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**RECLAIMING THE GRASSLAND FOR THE CHEETAH:  
SCIENCE AND NATURE CONSERVATION IN INDIA**

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**Abstract:**

The role of scientists in influencing the aims and priorities of biological conservation in developing countries has been a topic of debate and needs elucidation. The Asiatic cheetah reintroduction plan in India sparked much discussion on the pros and cons of attempting to revive the population of a large carnivore that had been missing from the landscape for over half a century. This paper traces the history of cheetah reintroduction with the aim of exploring the relationships amongst the constituencies of scientists, politicians, local communities and the bureaucracy. This paper suggests that the decision to reintroduce the Asiatic cheetah in India was motivated by political symbolism and had little grounding in scientific rigour. Science was used as a legitimizing tool for a politically influenced conservation goal which had little space for socio-economic constraints or academic rigour. While there are many strands of wildlife conservation emerging in India, the dominant paradigm upheld by biologists continues to be negligent of both scientific and social concerns.

*“Nature is forever being made and remade in speech and text, not least when science and the state collaborate to alter the fate of highlighted species.”*

Paul Greenough, 2003, *Nature in the Global South*<sup>1</sup>

## **1. INTRODUCTION**

### **1.1. Inviolate Areas and the State**

Until recent times, creation of inviolate spaces, where human activity is restricted, was seen as the primary means to conserve nature (Neumann 1998; Brockington 2002). Today as much as 15.4 percent of the earth’s land area is under protection of varying levels for the purpose of biodiversity conservation in the form of legally established Protected Areas (Juffe-Bignoli et al. 2014). Such a view of wildlife conservation has historically diminished the role of people in shaping past environments and justified exclusionary strategies (Rangarajan and Shahabuddin 2006; Beinart et al. 2013; Hughes 2013:4). Restrictions on forest use, village displacements, unclear forest rights and human-wildlife conflict, continue to fuel local resentment around wildlife PAs to this day (Shahabuddin 2010).

Historically, the power of the State has been critical to enforcing the ideal of the unpeopled wilderness, often at odds with local concerns (Brockington et al. 2008; Shahabuddin 2010). In medieval times, game reserves were enforced by Indian princely rulers for their value for trophy-hunting even as they enforced hunting bans for local villagers (Rangarajan 2001; Hughes 2013) the needs of game species also dictated the manipulation of habitats such as to encourage their proliferation. For instance, species such as the otter in Great Britain were protected for hunting, seen to be a challenging activity for upper-class English, but the protection took place at the cost of fisherpeople’s livelihoods (Allen 2013: 125). In princely states in north-western India, wild boar were

artificially fed to increase their populations, as it was a favourite sporting animal. Peasants suffered heavy crop damage as a result but were not allowed to cull the species (Gold 2003).

## **1.2. Science and Conservation**

In the 20<sup>th</sup> century, scientists came to play an important role in supporting State agendas on conservation (Chhatre and Saberwal 2006) and became increasingly involved in protected area creation and management (Adams and McShane 1996: 85-108; Shahabuddin 2014). For instance, in India, with the promulgation of Project Tiger in 1972, the hunted tiger was transformed overnight to a conservation icon, through the enunciation of ecological arguments (Lewis 2004: 161; Rangarajan 2009). Scientists such as Salim Ali, Dillon Ripley and M.K. Ranjitsinh played critical roles in conceptualising conservation ideals for India in the twentieth century and even implementation of that vision through political lobbying (Lewis 2004). In Africa, Western scientists were involved in major decisions in establishment of protected areas and management planning from the 1960s, often to the disregard of the socio-economic realities (Adams and McShane 1996: 207-226).

In the 21<sup>st</sup> century, too, ambitious conservation ideas such as ‘rewilding’, with far-reaching consequences for human society, have been initiated by governments in partnership with biologists. Rewilding aims to bring back top predators in nature reserves and human-free landscapes where they have gone locally extinct (Donlan et al. 2005), as they are considered useful flagship species for conservation and playing a crucial role in enhancing biological diversity.<sup>2</sup> For instance, the reintroduction of the Eurasian lynx in deciduous woodlands and moors of Britain is being seriously debated<sup>3,4</sup>. India is one of

the few developing countries where reintroduction of predators has been undertaken. In 2008, tigers were reintroduced to Sariska Tiger Reserve from where they had disappeared in 2004 (Johnsingh and Madhusudan 2009; Shahabuddin 2010).

