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Journal of Threatened Taxa

Building evidence for conservation globally

www.threatenedtaxa.org

ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

SHORT COMMUNICATION

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26 October 2018 | Vol. 10 | No. 11 | Pages: 12561-12565
10.11609/jott.4157.10.11.12561-12565



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FIRST RECORD OF THE ENDANGERED ARABIAN TAHR *ARABITRAGUS JAYAKARI* (THOMAS, 1894) IN THE HATTA MOUNTAIN CONSERVATION AREA, DUBAI, UNITED ARAB EMIRATES

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Abstract: The Arabian Tahr *Arabitragus jayakari* is endemic to the Hajar Mountains of Oman and the United Arab Emirates in the southeast of the Arabian Peninsula and is categorized as Endangered on the IUCN Red List of Threatened Species. Lack of scientific research from areas of its occurrence has been a challenge in determining its basic ecological aspects such as current distribution range, population status, and abundance. In the present study, we report a new distribution record for the Arabian Tahr from the Hatta Mountain Conservation Area in the Dubai Emirate through camera trap images. A total of 442 images (44 events) were obtained using three camera traps on 564 trap nights between March and December 2016. About 90% of the Arabian Tahr captures were recorded between 1100 and 1600 hr, indicating diurnal activity. This new occurrence record of the Arabian Tahr from this area is considered of high significance as it will drive in more studies and incentives towards the conservation and management of the species and the area as a whole.

Keywords: Arabian Tahr, *Arabitragus jayakari*, Hatta Mountain Conservation Area, camera trapping, Dubai Emirate, first record, UAE.

Information on species distribution and diversity pattern is crucial for understanding the ecological and evolutionary determinants of spatial heterogeneity in biodiversity (Ricklefs & Schluter 1993). Spatial congruence of species distributions has been studied in several taxa (Marquez et al. 1997; Gómez-González et al. 2004; Oertli et al. 2005), but remains poorly understood in certain mammalian communities, especially in herbivores, in the Middle East region. The ungulates of the Arabian Peninsula region, Arabian Oryx *Oryx leucoryx*, Arabian Ibex *Capra nubiana*, and gazelles *Gazella marica* & *G. arabica*, are generally poorly known among local communities and the general public. There is, however, a widespread impression that they are under severe threat because of overgrazing, lack of protection, and lack of knowledge, and that the animals are fragmented into small populations (Conservation Breeding Specialist

DOI: <https://doi.org/10.11609/jott.4157.10.11.12561-12565> | **ZooBank:** urn:lsid:zoobank.org:pub:C109A309-39C7-4F30-86D2-EA645CF70492

Editor: David Mallon, Manchester Metropolitan University, Derbyshire, UK.

Date of publication: 26 October 2018 (online & print)

Manuscript details: Ms # 4157 | Received 27 March 2018 | Final received 22 September 2018 | Finally accepted 03 October 2018

Citation: Aguohob, J.C., J.N. Shah, E.E.M. Elhassan, A.A.A. Muhery, M.M.E. Mohamed, J.A.S.M.A. Omairi, H.H.M.K. Albedwawi, O.M.S.M.A. Bedwawi, H.Z. Alsharif & A.M.M.A. Haji (2018). First record of the endangered Arabian Tahr *Arabitragus jayakari* (Thomas, 1894) in the Hatta Mountain Conservation Area, Dubai, United Arab Emirates. *Journal of Threatened Taxa* 10(11): 12561–12565; <https://doi.org/10.11609/jott.4157.10.11.12561-12565>

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Funding: Dubai Municipality (Government of Dubai), United Arab Emirates.

Competing interests: The authors declare no competing interests.

Acknowledgements: Authors are grateful to Eng. Alya Abdulrahim Abdulla Amin Alharmoudi, Director, Environmental Department, Dubai, for all her support during the study.



Group 2001). Most of the gazelles have received little attention and their taxonomic status and relationships are uncertain.

