife estates and conservancies, whereas a small proportion (17%) is found on commercial farmland (Table 4). No resident Cheetahs were recorded on land used for subsistence farming (van der Meer 2018). Zimbabwe's resident Cheetah range covers ca. 47,000 km^2 of land (ca. 12% of the country's terrestrial surface) (Fig. 9), which mostly includes wildlife designated areas (parastatal Zimbabwe Parks and Wildlife Management estates and Forestry Commission estates, and conservancies) (Table 5). Although not officially classified as protected areas, Zimbabwe's remaining conservancies generally consist of wildlife habitat with a high level of protection in which Cheetahs and other wildlife can thrive.

[1]An organization that has some political authority and serves the state indirectly, i.e., the Zimbabwe Parks and Wildlife management Authority and Forestry Commission

The largest Cheetah population on parastatal land is found in the complex of wildlife habitat between Hwange National Park and Victoria Falls; however, the species does not occur at its highest density in this area (Table 5). Overall, Cheetah densities are highest within conservancies, followed by commercial farmland and parastatal wildlife estates respectively (Table 4).

Table 4. Percentage of Zimbabwe's resident Cheetah range, Cheetah population and densities on parastatal wildlife estates, conservancies and commercial farmland (Copied from van der Meer 2018). Note that no resident Cheetahs were reported on subsistence farmland.

Land use type	Parastatal wildlife estates	Conservancies	Commercial farmland
Percentage of resident Cheetah range	66%	19%	15%
Percentage of Cheetah population	47%	36%	17%
Densities (cheetahs / 100 km²)			
Average density (mean (SE))	0.29 (0.06)	0.99 (0.37)	0.42 (0.07)
Min	0.15	0.36	0.27
Max	0.55	2.50	0.60
N	7	5	4

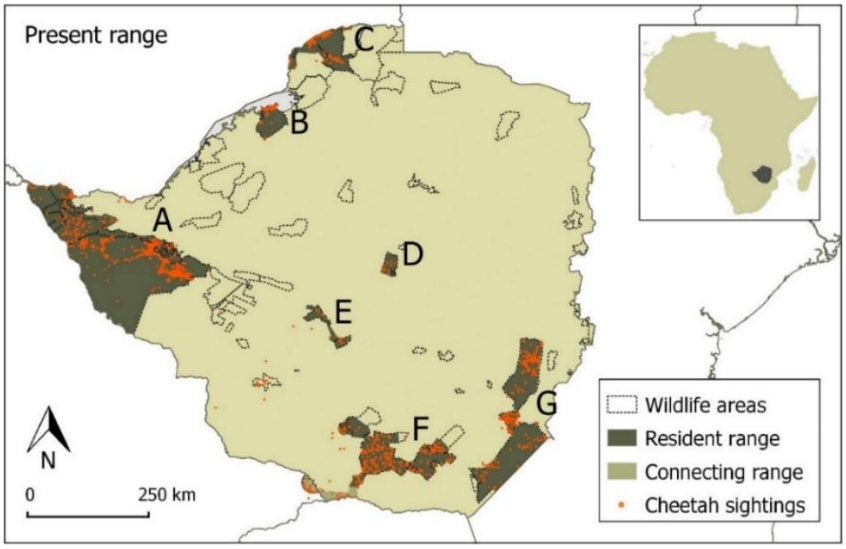

Figure 9. Current resident Cheetah range in Zimbabwe (Data source: van der Meer 2016). Details on the size, Cheetah numbers and Cheetah densities in each area (A-G) are provided in Table 5.

Table 5. Overview of estimated area sizes, Cheetah numbers (adult and adolescents) and densities of the Cheetah subpopulations in Zimbabwe, excluding occasional Cheetah sightings outside resident range (Data source: van der Meer 2016). See Figure 9 for geographic location of each area (A-G) in Zimbabwe. Note that the introduced Cheetah population in area B (Matusadona NP) has become extirpated (van der Meer *et al.* 2020); however, there has been a proposal to reintroduce Cheetahs in this area.

Map ID	Area	Area Site (km^2)	Cheetah numbers	Density (cheetahs/100km^2)
A	Hwange NP-Matetsi-Victoria Falls and surrounding forestry and wildlife estates	23 340	40-42	0.18
B	Matusadona NP	1 429	*NA*	*NA*
C	Mana Pools NP-shoreline Hurungwe and Sapi	2200	12	0.55
D	Midland Rhino Conservancy	585	3-5	0.68
E	Debshan ranch-De Beers Cattle Section and neighbouring farms	1100	3-5	0.36
F	Bubiana and farms in the West-Bubye Valley Conservancy and farms in the Southwest-Nuanetsi	9 143	46-54	0.55
G	Malilangwe-Save Valley Conservancy-Gonarezhou NP	8 280	37-39	0.46

Population and distribution trends

The earliest Cheetah population estimate in Zimbabwe was made in 1975 by Myers, who concluded there were ca. 400 Cheetahs in the country (range 250-500) (Fig. 10), although he does mention this number could conceivably be as high as 500 (Meyers 1975). In 1987, Wilson (1988) estimated a population size of ca. 470 Cheetahs. By 1992, this number had increased to 500-1,000 Cheetahs (Fig. 10), the majority of which (80%) resided on commercial farmland (CITES 1992). Based on this Cheetah population estimate and the high level of conflict with livestock farmers, Zimbabwe received an annual quota of 50 CITES tags for the export of live Cheetahs or hunting trophies to create an incentive for farmers to conserve the species (CITES 1992). After the last national survey conducted by the authorities in 1999, it was concluded there were a minimum of 1,520 Cheetahs in Zimbabwe (Fig. 10), 80% of which resided on commercial farmland (Davison 1999). However, with only 20% of the commercial farmlands and no communal areas covered with this questionnaire survey, the authorities believed these numbers could have been higher (Davison 1999).

In 2000, the government of Zimbabwe introduced a Fast-Track Land Reform Programme (FTLRP) which resulted in compulsory and rapid change in land use from large scale commercial farming (of which at least 20% was managed for wildlife) to small scale commercial and subsistence farming. By 2010, over 70% of Zimbabwe's commercial farmland had been redistributed, which, in combination with an economic depression, resulted in unsustainable use of natural resources and severe degradation of wildlife populations (incl. Cheetah prey base) and habitats (du Toit 2004, AWF 2011, Scoones *et al.* 2011). It was originally thought that resident Cheetah range post-FTLRP might still consist of 125,517 km^2, with an additional 100,699 km^2 possible range (Fig. 11) (ZPWMA 2009). However, a nation-wide Cheetah survey conducted in 2013-2015 recorded no Cheetah sightings in the possible range and a reduction of ca. 62% in the resident range (Fig. 9, 11) (van der Meer 2018). Consequently, compared to the last country wide pre-FTLRP assessment in 1999, Zimbabwe's Cheetah population estimate had decreased by at least 85% (Fig. 10) to 150-170 adult and adolescent Cheetahs, most of which reside in wildlife protected areas (Table 4, Fig. 9) (van der Meer 2016, 2018).

