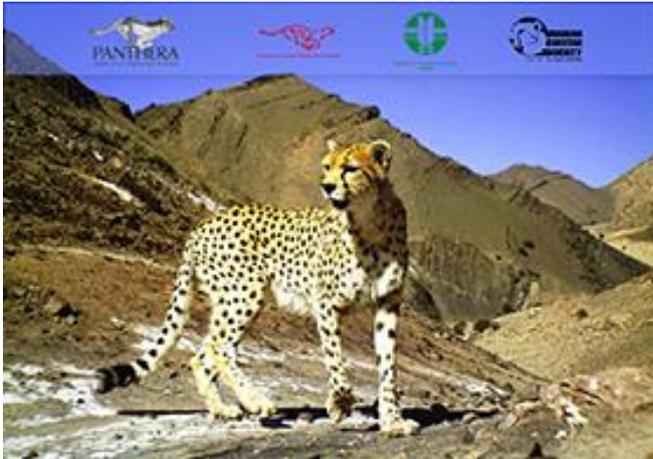


## IUCN/SSC Cat Specialist Group – Project of the Month December 2014

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The Cat Specialist Group's website ([www.catsg.org](http://www.catsg.org)) presents each month a different cat conservation project. Members of the Cat Specialist Group are encouraged to submit a short description of interesting projects with this standardised form.

### Status of Asiatic Cheetah in Iran: A Country-Scale Assessment



An adult male cheetah, named Arash in Naybandan Wildlife Refuge, eastern Iran. This image was selected as "Overall Winner of the Research" categories and "Winner of the Rare Species" category by BBC Wildlife Magazine in 2014, the prize will be used to buy additional camera traps. © ICS/DoE/CACP/UNDP/Panthera

**A country-scale demographic assessment was established to understand population size and composition of the Asiatic cheetahs within the animal's main nucleus across the species single stronghold outside Africa. The present report presents results of that intensive effort in order to provide a more realistic and comprehensive baseline for the state of the Asiatic cheetahs in Iran. The goal of this work was to provide a baseline for monitoring the status of the species in the country. Finally, we propose implication for the conservation of the country population.**



A rare image of an adult female with three small cubs from Iran. The female successfully raised all her cubs to independence in Miandasht, northeastern Iran. © ICS/DoE/CACP/UNDP/Panthera

Navid Gholikhani holds a bachelor of environmental sciences and works in the Cheetah Monitoring Project in Iran since 2011.

### Background

Historically, the cheetah *Acinonyx jubatus* accured widely through much of non-forested Africa, the middle east and southern Asia (Nowell & Jackson 1996), suggesting that the species might have a wide habitat tolerance (Bisset & Bernard 2007). In Africa, cheetahs have lost 76% of their historic range (Ray et al. 2005). In Asia, it formerly ranged across

southwest and central Asia to India (Nowell & Jackson 1996), but in the past four decades, the occurrence of Asiatic cheetahs *A.j.venaticus* has only been confirmed from Iran (Farhadinia 2004) with some occasional reports from some neighboring countries (i.e., Pakistan: Roberts 1997, Husain 2001; Afghanistan: Manati & Nogge 2008; Turkmenistan: Flint 1988).

The Asiatic cheetah was known to exist in more than forty areas in eastern Iran as well as Iran-Iraq borders in west during the 1950s (Harrington 1977, Ziaie 2008, Jourabchian & Farhadinia 2008) with an overall population of 200-300 (Firouz 1974). However, the latter population figure was considered to be an over-estimation by some experts, considering the country's population to be around 100 (Joslin 1984). It was declared as protected by law in 1959 by the former Iranian Game Council (Firouz 1974). However, due to weakened protection measures in early 1980s, the cheetah disappeared from most of its range (Fig 1; Ziaie 2008).

In late 1990s, Jourabchian (1999) reported that Iran hosts fewer than 40 cheetahs, in contrast to Asadi (1997) who reported some 50 to 100 individuals, before establishment of a comprehensive initiative, namely as Conservation of Asiatic Cheetah Project (CACP) in 2001. During first half of the 2000s, the country's cheetah population was still supposed to be fewer than 60 individuals, mainly living in five reserves (Schaller & O'Brien 2001, Farhadinia 2004).

Parallel to intensive attempts to halt drastic decline in the cheetah and prey number; however, more investigations by trained experts resulted in higher number of areas approved for existence of the cheetahs, so presently 17 areas are known with confirmed cheetah presence in the country. Thus, a higher cheetah population was considered in second half of the 2000s, mostly around 60 to 100 individuals (Hunter et al. 2007, Jourabchian & Farhadinia 2008, Jowkar et al. 2008) and it was officially published in Iran' A Field Guide to Mammals (i.e. 70-100 cheetahs; Ziaie 2008). However, none of these figures were based on scientifically accepted methods.