The role of science and scientists in conservation in India has been debated extensively during the last decade (Rangarajan 2003; Lewis 2004). Biologists are often critiqued for their role in perpetuating exclusionary modes of conservation and interpretations of nature (Guha 2003; Shahabuddin 2014). Scientific tools were used to perpetuate the state's ideals of conservation in the case of National Parks by Chhatre & Saberwal (2006) and for the endangered Bengal tiger by Shahabuddin (2010). In some senses, the agenda for conservation was largely decided by the State and scientific knowledge was then used to legitimize it (Shahabuddin 2010). In other cases, the need for conservation was highlighted by scientists and taken up by governments as worth pursuing (Rangarajan 2003). Much of the scientific lobbying on conservation in India was inspired by ecological ideas from the Western world which saw hands-off preservation as the primary means of saving biodiversity (Rangarajan 2003).

More recently, others argue that Indian scientists have attempted to adapt the Western ideals of ecology to suit the Indian situation by creating a place for human influence (Lewis 2004: 233-239). A more participatory view of nature conservation is emerging which has space for people as it gives as much importance to local knowledge as to expert knowledge. This view recognizes the dynamism of ecosystem properties in response to both natural and anthropogenic stimuli and, consequently, the historic imprint of humans on nature (Saberwal et al. 2001; Rangarajan et al. 2014). Such a recognition creates space for humans as important players in determining ecosystem

properties in contemporary times. However, it is unclear how influential the new ideas are and to what extent they influence formal conservation discourse today (Shahabuddin 2010). With the new developments triggered by global thinking on protected areas and people-free spaces, the interplay between conservation science and politics in India remains to be elucidated in the 21<sup>st</sup> century.

### **1.3 Rewilding with Cheetah**

It is in this context of scientific participation in conservation, that a recent rewilding proposal has to be seen: the reintroduction of the Asiatic cheetah, a species that went extinct in India in 1967. The cheetah, an iconic large cat species, has been clocked to be the swiftest mammal on the planet, a predator that is highly specialized for taking antelope prey. The cheetah was propounded to be a useful flagship species for conservation of grasslands, an ecosystem that has traditionally been neglected by governments in India (Ranjitsinh and Jhala 2010), due to the emphasis on forestry and timber management in colonial times.<sup>5</sup> A top predator was thought to control herbivore species through the cascade effect, thus leading to healthier, more diverse ecosystems (Terborgh and Estes 2013). The reintroduction plan seemed to take its inspiration from the accelerating movement of “rewilding” in Western countries (Donlan et al. 2005; Jorgensen 2013).

The cheetah reintroduction plan sparked a lively and rancorous debate on the pros and cons of attempting to revive the population of a large carnivore that had been missing from the Indian landscape for half a century. The ecological merits of trying to revive cheetah populations in India was fiercely debated amongst scientists and bureaucrats<sup>6</sup>. People feared that it might deepen existing park-people hostilities in India. Some saw it

as an assertion on the part of influential biologists, inspired by the concept of rewilding. This paper attempts to trace the history of thought and imagination on cheetah reintroduction, and explores the uneasy relationships amongst the constituencies of scientists, civil society and government through the medium of the cheetah. In particular, it seeks to answer the question: what is the role of science in conservation decision-making in India and how is it manifested in the planning process?

## **2. METHODOLOGY**

This paper is based primarily on scanning of newspapers, internet sites, government reports, court judgements and scholarly articles to explore the history of and thinking on the cheetah reintroduction plan in India. News reports and opinion pieces on cheetah in prominent Indian newspapers such as Times of India were scanned from 1900 onwards. Other national newspapers were searched for articles on cheetah through available databases that started in 1995. Interviews were carried out with two professional Indian biologists who work on carnivore ecology. Government reports related to the cheetah plan and court judgements on the issue were also studied to understand the debates and motivations surrounding the plan.

## **3. ARGUMENTS**

### **3.1 Cheetah in India**

The cheetah historically occurred throughout the semi-arid region of Africa, West Asia, central Asia and India<sup>7</sup>, due to its adaptability, being able to survive in deserts, grassland and woodland savanna (Eaton 1974). It is specialised for open-chase predation on antelope and deer. In East Africa, the cheetah preys on a diverse size range of species from hares and gazelles to zebra, warthog and wildebeest. However, its preferred prey in



East Africa consists of medium-sized antelope such as Thomson's gazelle and Grant's Gazelle which weigh between 40 lbs to 150 lbs (Eaton 1974: 52). Cheetah individuals are highly dispersed due to their need for following herbivores and consequently, the home-ranges can be huge, estimated to be 1651 sqkm in Namibian farmlands (Marker and Mills 2008) and 1583 sqkm in Algerian Sahara (Belbachir et al. 2015). In scrub savannah of South Africa, with high prey density, the home range of a single cheetah group has been estimated to be 126-195 sqkm (Broomhall et al. 2004).