Arabian Tahr is one of the two species formerly included in the genus *Hemitragus* that are disjunctly distributed in the southern slopes of the Himalaya (*H. jemlahicus*), and southeastern Arabia (*H. jayakari*). Hassanin & Douzery (1999) suggested that Tahr was probably of Eurasian origin and most closely related to Ibex, goat, and Bharal (*Pseudois*). More recent research on their molecular genetics (Ropiquet & Hassanin 2005), however, surprisingly concludes that *Hemitragus* is polyphyletic and that the Arabian Tahr is genetically most similar to the northern African Aoudad *Ammotragus lervia* and more distantly related to the other Tahr species.

The Arabian Tahr is currently classified as Endangered in the IUCN Red List of Threatened Species (Insall 2008). Its historic range covered an area of about 19,413km² (Insall 1999). A later analysis of the range by hectads 10km x 10km grid, reported Tahr as present in 8863km², absent in 3653km², and with an uncertain presence in 6924km² (Robinson 2005).

The population size of Arabian Tahr is speculated to be probably less than 2000 individuals (Munton 1978, 1985). There is no recent published population estimate of the species, though field surveys in Oman are ongoing. Though the population of the Tahr is assumed to be declining, accurate census proves difficult to be formulated due to the extremely rugged terrain of the area, low densities, and small group size. The optimum habitat of the Arabian Tahr comprises north facing slopes between 100–1800 m that are characterized by relatively high rainfall, cool temperatures, and diverse vegetation (Insall 1999).

The Arabian Tahr species has been categorized as critically endangered in the UAE (Hornby 1996). It has been reported from mountainous areas such as Jabal Hafeet in Abu Dhabi Emirate and from Wadi Wurayah in Fujairah Emirate, which included local reports from its immediate vicinities (Tourenq et al. 2009; Al Zaabi & Soorae 2015). On the other hand, a survey of Ru'us Al Jabal in Ras Al Khaimah Emirate reported that Tahr was absent in the area, which was confirmed as local communities also did not have any knowledge of the species (EPAA 2006).

Previous studies have established the presence of the Arabian Tahr in the UAE, in Wadi Wurayah in the Emirate of Fujairah and in Jabal Hafeet in the Emirate of Abu Dhabi. There were no previous reports of the Arabian Tahr from Hatta Mountain Conservation Area

(hereafter Hatta MCA) since no study was conducted in the area.

It is difficult to study this species through direct observation or other traditional study methods as with other elusive species such as the Caracal *Caracal caracal*, Arabian Sand Cat *Felis margarita harrisoni*, and Gordon's Wildcat *Felis silvestris gordonii*, but such species are significant indicators of the ecological condition of the environment.

Camera trapping is a non-invasive method that causes minimum disturbance to the target species. It has been widely used for inventories, particularly of elusive mammals (Silveira et al. 2003; Rovero & De Luca 2007; Tobler et al. 2008a,b; Ahmed et al. 2016) to study their activity patterns and habitat use (Bowkett et al. 2008).

With this background and main objective, we aimed to document the presence of the Arabian Tahr in the Hatta MCA of Dubai Emirate by using non-invasive camera trapping.

METHODS

The Hatta Mountain Conservation Area (Hatta MCA) in Dubai, UAE (24.760°N & 56.111°E), encompasses an area of around 27.43km² mainly consisting of mountainous rugged terrain with freshwater ecosystems (Fig. 1). Camera trapping was carried out between March and December 2016 in order to record the baseline status of biodiversity in the Hatta MCA (Fig. 1). Three camera traps (Bushnell™) were deployed on the trails at three different locations selected, based on the presence of indirect evidence (pellet groups of herbivore species) at Hatta MCA. Images taken using remotely triggered camera traps were used to ascertain the presence of different species in the area. Camera traps were mounted on rocks as it was difficult to mount them with tripods due to the ruggedness of the terrain and unpredictability of weather conditions in the area. The camera trap locations were recorded by a handheld (eTrex™) GPS receiver unit and ancillary information such as date, time, and temperature was recorded. Data analyses were done in MS Excel 2013 and Oriana (V 4.01). Image capture rates (R) were calculated as number of independent photographic events (N) divided by the number of camera nights deployed (T) as follows:

$$R = N/T \times 100$$

RESULTS AND DISCUSSION

A total of 442 images of the Arabian Tahr (44 events) were obtained from 564 trap nights during the study period with a rate of 7.8 capture events per 100 trapping