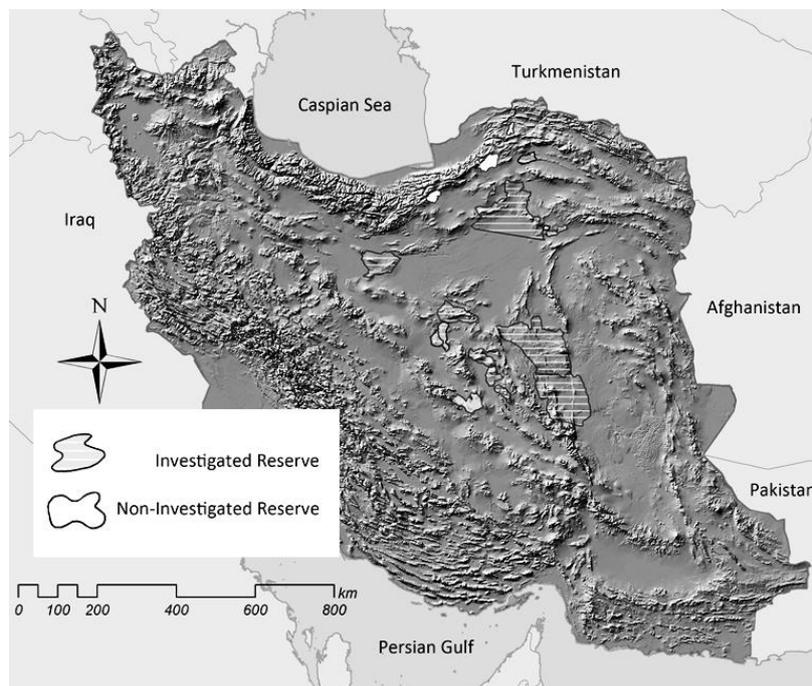


Typical landscape of Asiatic cheetah habitat in central Iran, dry riverbeds within arid mountainous terrians. © ICS/M. Farhadinia

As the most challenging question against managers, the cheetah population was one of the key protection indicators recommended to be targeted (Schaller & O'Brien 2001, Breitenmoser et al. 2009). Meanwhile, initial efforts based on camera trapping methodology (O'Brien 2003) were disappointing, yielding extremely low number of cheetah images (71 independent captures during 19080 trap nights efforts distributed in 16 surveys) and normally no more than three different individuals were recognized during each estimation season (Jourabchian & Farhadinia 2008). Furthermore, besides expertise drawback for data management and analysis, lack of necessary equipment, particularly camera traps which was increased due to financial sanctions against Iran did not permit implementation of a comprehensive assessment. Therefore, despite law enforcement and promotion of protection measures, success evaluation to guide future efforts was not easy. Thus, according to final

evaluation done by the IUCN/SSC Cat Specialist Group “It is assumed that the cheetah population has even increased in recent years, but the neither the initial baseline information nor the newest population estimates are reliable enough to assess this assumption” (Breitenmsoer et al. 2009).

Accordingly, a country-scale demographic assessment was established to understand population size and composition of the Asiatic cheetahs within the animal’s main nucleus across the species single stronghold outside Africa. The present report presents results of that intensive effort in order to provide a more realistic and comprehensive baseline for the state of the Asiatic cheetahs in Iran. The goal of this work was to provide a baseline for monitoring the status of the species in the country. Finally, we propose implications for the conservation of the country population.



Location of cheetah sites which hosted this survey in Iran.

## Methods

The monitoring programme was conducted across nine reserves. The landscape of these areas comprises arid plains, hilly terrain and rolling mountains. They are predominantly covered with vegetation communities of wormwood *Artemisia sieberi* and bean caper *Zygophyllum* sp. The wild goat *Capra aegagrus* and sheep *Ovis orientalis* are the most common ungulates in most surveyed areas with small to moderate-sized populations of chinkara *Gazella bennettii*, except Miandasht where the goitered gazelle *Gazella subgutturosa* is the single dominant wild ungulate.

In order to obtain an estimate about the overall population, we followed a stratified approach. Therefore, the entire cheetah range in Iran was split into two main categories, namely as confirmed (based on hard fact data, such as photo and casualties) and non-confirmed which include areas within the historical range of the cheetahs in the country, but without any recent evidence of presence over past five years. Bahabad was also considered as part of confirmed network due to occasional recent cheetah signs, approved by experts, resulting in

overall 14 sites all officially under protection by the Iran's Department of Environment which hosted exclusively the monitoring program. Due to equipment constrains and logistic challenges, priority was given to the confirmed network where the Asiatic cheetahs are known to persist.