Two races of the cheetah are recognised today- the African (*Acinonyx jubatus jubatus*) and the Asiatic (*Acinonyx jubatus venaticus*). However, the biological basis of the subspecific differentiation is still equivocal, as cheetahs across continents have been found to be highly homogeneous genetically (Divyabhanusinh 2006: 174). The African subspecies currently occurs in a number of fragmented populations in Africa, of which the ones in south-west Africa (Namibia & Botswana) and East Africa (Kenya & Tanzania) are the most numerous. <sup>8</sup> Iran holds a total population of the Asian subspecies of approximately 100 scattered over a large area.<sup>9</sup>

Cheetahs are thought to have naturally dispersed from populations in Africa just after the Pleistocene, based on the most recent genetic studies (O'Brien 2013). In India, historical information points to the presence of cheetah in Gujarat, Rajasthan, Punjab, Haryana, all the way to Orissa in the east and the River Ganges in the north in medieval times. It was also found in central India up to Andhra Pradesh and Karnataka upto the early nineteenth century. There are also some records from denser teak-sal forests of Chhotanagpur area (Divyabhanusinh 2006:91,102). The distribution of cheetah is based

on cave art that depicts cheetah from 2500 to 300 BC and archival records and paintings of hunting and capture from the wild from 1100's onwards (Divyabhanusinh 2006: 27).

In India, the main prey were blackbuck, and possibly chinkara and chital, abundantly found in grassland and open scrub habitats at one time. Cheetah are also reported to have preyed on domestic sheep and goat when no other prey was available (Divyabhanusinh 2006:2).

In medieval times, the Mughal emperors created the art of coursing with cheetah-hunting antelope with trained cheetah that were caught from the wild (Divyabhanusinh 2006). The cheetah became a symbol of princely pomp of the Mughal Court, with much resource and labour going into their upkeep. Cheetahs were captured from the wild and trained for up to six months before they could be used for coursing. The art of capture of cheetahs from the wild and their training is described in detail by Divyabhanusinh (2006).

### **3.2 Cheetah Decline**

Globally the cheetah has seen a decline of 90 percent in the 20<sup>th</sup> century, just in Africa (Roff 2012) and today numbers an estimated 10,000 globally.<sup>10</sup> The causes for cheetah decline in India have been much debated by conservationists. As with most extinctions, negative feedbacks from a variety of causes seem to have led to its extinction in India. The cheetah is likely to have been naturally rarer than Bengal tiger or leopard due to its needs for a larger home-range. It was not as versatile as the Bengal tiger which enables the latter to live in a far wider range of habitats. Also its reportedly low levels of genetic heterogeneity- caused due to the population bottleneck in its evolutionary history- manifests in high infant mortality and reduced fecundity compared to other cat species

(O'Brien 1994). Further, up to 50 percent mortality is reported from birth to ten months, partially caused by hyena, lions and other carnivores (Eaton 1974: 40).

By early 1800's, the cheetah was already rare in India, possibly due to the considerable pressure exerted on the wild populations for capture for Mughal courts from 1550's onwards (Divyabhanusinh 2006; Eaton 1974). It was never a good breeder in captivity, so that almost all captive cheetah were from the wild.

During British times, the hunting of cheetah for trophies became prevalent (Divyabhanusinh 2006: 88-92) but was never so widespread as that of Bengal tigers. This could simply be due to its rarity by that time. However, Rangarajan contends that from 1871 onwards, rewards were offered for cheetah-killing leading to widespread bounty-hunting (Rangarajan 1998). This must have added considerable pressure on the declining Indian population. Given the rarity of the species by this time, even small offtakes could cause local extinctions (Rangarajan 1998)

The twentieth century saw the accelerated expansion of agricultural settlements and habitations in the plains and plateau regions in response to a growing human population. M.Krishnan, an eminent naturalist, contended that the primary reason for its population decline was the conversion of the scrub forest and grasslands to cultivation in peninsular India from 1900's onwards. The degradation of grasslands due to over-grazing in some parts likely further reduced the extent of its habitat.<sup>11</sup>

Extreme rarity in the early 1900s can be surmised by the fact that the African cheetah began to be imported in small numbers into the country for hunting antelope (Craighead and Craighead 1942; Divyabhanusinh 2006: 152), a sport that continued right up to 1940s, the time of the demise of the princely states. In 1942, two American

naturalists write of hunts of blackbuck led by imported African cheetahs, in the princely state of Bhavnagar, Gujarat (Craighead and Craighead 1942).