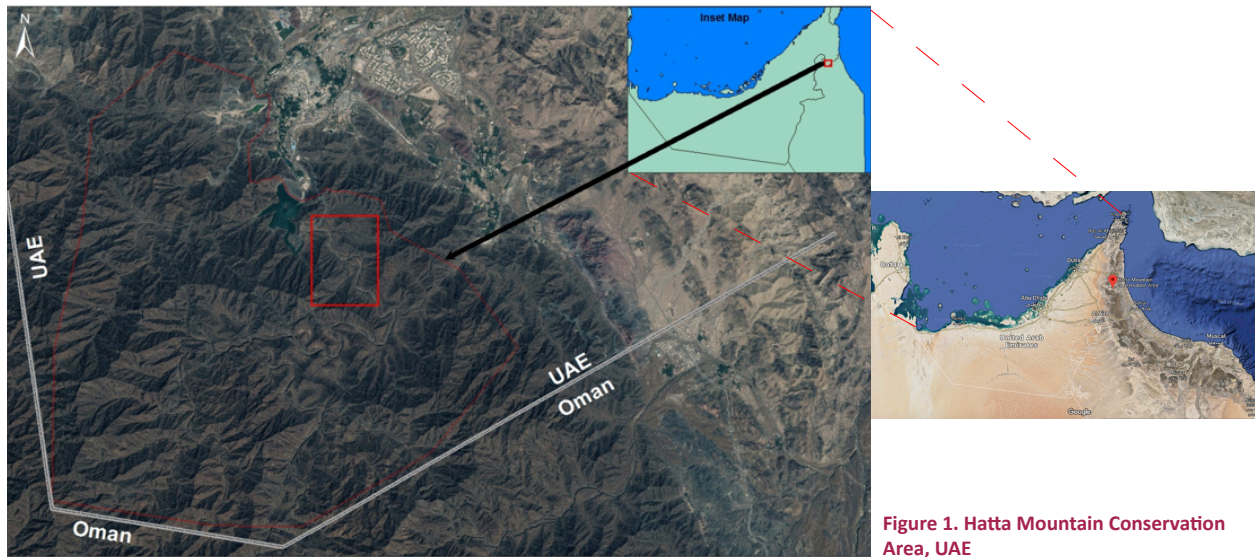


Figure 1. Hatta Mountain Conservation Area, UAE

nights. The first retrieved image of the Arabian Tahr was taken on 07 May 2016 at 1409hr, marking it as the first photographic record of the Arabian Tahr from the Hatta MCA (Image 1). The last image capture was recorded on 03 December 2016. Individuals were captured six times on 07 May 2016 on camera trap no. 2. Furthermore, camera trap no. 2 captured individuals at 14 different times, while camera trap no. 3 captured individuals at two different times. Camera trap no. 1 was unfortunately stolen, hence the absence of data.

In terms of the timing of images, about 90% of the captures were recorded between 1100 and 1600 hr, indicating a diurnal activity pattern. The remaining (10%) images were captured from 1600 to 1100 hr. We assume this activity pattern may be a result of the least human disturbance during the hottest hours of the day. The frequency of the Arabian Tahr recorded in camera