Camera traps were systemically deployed at least three months (varying from 3 to 8 months) inside each reserve which were selected. Multiple camera brands were deployed, mainly CamTrak (CamTrak South Inc., Watkinsville, USA), Panthera (New York, USA), and Cuddeback Capture (Green Bay, USA). Camera locations were along dried watercourses or signing posts, where cheetahs regularly visit for scent marking. Individuals were identified using comparison of spot patterns, and sexed and aged. In case of cheetah cub records, if our continuous monitoring using camera traps revealed that the animals attained independence time which is their second year, they were included in analysis (e.g. Miandasht).

Our camera trap data was supplemented with field surveys and local interviews with local conservation practitioners (i.e. game wardens and experts) during the survey period to determine the status of the cheetahs within the confirmed network. As game guards' duty is to patrol the reserves to implement law enforcement, we collected all cheetah sightings made by them with details on location, number, and date. Also, in case that female with cubs was seen, sighting was recorded as a family observation (with details on age/sex composition). A total of 82 game guards shared their cheetah sighting during the survey period. Furthermore, we recorded all opportunistic sightings made by herders and hunters, occurred during the survey period, accepted after assessment of local herders' ability to recognize the cheetah. Furthermore, casualties including any type of mortalities were also recorded after approval based on reliable evidence.

Presence data were plotted using Arc GIS v. 9.3 (ESRI, Redlands, USA) to obtain extant range of the animal in Iran.



Checking camera traps to replace battery and SD card in Siahkouh National Park. © ICS/M.Farhadinia



Camera traps are normally placed along trails and water courses where the cheetah regularly. © ICS/M.Farhadinia

## Results

Between December 2011 and November 2013, the Asiatic cheetahs were sighted 50 times within and around ten reserves in Iran, mostly by game guards while 16 of the mentioned total sightings were made by local people. Except two times, all sightings took place within the reserves which can be due to intensive presence of the game guards inside these areas. Almost all the cheetah sites were occupied by the cheetahs during the survey period, based on signs detected or direct sighting. Our data indicate an average of 1.68 individuals per each encounter (ranging 1 to 5 cheetahs), yielding an annual encounter rate of 25 sightings for the entire country, almost equal to fewer than two observations for each reserve during surveyed period (varying between zero and five). Touran possessed largest proportion of the cheetah direct sightings (20% of sighting times), followed by Ravar, the latter mainly by local people.

In May 2012 an adult female was photographed in Dorouneh Protected Area while in August 2011, two cheetahs were seen in Khosh Yeilq which one of them was photographed, both by the game guards. Meanwhile, image quality only allowed spot pattern comparison in Dorouneh images, so the Khosh Yeilq was excluded from our analysis.

Totally, 7 unique females were explored across these landscapes, living in only five reserves, just one accompanied by cubs. Also, direct sightings during the survey period indicated presence of another female with two cubs in Touran confirmed by the game guards. Also, an additional report from Ravar was also received from a cheetah family which was not confirmed. Accordingly, a total of two different cheetah families have been known over the course of the assessment across the entire animal's range in the country. At the same time, at least six different cheetahs have been killed during the survey period in Iran.

During the mentioned period, a total of seven reserves were surveyed systematically using camera traps to photo-trap different cheetahs with a total trap night efforts of 16311. Accordingly, 107 independent cheetah images were yielded, belonging to 13 different individuals (Table 1).

In Kavir National Park, after a status assessment done by Ghadirian et al. (2009) which resulted in a single adult male, we updated the species status in the park, resulted in the same single individual. Furthermore, Touran was reported to host five different individuals during the survey period (Ashayeri et al. 2013). As the last area approved for existence of the cheetahs, Boshrouyeh was highlighted due to an individual killed by a herder in 2011; however, we are not sure if there are more cheetahs still persisting in this area which is the only non-protected cheetah range in the country. Therefore, in combination with opportunistic images from other reserves, an additional 8 individuals were also known to exist within the conformed network, resulting in a total number of 22 individuals recorded from 11 reserves throughout Iran, representing most of the animal's well-established reserves (Table 1).

However, due to some operational problems, particularly lack of security due to smugglers in eastern ranges, some areas were not completely surveyed (e.g. Naybandan and Ravar). Moreover, there are still vast landscapes where the cheetahs might roam but further surveys are needed to approve the animal's existence, then to understand population size.