The reports vary on the date of the last sighting of the cheetah in India. The last record of a cheetah shoot is from 1947 from Korea, Madhya Pradesh. By 1955, the Indian Board for Wildlife accepted the fact of the cheetah's extinction in India.<sup>12</sup> However, a credible report of a live sighting is from the winter of 1967-68 when Maharaja M.S.Singh Deo sighted a pair between Surguja and Sidhi districts, in northern Madhya Pradesh (Divyabhanusinh 2006: 222).

### **3.3 History of Reintroduction**

The debate over whether cheetah reintroduction compatible with the stated aims of conservation, started soon after the realisation that it had become extinct in India. As far back as 1955, the State Wildlife Board of Andhra suggested the reintroduction of Indian cheetah, at least in two districts in the state of Andhra Pradesh, on an experimental basis.<sup>13</sup> Ten years later, the pros and cons of reintroduction of cheetahs was critically discussed by M. Krishnan in a newspaper article in 1965<sup>14</sup>. It is likely that this article sparked an interest in the reintroduction plan given the influential position that M.Krishnan enjoyed in the government, particularly with Indira Gandhi, a Prime Minister with considerable interest in nature and wildlife (Rangarajan 2009).

In 1984, Divyabhanusinh was asked to write a paper on status of cheetah in India for the MOEF. This paper was subsequently sent to the Cat Specialist Group of Species Survival Commission of IUCN where it sparked international interest (Divyabhanusinh 2006). According to a report in TOI, the matter of reintroduction of the cheetah was formally rekindled by Zafar Futehally, Honorary Secretary of WWF in early 1980s, who

wrote to Prime Minister Indira Gandhi on the issue, calling on her to reinstate the process<sup>15</sup>. In the same article, M.K. Ranjitsinh was quoted as suggesting the khadir <sup>16</sup> area of Rann of Kutch as suitable for release of the cheetahs. The Department of Environment, formally wrote to the Iranian government to ask for the cheetahs and apparently received a positive response. The favours asked of Iran are confirmed by another newspaper report on ongoing talks between the Indian government and Iranian government for obtaining cheetahs. In addition, offers by the Kenyan government to send cheetahs to India were reported. <sup>17</sup>

In 1995, eminent biologist and administrator, T.N. Khoshoo, also refers to the heated debate that likely took place through the late 1970s up to the end of her Prime Ministership in 1984, pointedly showing his opposition to the idea (Khoshoo 1995)<sup>18</sup>:

*“The reintroduction project was discussed threadbare during Indira Gandhi’s tenure and found to be an exercise in futility.”*<sup>19</sup>

T.N. Khoshoo himself, spoke strongly against the idea, saying that it was more important to conserve species that were still extant such as the lion and tiger, rather than trying to re-establish an extinct species that had little chance of surviving in a greatly transformed country (Khoshoo 1995). The idea of cheetah reintroduction, lay dormant through the 1990s with the lack of a politician to support it. Various news items related to the cheetah plan continued to appear. In November 1998, there was an announcement that a cheetah breeding facility at Machiya Nature Reserve, was to be set up in Jodhpur.<sup>20</sup> In October 2000, in the midst of much confusion regarding the possible sourcing of the cheetah, the BBC and Indian Express reported a proposal to attempt cloning of the

cheetah by Lalji Singh, director of the CCMB, Hyderabad,<sup>21</sup> which drew both excitement and scepticism.

The publication of the historical treatise by Divyabhanusinh (1995) on the cheetah in 1995 was another landmark. The information on the historical trajectory of the cheetah in India was a revelation for many conservationists and possibly laid the foundation for another serious look at the cheetah plan. He strongly recommended the reintroduction of the cheetah, seeing it as important for ecological reasons and as a flagship species for grasslands.