The 1998 Cheetah population estimate of 6,000 (± 1,500) Cheetahs, of which only 50-75 Cheetahs resided on National Parks estates, was mentioned in the Cheetah Policy and

Management Plan for Zimbabwe (Heath and Muchena 1998). The data source of this estimate remains unknown, but it seems likely this number was overestimated possibly because cubs were included in the estimate (see also Nowell 1996). Except for the 1991 population estimate which was based on model predictions (Zank 1995) and the 2011 estimate which was based on an extrapolation of spoor survey and sighting trends in and around Save Valley Conservancy (Williams 2011), Zimbabwe's Cheetah population estimates have historically been based on questionnaire surveys (Meyers 1975, Wilson 1988, Davison 1999, Wilson 2006). It should be noted that, unless sufficiently accounted for, questionnaire-based surveys can result in overestimation because it is not always clear if cubs are included in the count (Nowell 1996) and there is a high risk of double-counting Cheetahs on neighbouring farms (Wilson 1988).

The most recent nationwide survey consisted of questionnaire-based interviews and the collection of Cheetah sightings through a citizen science campaign (van der Meer 2018). Between 2013 and 2015, a research team visited each of Zimbabwe's 60 districts, within which they interviewed authorities responsible for wildlife plus additional stakeholders in wildlife areas, conservancies, farms and communities (van der Meer 2016). During the interviews, respondents were asked to provide details of Cheetah sightings, including number, sex and age, and approximate size of cubs. Where available, photographs were collected from which individual Cheetahs were identified based on coat patterns (van der Meer 2018). Only sightings from knowledgeable and reliable respondents who correctly identified Cheetah from a set of carnivore pictures were included in the analyses and precautions were taken to avoid double counting (van der Meer 2018). In total, the research team interviewed 1,209 respondents which, in combination with the citizen science campaign, resulted in 2,357 verified Cheetah sightings accompanied by > 5,000 photographs, on which the population estimate was based (van der Meer 2016, 2018).

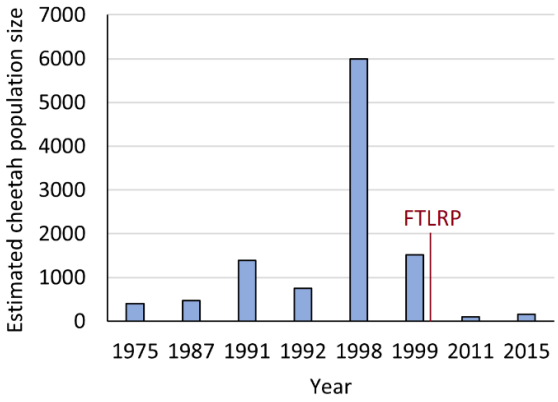

Figure 10. Overview of estimates of Cheetah population size for Zimbabwe and start of the Fast Track Land Reform Programme (FTLRP), the 1998 estimate was probably overestimated (Data source: Meyers 1975, Wilson 1988, Zank 1995, CITES 1992, Heath and Muchena 1998, Davison 1999, Williams 2011, van der Meer 2016).

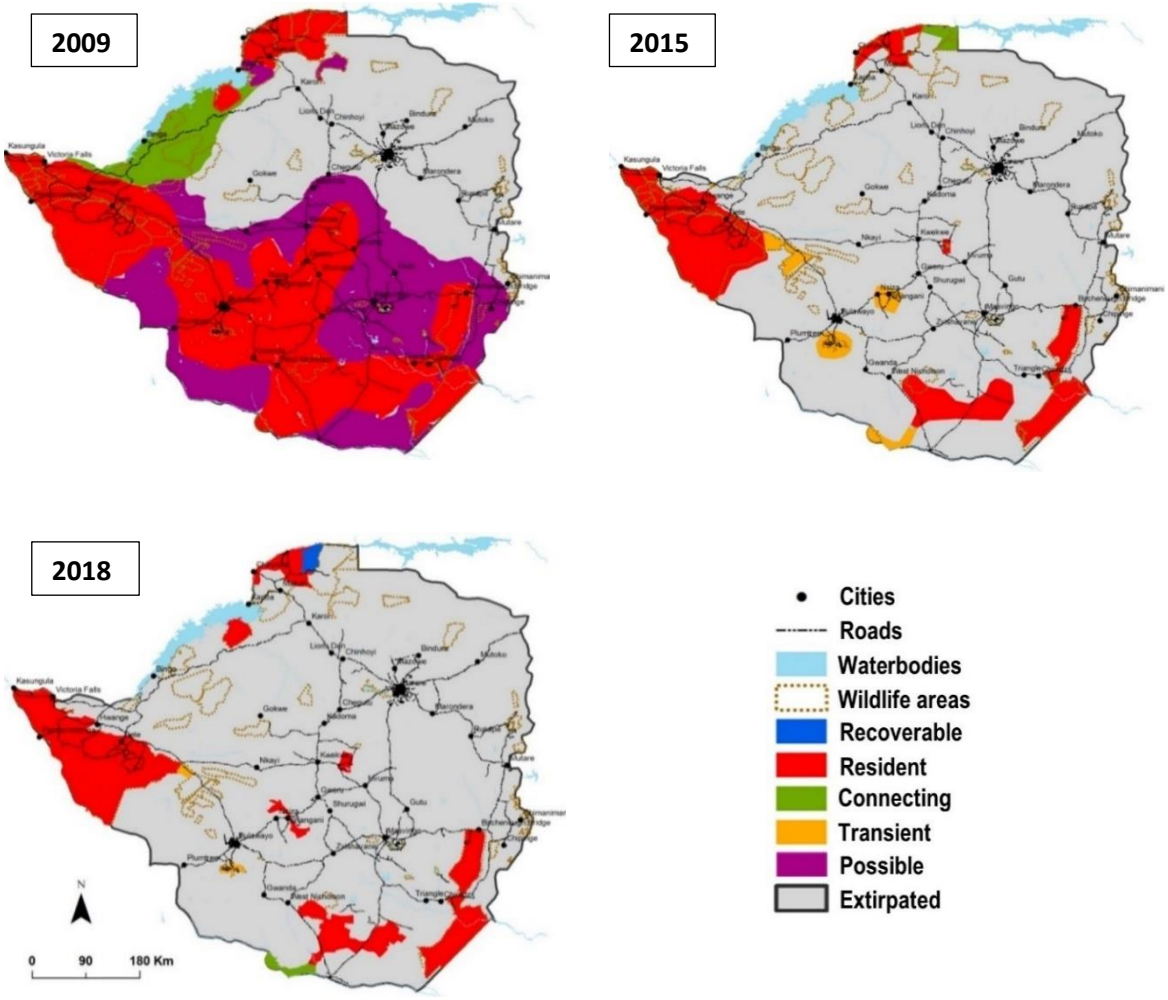

Figure 11. Overview of historic and present Cheetah range as per Zimbabwe's National Action Plan 2009, the regional action plan for Southern Africa 2015 and Zimbabwe's National Action Plan 2018 (Data source: ZPWMA 2009, 2018, IUCN SSC 2015, van der Meer 2016, 2018).

