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**CONSERVATION OF THE CHEETAH *ACINONYX JUBATUS* IN ASIA AND
NORTH-EASTERN AFRICA**

(Prepared by the IUCN Cat Specialist Group)

Summary:

This document highlights issues pertinent to the conservation of two subspecies of the Cheetah (*Acinonyx jubatus*) and presents to the ScC-SC5 a coordinated recovery strategy for Cheetah across the entire North-East Africa and South-West Asia region, namely the North-Eastern Africa / South-Western Asia Cheetah recovery strategy, that could bring together Parties in a coordinated approach to address the threats to Cheetah subspecies.

CONSERVATION OF THE CHEETAH *ACINONYX JUBATUS* IN ASIA AND NORTH-EASTERN AFRICA

1. Introduction

The Cheetah *Acinonyx jubatus* was listed on Appendix I of CMS in 2009 (excluding the populations of Botswana, Namibia and Zimbabwe). The Cheetah in Africa (with four African subspecies *A. j. jubatus* (Southern Africa), *A. j. raineyi* (Eastern Africa), *A. j. hecki* (North-Western Africa), and *A. j. soemmeringii* (North-Eastern Africa)) is furthermore one of the four species of the *Joint CITES-CMS African Carnivores Initiative* (ACI) (CMS 2021). The Asiatic Cheetah (*A. j. venaticus*) is a subspecies considered under the *CMS Central Asian Mammals Initiative* (CAMI; <https://www.cms.int/cami/en/species>) and subject of "Species-specific Measures" in the Programme of Work (2021-2026) for CAMI (annexed to [Resolution 11.24 \(Rev.COP13\)](#)). This document highlights issues pertinent to the conservation of the Asiatic and North-Eastern African Cheetah and presents to the ScC-SC5 a coordinated recovery strategy for Cheetah across the entire North-Eastern Africa and South-Western Asia region, a strategy that could bring together Parties in a coordinated approach to address the threats to Cheetah subspecies.

2. Situation of the Cheetah in Iran

The Asiatic Cheetah (*Acinonyx jubatus* ssp. *venaticus*), formerly widespread across Central, South and South-West Asia, is today restricted to several protected areas around the Dasht-e Kavir desert in central Iran. In 2008, *A. j. venaticus* was listed as Critically Endangered by IUCN (Jowkar et al., 2008), with a very small, but reportedly stable population. Current information, however, suggests an ongoing deterioration in the conservation status of the subspecies, based on evidence of substantial population decline: From 2015–2017, only 26 different individuals were identified by means of camera trapping or direct observations (Khalatbari et al., 2017). In a five-year effort of intensive camera-trapping across the remnant range of the Cheetah, only 17 adult Cheetahs were discovered, and no females were observed in two-thirds of the assumed distribution range (Eslami et al., 2017). No reproduction was reported in recent years from the southern protected areas hosting Cheetahs (Khalatbari et al., in prep). The *Conservation of the Asiatic Cheetah Project* (CACP) has been the main instrument for the conservation of the Cheetah in Iran (Ostrowski 2017); however, the programme currently has insufficient capacity and resources to enact the measures necessary to conserve and recover the population.

Given the increasingly perilous plight of *A. j. venaticus*, a captive conservation breeding programme has been suggested. However, the captive breeding of Cheetah is notoriously difficult; Cheetahs are one of the most difficult felids to breed in captivity, with 80 per cent of captive females never reproducing (Crosier et al., 2018). Attempts to breed confiscated Cheetahs in Pardisan Park facilities of the Department of Environment in Tehran have failed. Recently, the Department of the Environment Office of Semnan Province established a breeding facility in Touran protected area, holding two confiscated females, one old male, and one additional male that was specifically caught in March 2021 for breeding with the two females¹. Arguments in favour of a conservation breeding programme are to establish a backup gene-pool of the Asiatic Cheetah in captivity and to build-up a source population for future reintroductions and population reinforcements. Refutations against such a breeding programme are that the free-living population is too small to tolerate any further removals for the purpose of captive breeding, the risk of injuries or losses through captures is too high, the likelihood of successful captive breeding is low, and investment in *ex-situ* activities might compromise *in-situ* conservation measures. Due to the low density of Cheetah in Iran and the low likelihood of successful reproduction in captivity of Cheetah, even the removal of single individuals could critically reduce the demographic and genetic functionality of the free-living population, which is already well below the standard minimum viable size of 50 individuals (Jamieson and Allendorf, 2012). On the other hand, the remnant Asiatic Cheetah population may no longer be viable, and re-establishing the strategy that has been applied by the CACP since 2001 is unlikely to be sufficient to prevent its