In August 2009, a time coinciding with the installation of a new environment minister, Jairam Ramesh, newspapers reported rekindling of the talks with Iran for sharing of their animals.<sup>22</sup> Iran had always been hesitant to commit to the idea, given the rarity of the species there. In September of the same year, the cheetah plan received a fillip when the Ministry of Environment & Forests, through the Wildlife Institute of India (WII), organized a meeting in Gajner, Rajasthan, in September 2009 to discuss the issue. The meeting was jointly organised by the WII in association with the Wildlife Trust of India (WTI), a prominent NGO based in Delhi. The Cheetah Conservation Fund, IUCN and other NGOs were represented as were high-ranking officials of several State Forest Departments.

As a result of this meeting, the Minister approved the recommendation for a detailed survey of seven potential reintroduction sites (and three holding sites for captive breeding) in four states, shortlisted during the Gajner consultative meeting. The survey would further prioritise sites and also prepare a localised action plan to prepare for the return of the cheetah.<sup>23</sup> The animals, the press release said, would be obtained from

Africa, but failed to lay out specifics regarding the source population. By now, Iran was ruled out as a possible source of animals.

One year later, in July 2010, Wildlife Institute of India and Wildlife Trust of India jointly completed the report on feasibility of cheetah reintroduction in India which was made public (Ranjitsinh and Jhala 2010; hereafter referred to as the WII-WTI report).<sup>24</sup> Three sites were finally identified for the cheetah reintroduction of which Kuno Wildlife Sanctuary in Madhya Pradesh<sup>25</sup>, given the large area of habitat available and the already incurred investments in village displacement.<sup>26</sup> It was suggested that initially 27 cheetahs would be moved to the core area of 347 sqkm from where they were expected to spread out to a larger forested landscape of 3200 sqkm surrounding (and including) Kuno WLS. Eventually the report envisaged cheetahs populating an area of 6500 sqkm in the region. The public announcement of the plan sparked much furore in the national media. Conservationists took strong positions on both sides of the debate.

In April 2011, new sites were being scouted for cheetah in Rajasthan in addition to Kuno-Palpur and Nauradehi in Madhya Pradesh<sup>27</sup>, after the idea of Shahpur grasslands was opposed.<sup>28</sup> In fact there was considerable misgiving amongst the officials of the Rajasthan Forest Department on the cheetah reintroduction plan, particularly on the viability of the Desert National Park in Jaisalmer.<sup>29</sup> This was the conservation site for the endangered Great Indian Bustard, a crane-sized grassland-specialised bird, and it was feared that the cheetah may adversely impact the growing population of this species in this PA.<sup>30</sup>

To complicate matters, a Public Interest Litigation, filed by biologists against the cheetah plan in 1995 was heard in 2013. The primary plea was that the huge financial and

scientific investments in effecting the village displacements from Kuno had been made for creating a second population of the Asiatic lion, a plan that should be adhered to.

In 2012, the Supreme Court of India stayed the order to reintroduce cheetah to Kuno Palpur on the basis that the project was “misconceived” and that the matter had not been referred to the National Board for Wildlife<sup>31</sup>. The Supreme Court bench stated that the scientific studies were wanting and the reintroduction of African cheetahs would be “arbitrary and illegal and clear violation of the statutory requirements provided under the Wildlife Protection Act.”<sup>32</sup> The SC also agreed that the priority should be to first reintroduce the Asiatic lion and directed the Ministry of Environment and Forests to do so within six months.<sup>33</sup>

To add to the confusion, a book by eminent naturalist Valmik Thapar et al. (2013) sparked much controversy in India through its suggestion that cheetahs were exotic to India and had been introduced by anthropogenic means around 300 BC, and later by medieval princes for their game purposes. Based on their contention of the cheetah being an “exotic alien,” the authors opposed any move to “reintroduce” it into the country. However, in a detailed response, in the Journal of the Bombay Natural History Society, Stephen O’Brien, based on the latest molecular DNA analysis, cited evidence of colonization of Asia (Central and West Asia) by cheetah ancestors (from N.America) during the Pleistocene (2.5 MYA) which then spread into Africa, which precludes the role of humans in its subcontinental spread (O’Brien 2013). He held the view that the Iranian and African populations are genetically very close and appear to have diverged 10-13,000 YBP around the end of the Pleistocene, before the spread into African continent. He also stated that the Iranian and Indian subspecies are closer to each other than either is from



any of the other African sub-populations, seemingly having diverged from their African cousins 4500-6000 YBP (O'Brien 2013). Ranjitsinh and Divyabhanusinh (2013) also argued against the idea of cheetahs being a human-aided import into India based on historical evidence.