National Policy and Legislation

The Cheetah is listed as a specially protected species under Zimbabwe's Parks and Wildlife Act [Chapter 20:14 (1996) as amended in 2001], meaning that, unless a permit is issued by the Zimbabwe Parks and Wildlife Management Authority (ZPWMA), no person is allowed to hunt, possess, sell or otherwise dispose of a live Cheetah or the meat or trophy of a Cheetah (Parliament of Zimbabwe 2001a). A person engaging in any of the forementioned activities without a lawful permit is guilty of an offence and liable to a fine and/or imprisonment (Parliament of Zimbabwe 2001a). Under statutory instrument 56 (Parks and Wildlife (Payment for Hunting and Fish) Notice 2012) [CAP 20:14] and 57 (Parks and Wildlife (Payment for Trapping of Wild Animals) Notice 2012) [CAP 20:21], the compensation value of a Cheetah is set at USD 20,000 , while the maximum period of imprisonment specified under the Parks and Wildlife Act depends on the offence (Parliament of Zimbabwe 2001a). However, according to the ZPWMA, minimum imprisonment for poaching, illegally trading or illegally possessing a Cheetah is nine years, while the maximum fine is set at the compensation value of USD 20,000 (SC66 Doc 32.5 Annex) (CITES 2015). Permits to hunt and to sell live Cheetah and products thereof are issued by the ZPWMA for scientific or educational purposes, providing specimens, captive breeding, export or restocking, management and control of animal populations,

protection of human life or property or any other purpose which is considered of interest to Cheetah conservation (Parliament of Zimbabwe 2001a).

In addition to the Parks and Wildlife Act, there are several acts that apply to the protection of Cheetah or Cheetah habitat, such as the Trapping of Animals (Control) Act which restricts the use, possession and making of traps for the purpose of trapping animals [Chapter 20:21] (Parliament of Zimbabwe 2001b), the Forest Act [Chapter 19:05] which prevents illegal harvesting of or wrongful possession of forest produce (including wild animals) (Parliament of Zimbabwe 2002a) and the Environmental Management Act [Chapter 20:27] which provides for the sustainable management of natural resources and protection of the environment (Parliament of Zimbabwe 2002b).

To ensure long-term survival of remaining free-ranging Cheetah populations on Zimbabwe's parastatal wildlife estates, it is crucial to take this protection-reliant species into account in management decisions which may directly or indirectly affect Cheetah, e.g., trophy hunting of lion and leopard, fire management, planning and management of concessions. The Cheetah has been the subject of National Management Plans since 1997, and these initial plans were largely aimed at mitigation of conflict between livestock farmers and Cheetah and the reduction of illegal killing by facilitating translocation and trophy hunting of Cheetah. In 2009, under the guidance of the CCI (previously RWCP), the ZPWMA developed a comprehensive management plan which focusses on 'improving the status of Cheetah and African wild dog and securing (additional) viable populations of Cheetahs and African wild dogs across their range in Zimbabwe that successfully co-exist with and are valued by the people of Zimbabwe' (ZPWMA 2009). In line with a revision of the regional conservation strategy for Southern Africa, this National Action Plan for Cheetah and African Wild Dogs was recently revised and published in 2018 (ZPWMA 2018). In addition to the National Action Plan, in the management plans of the three largest National Parks where Cheetahs occur (Hwange, Mana Pools and Gonarezhou), Cheetah is recognized as an exceptional resource which requires special attention (van der Meer 2016).

The CITES quota for exporting live specimens and trophies (i.e., skins and skulls) from Zimbabwe has been set at fifty (50) for Cheetah in 2022 (CITES 2022). Based on the exporter reported quantities as reported in the CITES trade database (trade.cites.org), in the past decade, Zimbabwe has exported a maximum of three live Cheetahs and hunting trophies annually.

Threats to Cheetah survival in Botswana, Namibia and Zimbabwe

Human-cheetah conflict

Cheetahs occur at low densities, even relative to other large carnivores, throughout their range. However, they are able to persist outside of protected areas provided there is sufficient habitat and suitable prey. Two thirds of the global Cheetah population live on unprotected land, alongside people. In Botswana and Namibia this proportion is even higher, with 77% and > 80% of the national Cheetah population respectively living outside protected areas (Marker *et al.* 2018). In these multiple use landscapes, Cheetahs face a high risk of exposure to anthropogenic mortality, and human-wildlife conflict is one of the most significant threats to Cheetah survival in these countries.

Botswana and Namibia together host nearly half of the world's surviving Cheetahs, and the most important linking area between these two countries lies in the livestock-dense Ghanzi Agricultural Zone (Klein 2007). Conflict with people is a major factor affecting the survival of Cheetahs in this region (Boast 2014). Between 2010-2015, 28 Cheetahs were reportedly killed due to human-wildlife conflict throughout Botswana (DWNP *unpublished data*). However, this number is believed to be underestimated caused by a reluctance to report retaliatory killings of Cheetah to the authorities, in part due to the Killing Suspension Order for Cheetahs (*personal observations* M. Kral, J. Horgan, R. Klein). As an alternative to killing Cheetahs, translocations are carried out by Botswana's Department of Wildlife and National Parks' Problem Animal Control Unit in situations where a carnivore is considered a persistent problem. However, telemetry data on translocated Cheetahs showed a mortality rate of nearly 82% within one year of release (Boast *et al.* 2015). Furthermore, most farmers who had Cheetahs or other predators translocated off their land did not perceive a decrease in predation in the short-term (59.1%) or long-term (63.5%) as other predators in the area or new Cheetahs that moved into the area continued to predate on livestock (Boast *et al.* 2015). Therefore, translocation is not considered an effective conflict mitigation method.