Table 1: Details of population assessment surveys conducted in Iran

<b>Nucleus Name</b>	<b>Reserve Name</b>	<b>No. Camera Stations</b>	<b>Trap Night Effort</b>	<b>No. Independent Cheetah Captures</b>	<b>No. Cheetah Individuals</b>	<b>Source</b>
Northern	Miandasht	43	2429	13	4(2F & 2M)	This survey
	Touran	110	8958	56	5(2F & 3M)	Ashayeri et al. (2013)
	Dorouneh <sup>1</sup>	NA	NA	NA	1(1F)	See footnote
	Khosh Yeilq <sup>2</sup>	NA	NA	NA	NA	See footnote
Central	Bafq	42	2439	5		This survey
	Dare Anjir	26	1756	40	7 (2F, 4M, 1U)	This survey
	Ariz	10	792	24		This survey
	Siahkouh	23	1051	3		This survey
	Abbas Abad	35	1889	0	0	This survey
	Kalmand	NA	NA	NA	NA	Not surveyed
Eastern	Bahabad	NA	NA	NA	NA	Not surveyed
	Naybandan <sup>3</sup>	48	2662	19	2(1M & 1U)	This survey
	Ravar	22	3293	0	0	This survey
Kavir	Kavir	6	NA	3	1 (1M)	This survey and Ghadirian et al. 2009
<b>Total</b>					<b>20 (7F, 11M, 2U)</b>	

<sup>1</sup> A single female was photographed by guards on multiple times in 2012.

<sup>2</sup> Not surveyed, only one cheetah was photographed by game guards in August 2011 which was excluded from analysis due to blur quality of the image.

<sup>3</sup> Before establishment of systematic camera trapping assessment, two individuals were photo-captured by National Geographic Team in late 2011 which are included in our analysis. However, they were not present in the area during population assessment in 2012.

### **Sharing knowledge and findings to improve conservation:**

In order to develop capacity of local conservation practitioners (game wardens and experts) as well as to share findings with them to apply in conservation plans, a number of training workshops at different levels were organized. Also, attending game wardens in monitoring program were acknowledged. Totally, around 12,000 \$ was presented to the game wardens as gift for monitoring efforts.

Our sharing plan was developed based on different audience groups, to address all influential people in the country's main conservation agency, i.e. Iran Department of Environment.

#### **1. Local level: Workshops for game wardens working within each reserve (5 events)**

Game wardens are key partners in this project who are in charge of anti-poaching and protection. Therefore, a total of five workshops were held in various reserves, attended by all

the area's game wardens to provide research findings and to discuss their management implications. Also, they received acknowledgment prizes due to their active involvement in the survey.

**2. Regional level: Seminars for chief wardens, experts and university professors in capital of each province (5 events)**

Five seminars were organized in 4 different cities, each capital of a province and a total of 260 Iranian experts attended the events. During each seminar, the project findings were shared with more scientific scheme with regional decision-makers and scientists. Also, additional research topics for university students were proposed. The project was described for audience, emphasizing impact of large carnivores on each other which is crucial to better management of multiple endangered carnivore ecosystems.

**3. National level: Conference for national decision-makers, media representatives and domestic donors**

The conference on Iranian cheetah was held at Iran's Department of Environment's International Conferences Hall in Tehran on Saturday 5 October 2013. Attended by the country's vice president and head of DoE Dr Masoumeh Ebtekar as well as many national and regional authorities and experts, the conference was organized by the Iranian Cheetah Society (ICS) in partnership with Iran DoE and Conservation of Asiatic Cheetah Project (download full report here). (Urs: Please put a hyperlink here to the attached report).



At the end of project, all main stakeholders were presented with the project findings in multiple workshops and local cheetah guardians were acknowledged in an official ceremony in Tehran by Iran's vice president Dr Masoumeh Ebtekar. © ICS/ E.Jannati

## **Project information**

Duration: 2011 - 2013

Location: Multiple reserves in eastern half of Iran

Sponsor(s): Iranian Department of Environment(DoE), Conservation of Asiatic Cheetah Program(CACP), UNDP, Panthera, People,s Trust for Endangered Species (PTES), AfdPZ, Stichting SPOTS, Le Parc Des Fèlins

Project address: No.134, Shokrollah St., Amir Abad Ave. - POBox 14155-8549  
Landline: 98 (21) 8800 5926

Project leader(s): Navid Gholikhani  
Cheetah Program Director, Iranian Cheetah Society (ICS)  
Telephone (include international code): + 98(21) 8800 5926  
Email: [gho\\_navid@yahoo.com](mailto:gho_navid@yahoo.com)

Project link: [www.wildlife.ir](http://www.wildlife.ir)

## **Acknowledgement**

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