The cheetah wars continued on through 2014. On April 24, 2014, an assertive petition was filed by the Ministry of Environment and Forests to vacate the Supreme Court stay on cheetah relocation, replying to all problems pointed out in the SC order and denying any shortcomings in WII-WTI report.<sup>34</sup> Possibly sensing failure with the issue not being taken positively at the Supreme Court, on January 31, 2015, WII was commissioned to carry out a survey of habitat suitability for the cheetah in Sathyamangalam Forests of the state of Tamil Nadu.<sup>35</sup>

### **3.4 Debates on the Cheetah Plan**

Despite the admittedly poor success rate of reintroductions globally (MacDonald 2009) as many as 172 have been carried out since 1900 (Seddon et al. 2007). Reintroductions of carnivores come with many ecological and social concerns, however. The problems and pitfalls are currently being debated globally, such as the socio-economic concerns, appropriate ecological frameworks for planning and monitoring protocols.

What was evident early in the debate over cheetahs in India, was the fact that conservationists of all hues were highly divided regarding the merits of the cheetah plan. Post-2010, while several biologists and senior forest officials were in favor of the cheetah plan, many others were not.

Much of the skepticism about the plan stemmed from the estimated area needs for a viable population of the cheetah, given the species' high dispersal capabilities and vast home-range in similar habitats. Even early in the debate, naturalist M.Krishnan talked about the difficulties of providing large enough tracts of grassland habitat for the species.<sup>36</sup> The severe shortage of vast grassland stretches large enough anywhere in India seemed to preclude a comfortable accommodation of the large cat.<sup>37</sup> Several conservationists questioned the cheetah plan for its overall impracticality and unrealism, as did Ullas Karanth, tiger biologist with the Wildlife Conservation Society.

*“To establish a viable population in the wild we would need 10,000 sqkm area essentially free of dogs, goats, sheep etc. We do not have any such area in India. Losses of introduced animals will be high and sustained for a long time...all this is far too expensive and impractical. So first invest and create such a habitat and then think of cheetahs...”<sup>38</sup>*

Within the government too, there were many detractors of the plan. Several news agencies reported that local governments appeared reluctant to set aside the amount of land that would be necessary for the cheetah to survive in the wild. For instance, the erstwhile Chief Wildlife Warden of the Indian state of Rajasthan, was even quoted as saying that “it was not a wise idea.”<sup>39</sup>

It was all to do with the numbers. The WII-WTI report deemed 3200 sqkm as sufficient for 100 cheetah, after the initial released population of 27 (released in the core, Kuno WLS) multiplied and dispersed out. However, given the findings of long term research in Africa, it was obvious that the report had made a considerable under-estimate and much more area, approximately 12,700 sqkm, would be needed for 100 cheetah. This

too, is a conservative estimate as the proposed site's habitat quality was likely to be lower than the South African habitats on which the home-range estimates were based.<sup>40</sup>

The approach to calculation of prey density, the most crucial determinant of habitat suitability for the cheetah, was also wanting in rigour,<sup>41</sup> Prey density was extrapolated from unpublished data collected five years earlier in 2005 by a PhD student (Banerjee 2005). To this data, an annual growth rate of 5 percent was applied uniformly to all the existing species.<sup>42</sup> Also densities of different prey species were not given separately in the WII-WTI report. Numbers of sightings, not calculated to densities, were reported under four categories: all wild ungulates, lagomorphs (hares), primates (mainly grey langur) and peafowl. An ideal prey assessment, should have included, at the minimum, a species-wise breakdown of prey density so that a clear assessment could have been made of the habitat suitability for the cheetah, given its preference for a certain size range of prey. There are a few other assessments of prey density that were carried out by WII in 2004-05, and in 2006 that are mentioned in the Supreme Court judgement of 2013, but how these affect the suitability of the habitat for cheetah is not specified.<sup>43</sup>

As stated earlier, the cheetah's optimal prey in Kuno would have been blackbuck, chinkara and cheetal deer, based both on their size/weight as well as their preference of grasslands and open woodlands. Of the three optimal prey species, only the cheetal is seen in large enough numbers according to all reports. Blackbuck was reported to be present in one small herd only while chinkara is not reported at all, but was seen in small numbers by the present author. In most of the other estimates mentioned by the SC Judgment, chital, sambar and nilgai are the most abundant while black buck and chinkara are reported in very small numbers or absent. It is unclear to what extent the young of larger

herbivores such as sambar, nilgai and feral cattle would be taken by the cheetah: African studies of cheetah ecology are not used for understanding this aspect.