In Namibia, Cheetahs may have benefited from the removal of lions, leopards and spotted hyaenas from freehold farmlands, and from a subsequent reintroduction of prey species onto game farms (Marker-Kraus *et al.* 1996). Despite these apparently conducive conditions on farmlands, conflict with livestock and game farmers is the major threat to the Cheetah population in Namibia. Cheetah survival in the wild in Namibia is mostly threatened by human removal of Cheetahs of prime breeding age, with high chances of dying between the age of independence and six years for both males (80%) and females (86%) (Marker *et al.* 2003b). Since most of Namibia's Cheetahs live on unprotected land (Durant *et al.* 2017), they are particularly vulnerable to indiscriminate removal by livestock farmers and game farmers. Individual farmers have been reported to opportunistically kill Cheetahs, mainly as a preventative measure (in 91% of cases) and not necessarily due to actual livestock depredation (Marker-Kraus *et al.* 1996, Marker *et al.* 2003b). Although almost half of the land managers (49.7%) at Namibian farms (n = 185) considered Cheetah a conflict species, only 26.5% of the land managers actively persecuted Cheetahs (Weise *et al.* 2017). Overall, a minority of intolerant farmers (n = 10) has been responsible for 71.9% of all Cheetah persecution on freehold lands in Namibia (Weise *et al.* 2017). Between 1980 and 1991, 6,293 Cheetahs were reportedly killed or removed alive (CITES 1992). Between 1980 and 1993, an average of 26.1 Cheetahs were removed per game farm, and 12.6 per livestock farm (n = 157 farms total) (Marker *et al.* 2003b). In addition, the proportion of female Cheetahs removed was higher on game farms (42%) than on livestock farms, where females only represented 26% of caught Cheetahs (Marker *et al.* 2003b). Cheetah removals by district have been documented in Namibia from 1960 to 2017 (Table 6).

Table 6. The number of Cheetahs reported taken into captivity or killed between 1960 and 2017, by district (Copied from Melzheimer *et al.* 2022).

District	1960-1973 (Gaerdes[a])	1986-1994 (DVS[b])	1991-2017 (CCF[c])
Windhoek	296	146	26
Otjiwarongo	102	251	63
Okahandja	109	176	68
Outjo	45	118	16
Omaruru/Karibib	211	85	41
Grootfontein	54	87	20
Otavi	No removals reported	63	0
Keetmanshoop	No removals reported	24	0
Mariental/Maltahohe	98	50	0
Gobabis	No removals reported	94	50
Unknown regions	No removals reported	No removals reported	127
Total	**915**	**1094**	**411**

[a] Gaerdes (1974), summarized in Marker-Kraus *et al.* 1996

[b] Directorate of Veterinary Services in Marker-Kraus *et al.* 1996

[c] Cheetah Conservation Fund *unpublished data*

Namibia's Ministry of Forestry Environment and Tourism's (MEFT) permit system has collected information on Cheetah removals from the late 1970s to the mid-1990s and reported an average number of 553 Cheetahs killed per year (Nowell 1996). The number decreased from 1986 to 1995, when an average number of 297 Cheetahs per year was reported (Nowell 1996). More recently, the MEFT recorded that the total number of Cheetahs killed from 1997 to 2004 was 1,679, which averages as 240 animals per year. Of these, 1,088 were killed as 'problem animals', whereas 591 were hunted as trophy animals. The actual number of Cheetahs removed as 'problem animals' is likely to be higher than the number reported to the MEFT (Marker-Kraus *et al.* 1996).

Weise *et al.* (2017) reported a removal rate of 0.3 adult Cheetahs/100 km^2 per year on Namibian freehold farmland due to human-wildlife conflict (where removal refers to Cheetahs killed or taken into captivity). This annual removal rate corresponds to approximately 27% of the total estimated population (using the density estimate from freehold farmland in central Namibia (Portas *et al.* 2017). Weise *et al.* (2017) infer that, considering the annual reproductive output of Cheetahs for this area, such loss could be compensated if densities were at a minimum of 0.67 adult Cheetahs/100 km^2. Most Cheetah populations in Namibia are below this density threshold (Table 3), which suggests that current removals are unsustainable, and hence likely contribute to observed population declines.

Historically, the situation in Zimbabwe was similar to the situation in Botswana and Namibia, with most of Zimbabwe's Cheetahs occurring outside protected areas where they faced high levels of human-cheetah conflict and resulting anthropogenic mortality. However, rapid large-scale changes in land use have resulted in range contractions and population declines up to the point where most of the remaining Cheetahs now reside on parastatal wildlife estates (66%) and conservancies (19%). With the current low levels of human-cheetah conflict (van der Meer 2018), stakeholder attitudes towards Cheetah are generally positive (van der Meer and Dullemont 2021). However, hostility towards Cheetahs caused by fear of livestock depredation remains a challenge and impedes dispersal between Zimbabwe's free ranging Cheetah populations. As such, human-cheetah conflict in Zimbabwe is directly related to securing of

Cheetah population linkages, which is considered the country's main challenge for Cheetah conservation (see also *Land use change, habitat loss and fragmentation* on page 36).

Illegal trade

There is an ongoing illegal trade reported to be operating between Botswana and South Africa, from Botswana to South Africa in particular. Live animals, especially cubs, and skins are smuggled across the long, unattended borders between the rural villages of Werda and Tsabong, where several poaching incidents have taken place (Cheetah Conservation Botswana *unpublished data* 2022). Illegal trade in Cheetahs has also been reported between Namibia and South Africa, with Namibian cheetah cubs being smuggled into South Africa to be exported as captive born cheetahs by animal traders and South African cheetahs being smuggled into Namibia for canned hunting (Marnewick *et al.* 2007). Between 2005 and 2015, twenty-four cases of illegal trade between Botswana, Namibia and South Africa have been recorded (43 live Cheetahs and 14 skins/skeletons), but this number could be much higher (Tricorache *et al.* 2018).

In Botswana, eleven reports of Cheetah smuggling in the country or close to the country's border were recorded between 2012 and 2019, involving nine live Cheetahs and four Cheetah skins (Tricorache *et al.* 2021). The authorities in Botswana uncovered a predator smuggling syndicate in 2018, which intended to smuggle Cheetah to South Africa. In 2019, the South African authorities uncovered a cross border predator smuggling ring operating near the South Africa-Botswana border which illegally possessed two Cheetahs caught in South Africa (Tricorache *et al.* 2021). Between 2010 and 2019, 18 cases of illegal Cheetah trade were recorded in Namibia, involving a minimum of 13 live Cheetahs, 14 skins and two skulls (Tricorache *et al.* 2021). In Zimbabwe, the authorities seized two Cheetah cubs on a private farm in 2012 (Tricorache *et al.* 2021). To date, Zimbabwe has recorded no cases of illegal trade in Cheetah parts and derivatives (CITES 2015). Although historically Cheetah skins appear to have been used by traditional leaders during ceremonies, this tradition seems to have been lost and, in Zimbabwe, trade in Cheetah skins is currently not considered a threat to Cheetah survival (van der Meer 2016).

