

# Long-term trail-camera survey in the Adrar Souttouf indicates a denuded mammal fauna

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## Introduction

Remote camera-trapping appears to be an efficient, non-invasive technique for surveying and monitoring elusive mammal species. Whilst the larger fauna of the Oued Ed-dahab region of the Atlantic Sahara has been increasingly studied during the previous 15 years, the potential for valuable discoveries remains, particularly in more remote areas.

The Adrar Souttouf is a group of isolated massifs in the desert interior southwest of the remote desert town of Aousserd, the southernmost massif being approximately 30km north of the Mauritanian border (Figure 1). We focussed our trail-camera survey effort on two massifs: Massif de Koudiat

Laghnam (granitic rocks) and Massif de Mades (micaschists). Large mammal fauna in the region is known to have declined considerably in the last 100 years or so; Aulagnier *et al.* (2017) detail records in the region of the Adrar Souttouf including a single record of Caracal *Caracal caracal* (1951-1980), five records of Cheetah *Acinonyx jubatus* (1900-1980), and several records of Striped Hyena *Hyaena hyaena* (latest 1981-2000). Historically, the region was also home to various antelope species including Scimitar-horned Oryx *Oryx dammah*, Addax *Addax nasomaculatus* and Dama Gazelle *Nanger dama*, all of which have suffered catastrophic declines throughout the Sahara. Many of these locally extinct species are depicted on ancient rock art throughout the Adrar Souttouf (Photo 1).



Figure 1. Adrar Souttouf - Survey Area.



Photo 1. Petroglyph within the Adrar Souttouf.

## Methods

### 2016-2017

On 13 March 2016 we installed five trail-cameras<sup>1</sup> in the Koudiat Laghnam Massif (KL) (Photo 2) and five camera-traps in the Madès Massif (MM) (Photo 3). Trail-cameras were located in areas considered most likely to be used by large mammals and focussed on tracks/'cut-throughs'/potential feeding areas/mineral 'scrapes' at usually higher elevations and in locations where they were unlikely to be stolen (see also 'Limitations').

The cameras in KL worked for a total of 902 nights (range 15-353, median 221). The cameras in MM worked for a minimum of 822 nights (range 94-354, one camera malfunctioned soon after deployment, so it was not possible to work out the exact number of nights that it worked).

### 2017-2019

Fifteen camera-traps were deployed on 2 March 2017 in MM, and collected on 28 March 2019. The focus of ten of these camera traps was on ungulate mineral 'scrapes' on plateau areas, considered at the time to represent current or former Barbary Sheep *Ammotragus lervia* usage. Three cameras operated in small caves with one in a small valley. The final camera failed very soon after deployment. The cameras recorded for a total of 6,351 nights (range 12-756) with seven of the cameras recording for the duration of the monitoring period (756 nights i.e. they were still recording when collected).

## Limitations

During deployment we took into consideration the potential for theft, effects of sun and overheating, for example. In some cases, this is likely to have compromised the surveys in terms of the number of photographic captures. However, given the length of time the cameras were deployed for (particularly at MM), and their relatively high density, it is considered unlikely that any species of medium/large mammal that utilises such habitats would not have been photographed over the survey period. Isolated massifs such as KL and MM provide a refuge for many species, particularly in areas where hunting is prevalent. Whilst sandy desert adapted species such as Fennec Fox *Vulpes zerda* and Sand Cat *Felis margarita* would perhaps be unlikely to be recorded, all other species that would have been present in the region historically would use such habitats.

It was not possible to identify gerbils to species level, but as these were not the target species for the surveys, this is not considered to have compromised its aims.

## Results

Across the two monitoring areas, excluding unidentified gerbils, ten wild mammal species were logged during the two survey periods. *At Koudiat Laghnam (KL)*: Across 902 nights in 2016-17 seven mammal species were recorded. *At Massif de Madès (MM)*: Across a minimum of 822 nights in 2016-17 five mammal species were recorded, with an additional four mammal species recorded in 6,351 nights in 2017-2019.

<sup>1</sup> All trail-cameras used across both survey periods were Minox DTC-650





Photo 2. Koudiat Laghnam Massif.



Photo 3. Mades Massif.

## Species Accounts

### Mammals

#### Barbary Sheep (Photo 4)

Still extant and confirmed to be breeding successfully in KL (2016-17). What was considered to be the same adult male was captured on six separate dates between 25 November 2017 and 12 October 2018 at MM.

#### Dorcas Gazelle *Gazella Dorcas* (Photo 5)

Small numbers recorded occasionally at both KL and MM, with up to three together at MM, including a fawn.