Tied into habitat suitability issues was also the question of current understanding of Indian grasslands. Grasslands are complex and dynamic ecosystems and the factors that affect and shape plant species and composition are as yet largely unknown in India, as in many parts of the world. While some grasslands are largely fire-maintained, others may be controlled by soil fertility or floods. Tied into this are questions of past anthropogenic influences such as grazing and fire that may have played a role in maintaining plant species composition and diversity in the past, and that now have been modified. In addition, there are issues of over-grazing, grassland degradation, soil compaction and invasion by exotics in areas vacated by people. Such factors further lead to degradation and unsuitability of the habitat for ungulates<sup>44</sup>. Clearly in-depth studies are required to ascertain the need and processes for management restoration of the available habitats if the cheetah was to survive here. Biologist Ravi Chellam questioned the available scientific knowledge that could enable management

*“We know little about the kinds of grasslands that existed or the mix of prey species that sustained the cheetah. There is likely to have been considerable change in these systems since 1500s given climate change and extensive changes in land use. Given the lack of such knowledge, how can we satisfactorily restore such habitats, let alone assure the success of the cheetah introduction?”*

Ravi Chellam<sup>45</sup>

Apart from the ecological concerns, social issues surrounded the cheetah plan. One of the reasons Kuno was chosen was that it was populated by “tribal pastoralists/hunters with low impact” according to the WII-WTI report. However, the chosen site was also the place from where twenty-four villages (comprising approximately 5,000 people), were displaced for the purposes of creating a second home for the Asiatic lion. They were subsequently resettled outside its boundaries, during 2000-2004 (Sharma and Kabra 2007). The displaced people, mainly belonging to the backward tribe of Sahariyas, faced problems of livelihood security and impoverishment even several years after displacement (Sharma and Kabra 2007). Poor quality of allotted land, low financial allocations, poor infrastructure and lack of public consultation contributed to the poor quality of displacement to the extent that poverty, health and employment issues continue to shadow the population for several years afterwards. Such problems have been common in displacement history (Shahabuddin and Lakshmi 2014). Given the bitter experience of displacement, the local people were already likely to be alienated from conservation in general, and carnivore reintroduction, in particular.<sup>46</sup>

Given the critical social issues that could have impacted the success of the cheetah plan, inadequate information was generated that did not involve social scientists or village groups. For instance, there were no interviews in the larger target area (of 3200 sqkm.) surrounding Kuno where the cheetahs were expected to disperse after the initial introduction. Field surveyors mainly concentrated on people who were ousted in the first displacement phase and lived in villages outside the south-eastern boundary of Kuno. Surveys were done on meat-eating and hunting frequency which were unlikely to reveal real patterns given the methods adopted, such as direct questioning without

traingulation. The implications of the socio-economic survey for the planning process were not clear.

The proposed introduction of the cheetah would cause yet another 169 villages to be displaced (from the potential cheetah habitat of 3200 sqkm. area) and people to be compensated with land and other benefits (Ranjitsinh and Jhala 2010: 46). It was doubtful whether such an allotment could be feasibly made and whether these issues would be dealt with adequately in this phase, given the poor history of displacement.

Issues of human-wildlife conflict that could have cropped up between villagers and cheetahs in the future, were also given short shrift in the WII-WTI Report. Some officials admitted that the cheetah plan was rather unrealistic given the increasing negative interactions between locals and carnivores in different parts of India<sup>47</sup> Among large cats, cheetahs are considered the least aggressive towards humans; their aggression is limited to situations when their kills are threatened (Eaton 1974:161). Studies in East Africa show that when there are enough prey, cheetah do not show interest in domestic livestock such as sheep or goats (Eaton 1974: 161). However, given the patchy densities of prey present in the landscape, biologists such as A.J.T. Johnsingh<sup>48</sup> and Ullas Karanth contended that cheetahs were likely to feed on small livestock such as sheep, goats and calves and even village dogs. <sup>49</sup>

Given the likelihood of conflicts arising after cheetah reintroduction, a concerted plan of public outreach and education was not visible in the WII-WTI report<sup>50</sup>. As a prominent conservationist said:

*“We do not have a record of sensibly engaging with local people to prepare them for a novel new carnivore in their midst or to mitigate the adverse*