The Cheetah trade between Botswana, Namibia and South Africa seems to be primarily aimed at supplementing existing captive breeding operations in South Africa with live specimens; however, in Namibia, farmers who killed Cheetahs have been reported to sell them to the Chinese medicinal market as a substitute for tiger bones (Tricorache *et al.* 2018).

Legal trade and hunting quotas

In 1992, Botswana, Namibia and Zimbabwe were granted five, 150, and 50 CITES tags respectively for the export of live Cheetah or hunting trophies (CITES 1992). With 90% of the total net trophy exports, Namibia is the main exporter (Nowell and Rosen 2018), and legally exported an average of ca. 120 animals per annum between 2002 and 2012 (Nowell 2014). However, within the past decade, this number seems to have been reduced to an annual average of ca. 30 Cheetahs (exporter reported quantities, CITES trade database). Although the request and allocation of hunting quotas is usually higher (Masulani 1999, Cheetah Conservation Project Zimbabwe *unpublished data*), based on exporter reported quantities in the CITES trade database, annual offtake in Zimbabwe has never exceeded twelve Cheetahs (CITES trade database). Since 1992, Botswana exported one live Cheetah (in 1999) and one hunting trophy (a skull, in 2000) to South Africa. It should be noted that the export of the skull trophy may have been for purposes other than trophy hunting: the Cheetah was always classified as Royal game or conserved animals under the different game laws in Botswana and as such has been protected from hunting since 1968 (Klein 2007). Based on the most recent information on population estimates and offtake, trophy hunting is currently not considered the main threat to Cheetah survival in Botswana, Namibia and Zimbabwe.

Road mortalities

In Namibia, road mortalities have been reported across the country (Marker, Melzheimer, Wachter, and Weise pers. obs.). Reports of incidental Cheetah mortalities due to vehicle strikes have also been reported in Botswana (one incident every few years) (Cheetah Conservation Botswana *unpublished data*) and, to a lesser extent Zimbabwe (an adult female Cheetah in 2016 and a ca. 12-month-old cub in 2018; Cheetah Conservation Project Zimbabwe *unpublished data*).

Land use change, habitat loss and fragmentation

In all three countries, pressure on Cheetah populations is expected to grow in future as the human population grows, leading to greater competition for available resources and increased conflict. In Botswana, there have already been considerable land use changes over the last 50 years primarily due to the expansion of livestock operations into wilderness areas (Perkins and Ringrose 1996). This has resulted in widespread rangeland degradation, through bush encroachment, and loss of productivity as a result of dominance of less nutritious grass species (Dougill *et al.* 2016).

In addition to land use change, landscape fragmentation due to the erection of game fences, also poses an increasing threat to the Cheetah population (Marker-Kraus *et al.* 1996, Marker *et al.* 2003b, Portas *et al.* 2017, Dickman *et al.* 2018). In Namibia, there is a current trend across the country to erect game fences, motivated by an increase of farmers that breed valuable game species, exotic species, or different colour morphs of native antelope species. These game fences limit the movement of wildlife and aim to keep carnivores out. Part of these fences are electrified and may have mechanical methods to deter large carnivores. Some game farmers have a lower tolerance for Cheetahs than livestock farmers and induce higher mortality of Cheetahs within their game-fenced areas.

The situation in Zimbabwe is illustrative of the impact land use change and habitat loss can have on Cheetah populations. The country's Fast Track Land Reform programme, which was introduced in 2000, has resulted in a substantial population decline and large-scale loss and fragmentation of Cheetah habitat. The species is now divided into scattered small subpopulations (van der Meer 2018) which puts Zimbabwe's Cheetah population at risk of genetic isolation and increases vulnerability to stochastic events (e.g., disease and extreme climatic events), especially as most of these scattered populations are found in wildlife designated areas where Cheetah densities are naturally low due to competition with larger carnivores. Consequently, maintaining connectivity will be a key challenge and vital effort for Cheetah conservation in Zimbabwe. The Cheetah populations in the few remaining conservancies in Zimbabwe make up a considerable proportion of the national population, and as such, these populations do have conservation value. However, because of game fencing and human encroachment, most of these conservancy populations face isolation (van der Meer 2018). Unless concerted efforts are made to secure areas of connectivity and facilitate natural dispersal, most of the remaining conservancy populations are likely to require intensive management in future to prevent demographic decline and genetic isolation. Although occasional movement between Zimbabwe's free ranging Cheetah populations on parastatal wildlife estates has been observed (Cheetah Conservation Project Zimbabwe *unpublished data*), such movement seems to be limited and there is a need to identify and secure population linkages within Zimbabwe and across the country's international borders.

Depleting prey base

In Botswana, populations of Cheetah prey species have shown considerable declines since the 1950's, especially springbok and impala (aerial survey results Verlinden 1997, Moatswi 2020). These declines are suspected to be due to a combination of unsustainable extraction,

climate change, overgrazing by livestock causing habitat degradation, veterinary fences and expanding livestock areas cutting off traditional migration corridors, and competition with livestock. In Namibia, in several small areas, the loss of wild prey populations has also been identified as a conservation concern for Cheetah (MEFT 2013). While in Zimbabwe, land use change, overexploitation of natural resources and bushmeat poaching in combination with weakened wildlife management capacity due to funding constraints have resulted in a decline in prey base, which in turn has contributed to a decline in Cheetahs and other carnivore species (du Toit 2004, AWF 2011, Williams 2011).

Even in livestock farming areas, Cheetahs have been found to preferably predate on wild prey (Boast *et al.* 2016). However, when the wild prey base of Cheetahs is reduced to less than 20% of the overall biomass present (including livestock), Cheetah attacks on livestock increase significantly (Winterbach *et al.* 2014, 2015), resulting in an increase in human-cheetah conflict and Cheetahs being killed by farmers due to depredation of livestock. Maintaining a diverse and sufficient wild prey base is therefore considered a key component of Cheetah conservation (Winterbach *et al.* 2014, Boast *et al.* 2016).

Climate change

The majority of Cheetahs in Southern Africa are found in semi-arid environments (Nghikembua *et al.* 2018), where temperature increases and changes in precipitation patterns due to climate change have been observed and are expected to continue (Gutiérrez *et al.* 2021). With increasing temperatures, higher rates of evapotranspiration are expected, causing more water stress, lack of surface water and possibly reduced primary productivity, which in turn would result in lowered grazing carrying capacity and loss of grassy savanna habitat in some parts of Southern Africa where Cheetahs are found (Midgley *et al.* 2005, MEFT 2008). Consequently, Cheetahs may experience reduced prey availability, and competition for available resources may be intensified. Raised atmospheric CO_2 levels may contribute to bush encroachment (Midgley and Bond 2015, Scheiter *et al.* 2020), which also reduces the grazing carrying capacity as well as the hunting visibility for Cheetahs (Muntifering *et al.* 2006, Nghikembua *et al.* 2018). Ultimately, poor rangelands harbour more human-wildlife conflict as farmers become less tolerant towards any further economic losses. Varied precipitation patterns and rising temperatures also have the potential to change the ecology of vectors responsible for wildlife diseases such as fleas and ticks (Nghikembua *et al.* 2018, Roach 2008, Seijan *et al.* 2016).

