Assessment of Forage Productivity and Carrying Capacity

Aims

To investigate and recommend strategies to manage and restore the rangelands and conserve their biodiversity in the Dubai Desert Conservation Reserve

Goals

(1) Quantification of the forage productivity and evaluation of impact of important determining factors, such as soil and rainfall,

(2) Estimation of the rangelands carrying capacity, that is, the maximum possible stocking of livestock that a rangeland can support on a sustainable basis,

(3) Assessing the response of soil and vegetation to different grazing management practices for optimal rangeland use

(4) Assessment of the possibility of restoring the degraded rangelands with indigenous forage plants and defining the most appropriate conditions for this process.

Methodology

- Site selection, sampling and environmental measurements
- Estimation of forage productivity and carrying capacity
- Building a model of the relationship between environmental factors and carrying capacity.
- Assessing the response of soil and vegetation to different grazing management practices for optimal rangeland use
- enclosures will be established
- number of plots will be located in each enclosure
- Within each quadrate, the following plant community attributes will be recorded:
    - A list for all the available species.
    - Species density (number of individuals per unit area)
    - Species frequency
    - Species cover (for perennials)
    - Importance values (summation of relative frequency, relative density and relative cover) will be calculated for perennials
    - Species richness and diversity.
- soil samples will be collected to measure its physical and chemical properties
- Recovery of different species will be assessed in each enclosure

Expected Output

- Development of management strategies and decision tools to proactively manage livestock grazing and reduce the drought impacts on plant community structure and function.
- Building a model that could predict the carrying capacity in any season or region.
- The rehabilitated sites would create more appropriate micro-habitats suitable for the reintroduction of some endangered or extinct in nature indigenous wildlife of the UAE.