¹ See: <https://www.doe.ir/portal/home/?news/196210/1270788/1250973> گبری شد؟ 80% E2% غیر وز جرای چه زنده

final extinction (Eslami et al., 2017). Up to now, it remains unclear if the decline of the population is merely a consequence of demographic shortcomings (lack of prey, human-induced mortality) or if intrinsic factors such as genetic deterioration through inbreeding are accelerating the decline. The preservation of the Asiatic Cheetah poses one of the biggest challenges in cat conservation. Capacity and means for interventions are not only limited, but potential interventions may bear a high risk of failure, and decisions need to be taken in a situation of high uncertainty.

3. Situation of the Cheetah in North-Eastern Africa

The most recent and comprehensive genetic analysis, using both nuclear and mitochondrial DNA, identified that the most closely related subspecies of Cheetah to Asiatic Cheetah as the North-Eastern African Cheetah, *A. j. soemmeringii* (Table 1 in Prost et al., under review). Just as the Asiatic Cheetah, the North-Eastern African Cheetah faces significant threats. Although the exact distributional delineation of the subspecies remains unknown, it is likely confined to the Horn of Africa and bordering areas (Kitchener et al., 2017). The core population numbers approximate 260 individuals, consisting of the Ethiopian populations in Afar (estimated 11 individuals); Blen-Afar (20 individuals); Ogaden (32 individuals); Yangudi Rassa (8 individuals); and the border population with Kenya and South Sudan (191 individuals). Additional populations that are likely to be *A. j. soemmeringii* total 330 individuals and include Kidepo in Uganda and its environs in South Sudan and North-Western Kenya (19 individuals), the South Sudan populations in Badingilo National Park (85 individuals), Radom National Park (68 individuals), and Southern National Park (147 individuals) (Durant et al., 2017).

Illegal trade poses a historical and ongoing threat to *A. j. soemmeringii*. Live Cheetah are caught and traded illegally into the international pet trade and are also hunted for their skin. Concerns of Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) regarding the impacts of illegal trade in Cheetah on wild populations at the 16th Conference of the Parties of CITES ([CoP16 Doc. 51 \(Rev. 1\) Illegal trade in cheetahs \(Ethiopia, Kenya and Uganda\)](#)) resulted in a [CITES-commissioned study](#) revealing that the highest number of reports of illegal trade stemmed from Eastern Africa, particularly Ethiopia and Somalia (Nowell, 2014), and likely affected the subspecies *A. j. soemmeringii*. This trade existed mainly to furnish a demand for exotic pets on the Arabian Peninsula with the main trade transit route via Somalia to Yemen, and then overland for onward sale in the Gulf States. The study concluded that the level of illegal trade 'could be affecting and threatening most wild populations' but identified Cheetah populations in the Horn of Africa as facing the greatest threat due to their proximity to consumer countries in the Middle East. An intersessional working group on illegal trade in Cheetah was established at the 65th meeting of the CITES Standing Committee (SC65), which led to recommendations and Decisions to the subsequent CITES SC meeting to address the trade ([CITES SC66 Doc. 32.5](#), paragraphs 17 and 18; [CITES Decisions 17.124 - 17.130 Illegal Trade in Cheetahs \(Acinonyx jubatus\)](#)).