Transboundary connections of Botswana's, Namibia's and Zimbabwe's Cheetah populations

To the North of Namibia, major rivers may limit the movements of Cheetahs into Angola across some stretches of the border, whereas the Namibian Cheetah population seems well connected to the population in Botswana (*personal observations* L. Van der Weyde, J. Horgan, R. Klein). In 2016 and 2017, a coalition of two adult males from the Ghanzi farmlands in Botswana were collared and relocated to the Western Okavango delta region (350 km) and eventually moved to Northeast Namibia (220 km) before being killed due to human-wildlife conflict (Cheetah Conservation Botswana *unpublished data 2017*).

In early 2022, a total of four collared adult Cheetahs showed transboundary movement from the Northern Cape province of South Africa into Botswana (from 80-300 km) (one mother with four cubs, one mother with two cubs and two male coalitions) and have been residing in the wildlife management and farming areas of South-Western Botswana since crossing. In addition, another collared coalition of two male Cheetahs crossed the border from the Thabazimbi area of North-Eastern South Africa into the Southern Tuli area of Botswana for one month before returning to South Africa (Cheetah Conservation Botswana *unpublished data 2022*, pers. comm D. Cilliers).

The Tuli area between Botswana and Zimbabwe is part of the Greater Mapungubwe Transfrontier Conservations Area (TFCA), for which the governments of Zimbabwe, Botswana and South Africa signed a memorandum of understanding in 2006. Although there does not seem to be a resident Cheetah population in the Zimbabwe component of the Greater Mapungubwe TFCA (Fig. 12) (van der Meer 2016), Cheetah movement between Zimbabwe's Tuli Circle Safari Area and Botswana's Northern Tuli Game Reserve was confirmed based on photographic records: a coalition of three males which spent most of their time in the Northern Tuli Game Reserve has been seen in the Tuli Circle Safari Area on several occasions (ca. 20 km) (Brassine 2014, van der Meer 2016).

In 2011, the Governments of Angola, Botswana, Namibia, Zambia and Zimbabwe signed an agreement for the establishment of the Kavango-Zambezi TFCA (peaceparks.org). The Kavango-Zambezi TFCA is the largest transfrontier conservation area in the world and potentially connects Cheetah populations in Angola, Botswana, Namibia, Zimbabwe and, to a lesser extent, Zambia (Fig 12). The largest Cheetah population in Zimbabwe, which is found in Hwange National Park and the complex of wildlife areas along the Western border all the way up to Victoria Falls (van der Meer 2018), falls within the Kavango-Zambezi TFCA. Although transboundary movement has not been confirmed, in Zimbabwe, Cheetah sightings have been made close to the Botswana border (Cheetah Conservation Project Zimbabwe *unpublished data*). It is therefore possible that, like other large carnivore species such as African wild dogs (Painted Dog Conservation *unpublished data*), Cheetahs do disperse from the wildlife areas along the Western boundary of Zimbabwe into Botswana and vice versa.

The majority of Zimbabwe's Cheetah population resides in wildlife protected areas, due to human encroachment and resulting human-wildlife conflict, habitat degradation and prey depletion, dispersal options between these free ranging populations are limited and seem to largely depend on transboundary population links. Apart from the Greater Mapungubwe TFCA and Kavango-Zambezi TFCA, Zimbabwe is party to the Great Limpopo TFCA which may connect the Cheetah populations in the Southeast of the country to populations in South Africa and Mozambique, to which the Great Limpopo TFCA expands (Fig. 12). Although Cheetah spoor has been recorded along the Gonarezhou National Park's Eastern boundary with Mozambique, there is no official confirmation of transboundary movement of Cheetahs within the Great Limpopo TFCA (African Wildlife Conservation Fund *unpublished data*).

In addition, there are two proposed Transfrontier Conservation Areas (The Lower Zambezi-Mana Pools TFCA and the Zimbabwe-Mozambique-Zambia TFCA) which may be beneficial to the Cheetah population in the North of Zimbabwe (Fig. 12). Although transboundary movement

of Cheetahs has not been confirmed for this area, transboundary dispersal of African wild dog (Painted Dog Conservation *unpublished data*), indicates that it may be possible for Cheetahs to move from Mana Pools National Park and surrounding Safari Areas into Mozambique.

In 2020, Liuwa Plain National Park, the Zambian Carnivore Programme and the Zoological Society of London reported the first documented transboundary movement of Cheetah between Zambia and Angola: a collared female Cheetah split from her family group in Liuwa Plain National Park and dispersed to the Northwest of the park, eventually passing into Angola, after which she appeared to move back East into Zambia, returning to the wildlife-rich parts of the upper West Zambezi Game Management Area (AP 2020). While this movement is relatively short in distance, it illustrates how cheetahs can move from areas of rich prey density into areas of low prey abundance, and hence demonstrates their potential for recolonization.