*impacts on them or involve them in economic activities around the cheetah. Lack of sufficient networking and sensitisation can lead to havoc with the introduction of a big cat.”*

Ravi Chellam<sup>51</sup>

The authorities saw displacement through offer of compensatory packages as the only possible interface with the affected villages. The involved scientists appeared to ignore the local political economy, revealed in statements such as:

*“The people residing in the forested areas outside Kuno are poor and backward and a good compensation package like the one offered for the core areas of Tiger Reserves would be irresistible.”*

Ranjitsinh and Jhala (2010)

In the process of poor conservation planning, the planners seemed to have lost an invaluable opportunity to establish opportunities for co-existence and incentives for conservation amongst the local communities. Possibilities for sustainable extraction of non-timber forest products, wildlife and bird-based tourism or homestay development for livelihood development were ignored. Such means have been found to be at least partially successful in garnering local support for conservation in many parts of the world.<sup>52</sup>In contrast, the reintroduction of the Eurasian beaver in Great Britain took ten years due to the elaborate public consultations and parliamentary deliberations, in addition to the scientific studies (MacDonald 2009).

#### 4. CONCLUSION

Large carnivores loom large in public and governmental consciousness, more than any other group of wild species (Quammen 2003). In this sense, the proposed cheetah reintroduction harks back to times in Indian history when particular animals were symbols of state power and identity (Hughes 2013: 49,86,146). Today, conservation programs frequently center around charismatic carnivores. For instance the gray wolf in North America (Smith and Bangs 2009) has been a prominent target for reintroduction. The social and ecological implications of these programmes, not always successes, have been much debated in public and scientific arenas (MacDonald 2009).

The cheetah is another iconic species that reinforces public ideals of conservation around the world and whose reintroduction was seen as a triumph of wildlife management in India. The cheetah idea captured the imagination of public, media, biologists and government alike right from the time the official WII-WTI report was made public. To be transporting and successfully reviving a wild population of the “fastest cat in the world” seemed to be a major motivation for initiating the reintroduction plan. Biologists and government often take pride in the fact that the cheetah is the only mammal species that has gone extinct in India in the recent past (Ranjitsinh and Jhala 2010). The return of the cheetah was obviously motivated by the nationalist ethos, as seen in the following quotes:

*“The return of the cheetah would make India the only country in the world to host six of the world’s eight large cats and the only one to have all the large cats of Asia.”*

M.K. Ranjitsinh, quoted in Braun, 2009<sup>53</sup>



*“It (Cheetah) is the only mammalian species to have gone extinct in peninsular India in historical times and bringing it back will have special significance for the national conservation ethic and ethos.”*

Petition of the Ministry of Environment and Forests, Government of India to Supreme Court, 2014

However, the political imperatives soon overshadowed the scientific ones. The government’s use of scientific facts and tools for justifying the cheetah reintroduction was selective and inadequate. The WII-WTI report used incomplete and even questionable data, both social and ecological, for justifying the ambitious project. Largely ignoring the possible conflicts between humans and wildlife, the requirements for enabling or facilitating future co-existence were only superficially considered. While the cheetah plan was opposed by a number of conservationists who saw it as an unrealistic project under the circumstances, the government pushed ahead with its agenda, strengthened by biologists who saw this as a landmark wildlife project for India. I, thus, show here that governments respond more to political motivations than scientific or social arguments when they are involved in conservation decision-making, which leads to compromises on public participation and scholarly rigor.

In recent times, the role of scientists in perpetuating the exclusionary ideals of conservation have been debated in a number of case studies. Mike Lewis contends that Indian ecologists have reinvented the Western ecological constructs with Indian imperatives and realities in a give-and-take process that spans half-a-century (Lewis 2004). Rangarajan et al. (2014) showcase several case studies from all over India which indicate that ecologists are increasingly factoring in humans and their influences in

maintaining diverse ecosystems. In this paradigm, as much attention is paid to strengthening conservation in human-dominated ecosystems as to inviolate zones. The role of traditional knowledge base in terms of the understanding that it bring to ecosystem management is increasingly being acknowledged and used. In this sense, there are now scattered efforts to re-invent the conservation ideals with participatory notions of how to do ecology and incorporate holistic views of the human place in nature (Rangarajan et al. 2014). Yet, due to the dominant paradigm adopted by the government and supported by biologists, conservation will continue to be a battlefield for tussles amongst various kinds of imagined nature, to the detriment of both scientific rigor and environmental justice.

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- <sup>43</sup> SC Judgement 2013
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