In line with CITES Decision 17.127 *Illegal trade in cheetahs (Acinonyx jubatus)* adopted at CITES CoP17 in 2016, a questionnaire was circulated to Parties ([E-Notif-2018/058 Concerning Illegal trade in cheetahs](#)) to gather information relevant to progress on implementing the recommendations adopted at CITES SC66 as presented in paragraph 32.5 of document [SC66 SR](#) and the recommendations adopted at SC69 as presented in paragraph 45 of document [SC69SR](#). An intersessional [Working Group on Cheetah established at the 69th Meeting of the CITES Standing Committee](#) (SC69) conducted an analysis of questionnaire responses received from 17 Parties, one Non-Party with a competent national authority, and two NGOs (see [CITES SC70 Doc. 43](#), Annex 2). This analysis indicated several positive developments, including enactment of new legislation in one consumer country illegalizing the private ownership, possession, trade or breeding of dangerous animals, including Cheetah. However, the report also indicated ongoing illegal trade: 'between 2015 and mid-2018, 13 live Cheetahs, 15 Cheetah skins, two Cheetah skulls, one small piece of a Cheetah specimen and two kilograms of unspecified Cheetah specimens were seized by authorities' ([CITES SC70 Doc. 43](#), paragraph 23).

Official records revealed an average of three confiscations of illegally traded live Cheetah reported to CITES per year between 2002–2011 (Nowell, 2014); however, these confiscations likely only reflect an underestimate of the actual trade. Ongoing territorial disputes between Somalia and Somaliland mean that Somalia does not include records of confiscations in Somaliland (where most confiscations occur) in its official records. The *Cheetah Conservation Fund* (CCF) reported 1,884 incidents that they estimated to involve 4,184 Cheetahs (87.1 per cent live) over 10 years between 2010–2019 (Tricorache et al., 2021). Most of these reported incidents (94.5 per cent) were recorded either in source, transit, or destination countries for the live trade, pointing at *A. j. soemmeringii* being the most affected subspecies (Tricorache et al., 2021). A high mortality rate (70 per cent) has been reported from the known outcomes of confiscations of cubs in Somaliland and Ethiopia, and many captured Cheetah cubs likely die undetected. These records indicate an illegal trade that may be significantly higher than the official reports submitted to CITES and suggest a recent rise in confiscations (Tricorache et al., 2021). The status of the subspecies *A. j. soemmeringii* is yet to be assessed by the IUCN Red List; however, it clearly qualifies for a status of “Endangered” under criterion C2a and, given the extent of the illegal trade, may qualify for a status of “Critically Endangered”.

4. Reintroduction of the Cheetah to its former range in Asia

A. j. venaticus was once widespread in Central and South-Western Asia, India, and the Arabian Peninsula (Bellani, 2020); the last remaining populations on the Indian subcontinent collapsed in the first decades of the 20th century, and the Cheetah went extinct shortly after India's independence (Divyabhanushinh, 2002; Ranjitsinh and Jhala, 2010). The reintroduction of Cheetah to India has been a long-lasting desire toward which the IUCN SSC Cat Specialist Group has at several occasions taken a positive stand (e.g., Jackson, 1984). As a flagship species for the conservation of the Indian dryland ecosystems, the reintroduction of the Cheetah in India was proposed (Ranjitsinh and Jhala, 2010) and recently reassessed (Jhala et al., 2021). The proposal is to initially create 3–5 populations of Cheetahs in (fenced) protected areas in Northern India and subsequently manage them as a metapopulation (Jhala et al., 2021, Cockburn 2021). After clarifying legal aspects with the Indian Supreme Court, the proponents of the reintroduction have re-assessed and confirmed the designated sites in 2020 and are proceeding with the project in 2021 (Cockburn, 2021; Biswas, 2021). Other plans contemplate the reintroduction of the Asiatic Cheetah in Uzbekistan (<http://sgp.uz/en/projects/biodiversity/430>).

The source of Cheetah for the planned reintroduction poses a significant challenge. The most suitable subspecies, *A. j. venaticus*, is not available due to the critical status of the Iranian population. The only alternatives are Cheetahs from Africa; however, there is substantial genetic and morphological divergence between the four African subspecies *A. j. jubatus* (Southern Africa), *raineyi* (Eastern Africa), *hecki* (North-Western Africa), and *soemmeringii* (North-Eastern Africa). Thus, a key challenge for the planned reintroduction process in India is a decision on the source for Cheetahs to be used for a sensible and successful reintroduction.

