Leptien's Spiny-tailed Lizard (*Uromastyx aegyptia leptieni*) in the Dubai Desert Conservation Reserve

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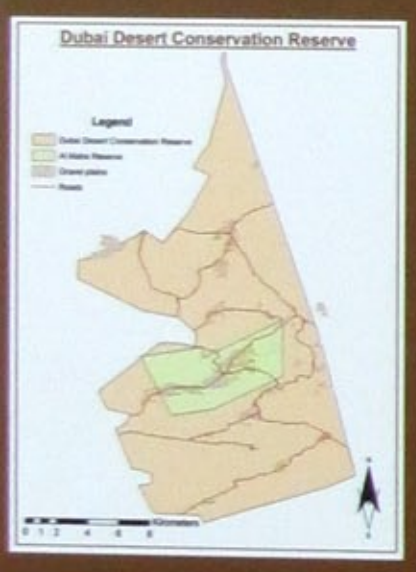
Introduction

Leptien's Spiny-tailed Lizard (*Uromastyx leptieni*) are large, predominantly herbivorous lizards, endemic to the U.A.E. and Oman, who's preferred habitat are gravel plains and inter-dune compacted soils. They can grow up to 65cm in length and usually live in loose colonies, with borrows between 20 and 100 meter apart.

Their diet consists of coarse desert grass and evergreen herbs and includes the following species; *Aerva Javenica, Citrullus colocynthisis, Fagonia indica, Haloxylon salicornicum, Heltropium kotschyi, Moltkiopsis ciliata, Pennisetum divisum* and *Stipagrostis plumosa* (Cunningham, 2001). Water requirements are obtain from the plants they eat and any excess salt is excreted through a gland near the eye.

Aim

The survey was conducted to obtain a baseline of the size, distribution and density of the Leptien's Spiny-tailed Lizard population in the Dubai Desert Conservation Reserve. This will enable the future study of the population dynamics in relation to environmental factors such as predation, rainfall and vegetation cover through a regular monitoring program.



Study Region

The Dubai Desert Conservation Reserve (DDCR) is a designated protected area for the conservation the natural inland desert ecosystem of Dubai. It spans 4.7% of the total land area of Dubai Emirate and encompasses 225km² of sand dunes desert ecosystem interspersed with gravel plains, which constitute 3.9% of the DDCR. The survey was concentrated on the gravel plains within the DDCR, the preferred habitat of the Leptien's Spiny-tailed lizard.

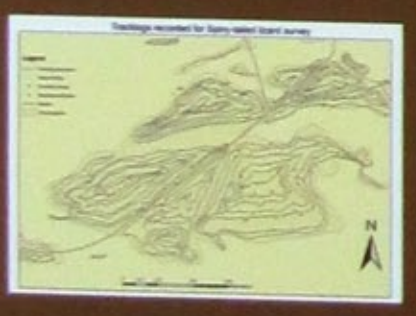
The DDCR was established in 2003 but contained domestic livestock within the area until the end of 2008. At the core of the DDCR is the Al Maha Reserve (AMR) established in 1999 and with all domestic livestock excluded from inception.

Methodology

The survey was conducted in September and October 2008 and completed in May 2009 while the spiny-tailed lizards were active between 6 and 10 in the morning.

Transects were walked across the gravel plains and a track log maintained with a Garmin GPS Map76. Distances between transects varied from15 to 60 meters dependent on factors that affected the discovery of burrows such as vegetation cover and terrain. Burrows were recorded along both sides of the transects.

On discovery of a burrow the co-ordinates were recorded with the GPS and then the burrow was classified into one of three categories.



Active: Entrance is open and shows clear signs of activity (tracks, fresh faeces etc.)

Inactive: Entrance is open but shows signs of sand build-up. No clear signs of activity (tracks, fresh faeces etc.) around the borrow

Abandoned: Entrance is closed in with sand but the gravel ridge around the burrow is still obviously present.

All the recorded data; transect tracklogs, burrow co-ordinates and classification were uploaded to ArcGIS and plotted on to a map displaying the gravel plains. This ensured that all the gravel plains were surveyed, as well as enabling further interpretation of the distribution of the burrows relevant to other geographical information.

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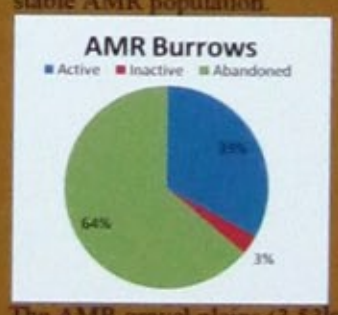
Results

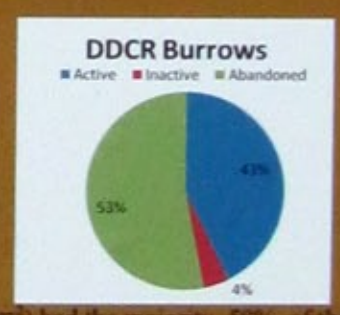
The results of the survey were divided into two sections, burrows found in the core AMR and burrows in the rest of the DDCR this was done because of the different length of time they have been protected and the different management strategies, related to domestic livestock, until the end of 2008.

Category	AMR Burrows	DDCR Burrows	Total Burrows
Active	259	189	448
Inactive	25	18	43
Abandoned	504	236	740
Total	**788**	**443**	**1231**

Discussion

The relationship between the different categories of burrows is only consistent in the low percentage of inactive burrows, this could be attributed to the fact that the burrows fill with sand relatively quickly when not in use and hence then fall into the abandoned category. The abandoned burrows by contrast are visible for long periods, possibly even years, which in a stable population would lead to an accumulation of abandoned burrows. This factor combined with the factor that the DDCR gravel plains are being recolonised by the spiny-tailed lizards has lead to the 10% relatively higher number of abandoned burrows in the more stable AMR population.





The AMR gravel plains (3.53km²) had the majority, 58%, of the active burrows as well as the highest density at 73.4 active burrows/km², while the larger area of DDCR gravel plains (5.32km²) had a density of only 35.5 active burrows/km². When compared to vegetation data of the DDCR and AMR a clear correlation between burrow density and vegetation density is apparent In the maps of the AMR there is a clear decrease in burrow density from east to west and the vegetation density follows the same trend. It is also important to note that different plant communities also have an effect on the density of Spiny-tailed lizards, where the absence of preferred plant species may lead to a greatly lowered density. The most number and highest density of borrows were found on vegetation habitats AMR-N dominated by *Helitropium digynum, Moltkiopsis ciliata, Centropodia forsskaolii* and DDCR-P dominated by *Dipterygium glaucum, Indigofera colutea* and *Haloxylon salicornicum*.

Distribution of active burrows on a gravel plains also seems to be affected by the distribution of vegetation. The majority of burrows were found in moderately vegetated areas. Fewer were recorded in densely vegetated areas of the gravel plain, suggesting the need for Spiny-tailed lizards to have a clear view of their territory to avoid predation and detect potential rivals. This is supported by the fact that burrows were often found on raised gravel mounds or the sloped section of the gravel plain. Gravel plains with a less solid sandy surface where also found to have lower burrow density.

Conclusion

The survey revealed a healthy population within the AMR which has thrived in the absence of the competition of domestic livestock. As the habitat improves through increased diversity and abundance of plant species there should be able opportunity for the re-population of the DDCR gravel plains. The dynamics of the population will only be revealed through regular monitoring and comparative analysis. There would also be further benefit if future survey include dimension of active burrows, behavioural observation, forage plant preferences as well as records of co-habitation of burrows by other species.