Challenges for Applying Visual Monitoring Techniques on Small Mammals in Arid Zones

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The combination of harsh arid environments and small animals' size forms major constraints on visual tracking of rodent's behavior. In the state of Kuwait, the most abundant mammals in the desert are rodents of small size, and the majority of them are nocturnal. Therefore, night vision should be considered when using visual tracking techniques. In addition to rodents, there are approximately 14 species of mammals recorded in Kuwait [1], most of them were extinct or on the edge of extinction due to habitat loss [2]. Therefore, there is an urgent need to develop and apply the latest techniques to monitor and measure different animals' behavioral activities. If these techniques were proven to be useful and applicable in different environmental conditions, we can eliminate or minimize the causes for the rapid decline in the number of desert mammals.

The aim of the study is to test video camera traps and modify it to record nocturnal behavior of lesser Jerboa (*Jaculus jaculus*). The passive camera trap uses the combination of animal movement and body heat to trigger the video camera to record such activity for certain period of time in a design similar, but not exact, to [3]. Most captured animals using theses cameras were of relatively large sizes that could be easily detected. Lesser jerboa is a small rodent of approximately 300g [4] and it is distributed throughout different arid zones in the Middle East. The questions that needed to be answered are: Can camera traps detect animals of such small size as the lesser jerboa with its fast movement? And can these traps recognize its body heat within the hot and dry conditions? Would the cameras be triggered to operate by the movements of small shrubs that dominate the Kuwaiti desert?

In order to answer these questions, two sets of camera traps (TM700V Trail monitor) were placed in two areas with different vegetation community [5] at both the center and north of the State of Kuwait in attempts to capture the nocturnal feeding behavior of lesser jerboa. The trail monitor was first tested in different locations and several configurations to identify the optimal placement for the device to detect small desert rodents. The device was set to operate at night using infrared light and it would trigger a video camera to record any event that might set the device on including the movements of other animals or simply the movement of plants parts by wind. It was also tested in different environmental conditions such as high temperature, strong wind and sandy storms.

After two months of trails, it was proven that trail monitor using passive infrared lights and triggered by the combination of body heat and animal's movement could be used in desert conditions. The results show different animal species caught on video cameras performing their natural activities without human interfere. Animal species such as; mammals, lizards and even birds were recorded feeding on different plant species or simply using them as shelter. Sometimes, harsh weather conditions were an obstacle in obtaining good and clear recording because they change the camera trap configuration or cause false triggering of the camera.

References

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