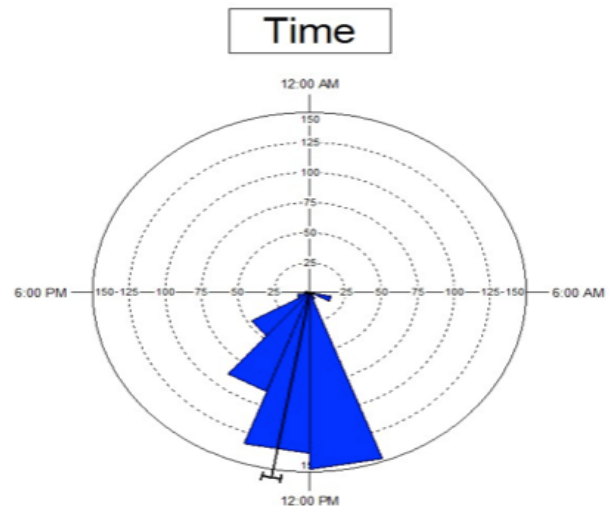


Figure 2. The frequency of Arabian Tahr recorded in camera traps along 24-hour cycles between March and December 2016



Image 1. First camera trap image of Arabian Tahr in Hatta Mountain Conservation Area

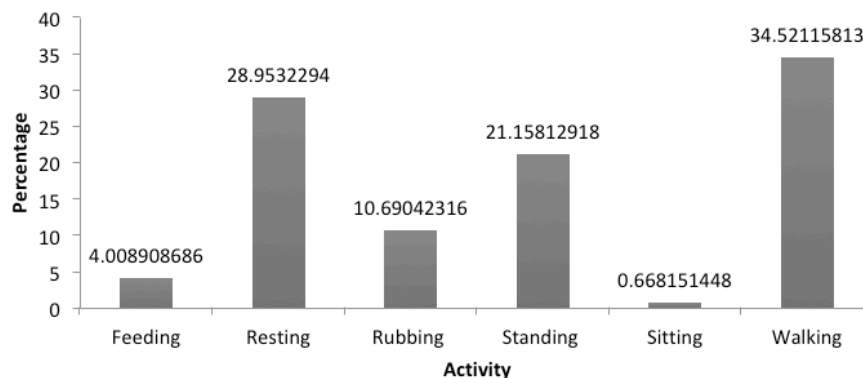


Figure 3. The activity of Arabian Tahr individuals as per images captured in Hatta Mountain Conservation Area



Image 2. Camera trap images of Arabian Tahr in Hatta Mountain Conservation Area

traps along 24-hour cycles is given in the circular plot (Fig. 2).

During the course of the study, the temperature stamped on the images ranged between 21 and 45°C with an average of $39.38 \pm 0.22^\circ\text{C}$ (mean \pm SE) between May and December 2016, which indicates that Arabian Tahr prefers medium to high temperature for its activities. The images show that the majority of individuals (34.52%) were photographed while walking, followed by resting, standing, and rubbing (Fig. 3).

Comparing the general body conditions such as build, size, and horns, we were able to record nine to 12 individuals through the camera trap images (Image 2). This population of the Arabian Tahr seems to be the largest in the UAE as compared to the two other

populations recorded in the country. At Jabal Hafeet, a maximum of six individuals was recorded (Al Zaabi & Soorae 2015), while in Wadi Wurayah its presence has been documented without any estimate of the population (Tourenq et al. 2009) and there have been no records since 2012 (Al Bustan Zoological Centre and Environmental Agency – Abu Dhabi 2017). These two locations where the Arabian Tahr are recorded in UAE are not connected to the population found in Hatta MCA as these areas are not linked by any corridors.

The confirmed presence of this secretive animal in the Hatta MCA is highly significant as it will a) add to the knowledge base of the extent of the Tahr's range not just in the UAE but also in the whole Hajar Mountain range, b) help in formulating an effective management plan for the conservation of this rare and charismatic species in the area as establishing spatial distribution of species is critical for designing appropriate conservation strategies, and c) strengthen the significance on the establishment of a protected area in species conservation.

With the confirmation of the Tahr population in the Hatta MCA, further studies can provide a better understanding of the different ecological characteristics and threats faced by the species in the area. The data generated will be valuable in all levels of the decision-making process and in ensuring the continued survival of this species in not only the national context but also in a transboundary, multinational management framework.

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ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

October 2018 | Vol. 10 | No. 11 | Pages: 12443–12618

Date of Publication: 26 October 2018 (Online & Print)

DOI: 10.11609/jott.2018.10.11.12443-12618

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