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Research paper

Cheetah reintroduction in relation to SDGs

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Abstract: There have been several studies on Cheetah reintroduction *per se* and recently Cheetah has been reintroduced at Kuno National Park, Sheopur district of Madhya Pradesh, India and there are plans to reintroduce at elsewhere in India. Cheetah's original range included vast areas in India as well as other parts of Asia. Sustainable Development Goal (SDG) is an important concept so it is worthwhile to relate Cheetah reintroduction to SDGs so that local community support and other benefits are ensured and efforts are sustainable. SDG goal 15 (Life on land) is directly related to this and within this SDG, 15.5 deals with combating species extinction. As SDGs rest on three pillars; social, economic and environmental, so it is needed to incorporate these aspects in a well integrated manner. Beside SDG 15 should relate to SDG 1 (no poverty, SDG 3 (good health and well being), SDG 5 (gender equality), SDG 6 (clean water and sanitization) and SDG 13 (climate action). These are some of the SDGs to which SDG 15 can relate while doing Cheetah reintroduction in its former range in India and other parts of Asia.

Keywords: Cheetah, Re-introduction, SDG, interaction, trade - off

Introduction:

Historically widespread across Africa and south-western Asia, cheetah are now known to occur in only 9% of their past distributional range (Durrant *et al.*,2017) From India Cheetah become extinct a few decades back and last cheetah was shot in Chattisgarh . Recently cheetah have been in traduced from Africa at Kuno National Park (746 sq Km ra approx.) in Sheopur district in Madhya Pradesh .

(Durant *et al.*, 2017) estimate approximately 7,100 adult cheetahs across Africa and Asia, with five separate subspecies (Krausman and Morales, 2005). Of these, approximately 4,300 cheetahs (61%) live in southern Africa, 4,029 in our four study countries, and 2,300 cheetahs (32%) in eastern Africa. Historically, cheetahs roamed large parts of sub-Saharan Africa, but have been widely extirpated, now residing in only 22% of their historical range (Durant *et al.*, 2017). This reflects an on-going declining population and that >75% of the species' range exists outside protected areas where

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cheetahs may be exposed to high levels of threat from human persecution.

Review of literature:

Independent assessment by (Weise *et al*., 2017), with an estimated range size lower than the IUCN estimate and an estimated adult cheetah population of approximately 3,577 free-ranging animals, supports the conclusion of (Durant *et al*., 2017) to review the cheetah's threat status and consider up-listing the species to endangered status.

In Asia, the decline of cheetah has been particularly precipitous. Cheetah have been extirpated from 98% of their historical range, and a critically endangered population of Asiatic cheetah *Acinonyx jubatus venaticus* survives only in Iran (Durrant *et al*., 2017).

Across their surviving range, cheetah populations vary in the level of threat that they experience. Most resident range (77%) is on unprotected land, which supports an estimated 67% of the cheetah population. Here, cheetah face increased pressures from widespread human–wildlife conflict, prey loss caused by overhunting and bush meat harvesting, habitat loss and fragmentation, and illegal trade (IUCN/SSC). The species thus faces spatially heterogeneous threats that are higher outside than inside PAs, whereas much of the data available for threat assessment comes from within PAs, which support the highest reported densities of cheetah (~0.02/km^2) (Marnewick, *et al*., 2014; Durant, *et al*., 2011). Populations on unprotected lands and in small or poorly managed PAs, where they are exposed to multiple threats, are likely to be in decline (Durrant *et al*., 2017).

It is clear from foregoing description that there have been studies on Cheetah's population and distribution as well as SDG in relation to each other in general (Tosum, 2017, Singh *et al*., 2018), (Nilsson, 2019), (Pham-Truffert *et al*., 2020), (Bennich *et al*., 2020) and (Scharlemann, 2020). However, there is a clear lack of studies of SDG interactions and trade- offs in relation to Cheetah particularly in Indian context. Therefore, the present paper ahs the aim of putting forward a hypothesis of cheetah's re-introduction in India in the context of interactions and trade-offs of relevant SDGs.

Methodology:

The proposed hypothesis is based on authors own observations while on a visit to Kuno , interaction with forest staff and study of relevant available literature.

Results and Discussion:

Theoretical framework:

Development is an undeniable reality however it has to be sustained. The 17 SDGs present an opportunity for sustainable development. Biodiversity conservation is a very strong focus on sustainable development and SDG 15 (life on land) along with SDG 14 (Life below water) emerge as multipliers of co-benefits across the goals.

Substantial economic, social, and environmental benefits can be obtained from the well-coordinated implementation of the SDGs and intentional use of synergies among goals. Several studies on SDG interactions have demonstrated that actions or inactions toward specific goals positively or negatively affect progress towards other goals (Nilsson et al., 2020, ICSU, 2017 and Pham-Truffert et al., 2020).

Coherent policies to achieve the SDGs requirean understanding of the interactions between SDGs, (OECD, 2019) and (Tosun, 2017). That is, biodiversity-focused SDGs emerge asmultipliers of co-benefits across all goals, and further serve to buffer negative interactions.

SDG interactions refer to interdependencies between the sustainable

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development goals (SDGs), whereby action toward one goal (i.e., SDG or target) impacts the performance of one or more others. There can be synergistic interactions ('co-benefits') or conflictual interactions ('trade-offs') for Each pair of SDG targets, e.g. identified in a formal network analysis based on literature review (Nilsso, 2016). Also, impacts on SDGs may occur at other levels (e.g., local and regional) besides the national and international levels. Studying impacts at all levels is important because achieving SDGs everywhere requires efforts worldwide and achieving SDGs at local and regional levels is a foundation for achieving SDGs at national and international levels (Xu *et al*., 2020). Furthermore, besides places with81 direct connections, other places may also be indirectly affected. (Zhao *et al*.,2021)

(Zhao et al., 2021) worked using the examples of tourism and panda loans between the globally important Wolong Nature Reserve for panda conservation and the rest of the world to evaluate their effects on six SDGs in Wolong and the other 66 panda reserves. Their analyses uncover a total of 17 synergies and two tradeoffs, of which 10 synergies and one tradeoff are internal to Wolong, while seven synergies and one tradeoff occur across reserve boundaries.

Within SDG 15, SDG 15.5 deals with combating species extinction. However, combating species extinction is not feasible without adopting an approach that involves local community participation and locals should see a direct gain for themselves from species re-introduction. SDG have three pillars to succeed; social, economic and environmental. Kuno is a grassland habitat of approx. 745 sq Km , although in Africa re-introduction of cheetah has been done where the area of conservation reserve was 1600 Km sq approx.. There are several villages around Kuno and villagers have been made "cheetah mitr" (friends of cheetah). . It is expected that this re-introduction programme shall relate to SDG (No poverty) be generating employment specially for local people (as well as those outside), SDG 13 (good health and well being) as everyone needs clean air and water , which cheetah's conservation will ensure , SDG 5 (gender equality as both men and women will get employment and both will get educated (it is said that if you educate a man, you educate only a person but if a woman gets educated, whole family gets educated) , SDG 6 (clean water a d sanitisation), habitat conservation will necessitate that trees and conserved and sensitisation is mainained to keep the area disease free and SDG 13 (climate action) ; as all these actions will in directly or directly contribute to climate conservation and reduce greenhouse gases.

Therefore, based on the personal observations and theoretical framework presented above for SDG interaction and trade- off , it is it is hypothesised that Cheetah conservation as a result of re-introduction in Kuno shall involve interaction among various SDG and trade-offs.

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