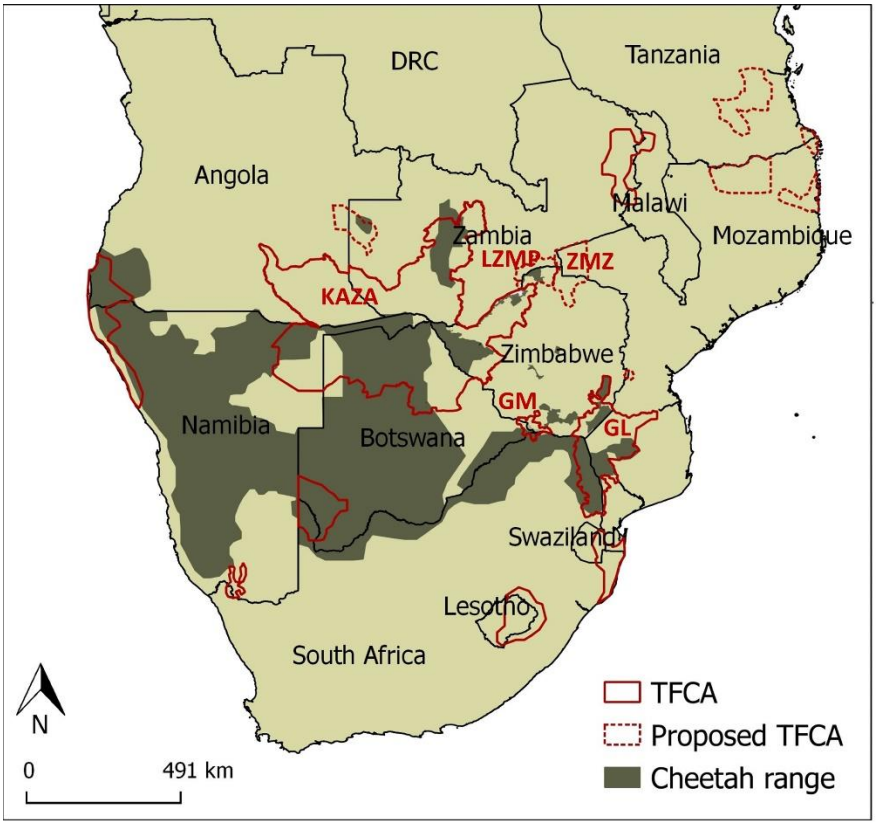

Figure 12. Cheetah range in Southern Africa (Adapted from Durant *et al.* 2017) in relation to (proposed) Transfrontier Conservation Areas (TFCAs) (Adapted from Peace Parks Foundation as published in EU 2014), TFCAs which are of importance for the Cheetah populations of Botswana, Namibia and Zimbabwe are the Kavango Zambezi (KAZA), Greater Mapungubwe (GM), Great Limpopo (GL), Lower Zambezi Mana Pools (LZMP) and Zimbabwe Mozambique Zambia (ZMZ) TFCAs.

Protection of the Cheetah through international treaties

Convention on the Conservation of Migratory Species of Wild Animals (CMS)

The Convention on the Conservation of Migratory Species of Wild Animals aims to conserve terrestrial, aquatic and avian migratory species throughout their range by bringing together the states through which the species pass and lays the foundation for internationally coordinated conservation efforts. Zimbabwe became Party to CMS in 2012, whereas Botswana and Namibia are not Party to the Convention. Except for the Cheetah populations of Botswana, Namibia and Zimbabwe, the Cheetah is listed on CMS Appendix I since 2009 (CMS 2009). Range States of CMS Appendix I species are obliged to endeavour to conserve and, where feasible and appropriate, restore habitats which are of importance to removing the species from danger of extinction; prevent, remove or mitigate obstacles to the species' migration; and prevent, reduce or control factors that are endangering or likely to further endanger the species. Range States of CMS Appendix I species must also prohibit the taking (taking, hunting, fishing capturing, harassing, deliberate killing, or attempting to engage in any such conduct) of animals belonging to the species. Exceptions to this prohibition may be made for scientific purposes, purposes that enhance or propagate the survival of the species, traditional subsistence use, or if extraordinary circumstances so require, provided such exceptions are precise as to content, limited in space and time and do not operate to the disadvantage of the species (CMS Article III Paragraphs 4 and 5).

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

The Cheetah has been listed on Appendix I of the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1975 (CITES 2014). This listing provides the species with the highest degree of protection against (illegal) trade and only allows trade under exceptional circumstances (CITES 1973). Botswana, Namibia and Zimbabwe joined CITES in 1977, 1990 and 1981 respectively. In 1992, in an attempt to reduce human persecution of Cheetahs over livestock depredation, an annotation was added to allow export of live Cheetahs or hunting trophies from Botswana (5), Namibia (150) and Zimbabwe (50) Cheetah (CITES 1992). Live Cheetahs may only be exported if they are not used for primarily commercial purposes and the importer or destination is a recognized breeding facility participating in an international breeding programme aimed at species recovery (CITES 1992).

The African Convention on the Conservation of Nature and Natural Resources

The fundamental principle of this convention is to enhance environmental protection, foster the conservation and sustainable use of natural resources and harmonize and coordinate policies in these fields (Article II), in particular through preventive measures and the application of the precautionary principle, with due regard to ethical and traditional values as well as scientific knowledge in the interest of present and future generations (Article IV) (AU 2017). With regard to faunal resources, Parties shall maintain and enhance species and genetic diversity of species and ensure the conservation of species and their habitats within the framework of land use planning and sustainable development (Article IX, 1, 2) (AU 2017). Management of species and their habitats needs to be based on continued scientific research (such as inventories to monitor distribution and abundance) and, amongst other things, harvestable populations outside conservation areas shall be managed in a sustainable manner compatible with and complementary to other sustainable land uses (Article IX, 2a, b), where all forms of taking are strictly regulated (Article IX, 3) (AU 2017). The Parties are expected to identify factors that are causing the depletion of animal and plant species which are threatened, or which may become so, with a view to their elimination, and to accord special protection for such species and adopt legislation on the protection of threatened species (Article X) and regulate trade (Article XI)

(AU 2017). Threatened species are species that are 'Critically Endangered', 'Endangered' or 'Vulnerable' (Annex 1) (AU 2017), which means the Cheetah would fall under this convention. Botswana provided a simple signature to this convention in September 1968, while Namibia and Zimbabwe provided a simple signature upon revision of the convention in 2003; however, the three countries did not ratify or accede to the agreement (Nowell and Rosen 2018).

Convention on Biological Diversity (CBD)

A convention which indirectly contributes to the conservation of Cheetah and Cheetah habitat is the Convention on Biodiversity. Botswana, Namibia and Zimbabwe are all Parties to the Convention on Biological Diversity. By signing this Convention, the Parties, among other things commit to monitor biodiversity; develop a national strategy for the conservation of biodiversity; integrate biodiversity conservation and sustainable use in plans and policies of relevant sectors; minimize adverse impacts on biodiversity; promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in their natural surroundings; develop and maintain necessary legislation protecting threatened species; where an adverse effect on biodiversity has been determined, manage the relevant process and categories of activities (CBD 1992). In 2010, the Conference of the Parties adopted a revised and updated strategic plan for biodiversity that includes the Aichi Biodiversity Targets, herewith providing an overarching international framework for the conservation of biodiversity (CBD 2010).

Convention Concerning the Protection of the World Cultural and Natural Heritage

Under this Convention State Parties recognize the duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of the natural heritage situated on its territory (Article 4) (UNESCO 1972). This includes geological and physiographical formations and precisely delineated areas which constitute habitat of threatened species of animals and plant of outstanding universal value from the point of view of science or conservation (Article 2) (UNESCO 1972). Various natural heritage sites fall within Cheetah range, including Zimbabwe's Mana Pools National Park, Sapi and Chewore Safari Areas and Botswana's Okavango Delta (see also Trouwborst 2015). Botswana, Namibia and Zimbabwe ratified or acceded to the agreement in 1998, 2000 and 1982 respectively.

Southern African Development Community (SADC), Protocols and Strategies

The Southern African Development Community (SADC) has developed several protocols and strategies which (indirectly) apply to Cheetah and Cheetah habitat. SADC has 16 member states, including Botswana, Namibia and Zimbabwe.