#### African Wildcat *Felis lybica* (Photo 6)

Present within both massifs with a family (including three small kittens) recorded at MM in April 2017.

#### African Golden Wolf *Canis anthus* (Photo 7)

Not recorded at either massif during the first survey period in 2016-17. A relatively small number of captures (21) during 2017-2019, usually singly but a pack of four were photographed on one occasion.

#### Ruppell's Fox *Vulpes rueppellii* (Photo 8)

A common species within both massifs, usually recorded singly, occasionally two adults, with juveniles also photographed at KL.

#### Honey Badger *Mellivora capensis* (Photo 9)

A single recorded entering a cave at MM in July 2016.

#### Saharan Striped Weasel *Ictonyx libycus*

A single was recorded at KL in March 2016.

#### Desert Hedgehog *Paraechinus aethiopicus*

A single was recorded at KL in April 2016.

#### Egyptian Mouse-tailed Bat *Rhinopoma cystops* (Photo 10)

A single was recorded hanging from a cave wall at MM in July 2016.

#### Unidentified Hare species *Lepus* spp.

Singles were recorded at both KL (May 2016) and MM (May 2018).



Photo 4. Barbary Sheep.



Photo 5. Dorcas Gazelle *Gazella Dorcas*.





Photo 6. African Wildcat *Felis lybica*.



Photo 7. African Golden Wolf *Canis anthus*.



Photo 8. Ruppell's Fox *Vulpes rueppellii*.



Photo 9. Honey Badger *Mellivora capensis*.



Photo 10. Egyptian Mouse-tailed Bat *Rhinopoma cystops*

### **Birds**

Several bird species were also photographed: Golden Eagle *Aquila chrysaetos* (Photo 11), Northern Wheatear *Oenanthe oenanthe* (migrant), White-crowned Wheatear *Oenanthe leucopyga*, Stonechat *Saxicola rubicola*

(migrant), Blue Rock Thrush *Monticola solitarius*, Pied Flycatcher *Ficedula hypoleuca* (migrant), Desert Lark *Ammomanes deserti*, Trumpeter Finch *Bucanetes githagineus*, Pharaoh Eagle-Owl *Bubo ascalaphus* and Desert Grey Shrike *Lanius elegans*.



Photo 11. Golden Eagle, Koudiat Laghnam.

## Conclusions

A total of 8,075 camera-trap 'nights' at two isolated massifs in the Adrar Souttouf between 2016 and 2019 recorded ten mammal species (excluding unidentified gerbils).

Barbary Sheep were confirmed as still present and breeding successfully at KL, with a male also captured on six separate dates between 25 November 2017 and 12 October 2018 at MM. Dorcas Gazelles were also captured at both massifs in low numbers, with juveniles photographed. Both of these ungulate species have been recorded in the area in recent times (e.g. Qninba *et al.* 2016, R. Moores pers.obs).

African Golden Wolves were not recorded at either massif during the first survey period (2016-17 – 1,724 camera-trap 'nights') but were recorded on 21 occasions during 6,351 camera-trap 'nights' at MM during the second survey period (2017-19) i.e. one photograph every 302 nights on average. This suggests that this species does not inhabit these massifs on a permanent basis.

Ruppell's Fox, African Wildcat and Saharan Striped Weasel were expected species, all of which have been regularly recorded in the region. Following a family of Honey Badgers captured on camera-trap at Leglat, Aousserd in March 2016<sup>2</sup> (reportedly the first record in the region for at least 25

years), this species has been irregularly reported near Aousserd in the years since. As such, our record of a single animal at MM in July 2016 was not unexpected.

Just two hares were photographed. Following dental examinations of dead specimens in the region in recent years (e.g. Moores *et al.* 2012, Moores & Brown 2013) it was considered that all hares in the region were African Savanna Hare *Lepus microtis*. However, research is ongoing and at least two researchers consider this not to be the case (Angermann pers.comm, and Palascios pers.comm).

A single bat was recorded, Egyptian Mouse-tailed Bat, from MM. This species had previously been recorded at the same site in 2016 (Moores & Brown 2017) and at KL in 2011 (Chevalier *et al.* 2012).

The surveys did not record any 'unexpected' species. Sand Cat and Fennec Fox are present in the region but they would perhaps be unlikely to regularly venture into massifs with any regularity, away from favoured habitat, where African Wild Cat and Ruppell's Fox are the dominant cat and fox species respectively.

Small populations of Dorcas Gazelle would appear to be the only antelope species to remain in the area, primarily due to hunting pressure.

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2. <https://biomeecology.com/nature/mammals/2016/04/honey-badgers-western-sahara-first-record-25-years/>