5. Phylogenetic considerations for Cheetah reintroduction in the historic range of *A. j. venaticus*

Genomic phylogenetic analyses showed that *A. j. venaticus* diverged from African Cheetahs after an earlier split that saw Northern African Cheetahs diverge from Southern African Cheetahs (Prost et al., under review). Although mitochondrial analyses show a closer relationship between *A. j. jubatus* and *A. j. venaticus*, this result may be confounded by a much slower rate of divergence of mitochondrial DNA compared to nuclear DNA (Prost et al., under review, Rai et al., 2020). Based on the most recent nuclear genomic evidence, the Asiatic Cheetah *A. j. venaticus* is most closely related to the North-Eastern African Cheetah *A. j. soemmeringii* (Table 1; Prost et al., under review).

While there is little information available on the ecological relevance of the genetic divergence of the subspecies of Cheetah, morphological differences have been documented. *A. j. venaticus* appears to be smaller than Southern and Eastern African Cheetah, with a reported body mass range of 25 to 38 kg (males) and 23 to 35 kg (females) (Farhadinia et al., 2016). This body mass is more aligned with that recorded for captive males of *A. j. soemmeringii* with an average body mass of 29 kg, which is 29 to 36 per cent less than *A. j. jubatus* males with a body mass range of 41 to 45 kg (Meachen

et al., 2020). These differences are based on a small number of samples and require further investigation. Body mass is well known to have ecological significance, for example in the resource partitioning between sympatric carnivores (e.g., Lanszki et al., 2019), but it is also likely to be linked to human wildlife conflict, where larger predators tend to come into greater conflict with people (Inskip and Zimmerman, 2009). Further ecologically meaningful differences between the Cheetah subspecies likely exist but have not yet been evaluated.

6. Conservation perspectives for Cheetah in Asia and North-Eastern Africa

Given the increasing plight of the Asiatic Cheetah and the precarious status of the North-Eastern African Cheetahs, alongside their relative genetic and morphological similarities, we propose the development of a coordinated conservation and recovery strategy for Cheetah across North-Eastern Africa and its former Asian region. This would require not only sound conservation and management action plans for each of the regions, but also an over-arching strategy. Such an interregional recovery strategy should bring together Parties and other partners in a coordinated approach to address the threats facing the Cheetah in its North-Eastern range. With support of the Parties, the CMS CAMI and the joint CITES-CMS ACI are well positioned to provide the framework for such a novel approach. A combined Cheetah conservation approach would need to:

- a) urgently assess the current genetic status of *A. j. venaticus* to determine whether supplementation from other Cheetah populations is needed to secure its genetic viability. Rapid intervention could help maintaining or re-creating favourable ecological conditions in the range of the remnant populations, and also to preserve as much of its genetic diversity as possible. Any intervention bears its risks and must be carefully considered, but we are increasingly convinced that present conservation efforts are not sufficient to save the Asiatic Cheetah.
- b) take necessary steps to make "sensible" use of confiscated Cheetahs identified as *A. j. soemmeringii* from North-Eastern Africa to establish and maintain a well-managed population for eventual reintroduction/reinforcement back into North-Eastern Africa, once their protection can be secured, and to provide support to the South-Western Asian Cheetah recovery strategy.
- c) welcome India's attempt to reintroduce Cheetah and the critical role India could play in the recovery of the Cheetah across the North-Eastern Africa and South-Western Asia region, if India were to establish a managed metapopulation that would not only allow reintroduction the species to India, but could eventually be used to restore Cheetah populations across this vast region. We therefore recommend using *A. j. soemmeringii* rather than *A. j. jubatus* to establish a captive metapopulation, provided that sufficient suitable animals can be made available. This activity would also allow India's participation and leadership in a wider restoration programme across North-Eastern Africa and South-Western Asia.
- d) collate, along with relevant Parties and potential participating organisations, a catalogue of likely candidates of *A. j. soemmeringii* that could be available for a North-Eastern Africa / South-Western Asia Cheetah recovery programme. This activity will require further rapid assessments (including genetic and health screening according to standardised protocols) and putting in place the transboundary and inter-sectorial cooperation needed.
- e) support Iran in its difficult task to develop a new strategy for the conservation of the Asiatic Cheetah, including the option of creating a small, admixed ex-situ population of *A. j. venaticus* and *A. j. soemmeringii* in order to make best use of confiscated Cheetahs and save as much as possible of the gene-pool of the Asiatic Cheetah.

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