The aim of the SADC Protocol on Wildlife Conservation and Law Enforcement is to establish regional common approaches to the conservation and sustainable use of wildlife resources and to assist with the effective enforcement of laws governing those resources (SADC 1999). Specific objectives include promotion of the sustainable use of wildlife; facilitate harmonisation and enforcement of wildlife laws; capacity building and exchange of information concerning wildlife management, conservation and utilisation and enforcement of wildlife laws; promotion of the conservation of shared resources through the establishment of transfrontier conservation areas and facilitate community-based management of natural resources (SADC 1999). Under Article 7, State Parties agree, among other things, 'to establish management programmes for the conservation and sustainable use of wildlife' and 'avoid or minimise negative impacts on wildlife by assessing and controlling activities which may significantly affect the conservation or sustainable use of wildlife'. Measures that shall be taken by State

Parties to ensure the conservation and sustainable use of wildlife include 'the protection of wildlife resources and wildlife habitats to ensure the maintenance of viable wildlife populations, prevention of overexploitation and extinction of wildlife species, restrictions on the taking of wildlife and restrictions on the trade in wildlife resources and products'.

The vision of SADC's Regional Biodiversity Strategy is to conserve biodiversity across the region and sustain SADC's economic and social development in harmony with the spiritual and cultural values of the people by promoting equitable and regulated access to, sharing of benefits from, and responsibilities for protecting biodiversity (SADC 2008). The purpose of the Regional Biodiversity Strategy is to provide a framework for regional cooperation on biodiversity issues and provide guidelines that build the region's capacity to implement provisions of the CBD; provide a framework for obtaining consensus on key biodiversity issues; act as a vehicle for forming partnerships with development partners on transboundary issues; and provide a framework for cooperation between Member States and with relevant multilateral environmental agreements (SADC 2008). Within this strategy, population growth and poverty, agricultural expansion, continued reliance on wood fuel, land degradation and the introduction of genetically modified organisms and proliferation of invasive alien species have been identified as main threats to SADC's biodiversity (SADC 2008). The Cheetah is mentioned as a species of which, although present in small numbers, the SADC contains a high proportion of the world's population (SADC 2008).

The SADC has also developed a programme for Transfrontier Conservation Areas (TFCAs) which calls for the commitment of the Member States to establish TFCAs (SADC 2013). SADC's vision is to become a model of a community centred, regionally integrated and sustainably managed network of world class Transfrontier Conservation Areas (SADC 2013). The key components of the programme are advocacy and harmonisation; enhancement of financing mechanisms for TFCAs; capacity building for TFCA stakeholders; establishment of data and knowledge management systems; enhancement of local livelihoods; reducing vulnerability of ecosystems and people to climate change; and development of TFCAs into marketable regional tourism products (SADC 2013).

Additional agreements to combat illegal wildlife trade

Although not signatories to the Lusaka Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora, police, customs and wildlife officers from Botswana and Zimbabwe did participate in the Task Force's international operations which resulted in a large number of arrests and seizures of specimens from wildlife, including Cheetah (CITES 2021). In addition to existing agreements, the African Union endorsed the African Common Strategy on Combatting Illegal Exploitation and Trade in Wild Fauna and Flora at its 27th meeting in 2015, which is a non-binding declaration not requiring ratification by member countries (AU 2015).

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CMS

CMS Secretariat
UN Campus
Platz der Vereinten Nationen 1
D-53113 Bonn
Germany

Tel: (+49) 228 815 24 01/02
Fax: (+49) 228 815 24 49
E-mail: cms.secretariat@cms.int
www.cms.int

ANNEX 2

LIST OF PARTICIPANTS OF THE MEETING OF THE IWG

Category	Country / Affiliation	Function	Name
Part-Appt. Councillor	Africa	Party-Appointed Councillors / African Regional Representative of the Sessional Committee	Djibril Djouck
Part-Appt. Councillor	Africa	Party-Appointed Councillors / African Regional Representative of the Sessional Committee	Edson Gandiwa
Observer NGO	African Wildlife Conservation Fund	Experts	Sugoto Roy
Observer NGO	Born Free	NGO	Mark Jones
Range State - Observer	Botswana	CITES SA; National Coordinator	Kenosi Nkape
Range State - Observer	Botswana	CITES MA	Kabelo Senyatso
Range State - Observer	Botswana	unknown	Monei Onalethata
Expert	Cheetah Conservation Botswana (CCB)	Experts	Rebecca Klein
Observer NGO	Cheetah Conservation Botswana (CCB)	NGO	Michelle Kral
Observer NGO	Cheetah Conservation Fund (CCF)	NGO	Laurie Marker
Observer NGO	Cheetah Conservation Fund (CCF)	NGO	Shira Yashphe
Observer NGO	Cheetah Conservation Fund (CCF)	NGO	Anne Schmidt-Kuentzel
Expert	Cheetah Conservation Project Zimbabwe	Experts	Esther van der Meer
Expert	Cheetah Conservation Project Zimbabwe	Experts	Lovemore Sibandi
Observer IGO	CITES Secretariat	CITES	Hyeon Jeon Kim
Secretariat	CMS Secretariat	CMS Secretariat	Nora Weyer
Secretariat	CMS Secretariat	CMS Secretariat	Clara Nobbe

Secretariat	CMS Secretariat	CMS Secretariat	Matilde Montagna
Secretariat	CMS Secretariat	CMS Secretariat	Marco Barbieri
Chair; COP-Appt. Councillor	COP-appointed councillor for terrestrial mammals	IWG Chair; COP-appointed councillor for terrestrial mammals	Alfred Oteng-Yeboah
Observer NGO	EWT	NGO	Samantha Nicholson
Observer NGO	EWT	NGO	Derek van der Merve
Observer NGO	EWT	NGO	Cole du Plessis
unknown	G. H. Moyo	unknown	unknown
Expert	IUCN SSC Cat SG	Experts	Urs Breitenmoser
Expert	IUCN SSC Cat SG	Experts	Christine Breitenmoser-Würsten
Expert	IUCN SSC Cat SG	Experts	Sarah Durant
Expert	IUCN SSC Cat SG	Experts	Kelly Anne Marnewick
Expert	Leibniz Institute for Zoo and Wildlife Research	Experts	Joerg Melzheimer
Range State - Observer	Namibia	CITES MA	Elly Hamunyela
Range State - Observer	Namibia	CITES MA	Fillemon Lifo
Range State - Observer	Namibia	National Coordinator	Uakendisa Muzuma
Observer NGO	Panthera	NGO	Kim Young-Overton
unknown	Pitso Wildlife	unknown	unknown
Range State - Party	Zimbabwe	International Conventions Manager at Zimparks	Dickson Chitupa
Range State - Party	Zimbabwe	National Coordinator	Roseline Mandisodza