

Monitoring of arid rangeland ecology using Unmanned Aerial Vehicles (UAVs) Desert Drones over Dubai

Aim:

To establish a base in this emerging field within DDCR for the civilian use of aerial photography from Unmanned Aerial Vehicles (UAVs) and demonstrating its values for arid rangelands conservation.

Goals:

Collecting accurate, inexpensive data to:

- 1- Monitor grazing pressure on rangelands, and estimate botanic health of an arid ecosystem.
- 2- Estimate and monitor the population of protected and endangered species
 - Arabian Oryx, gazelle species, foxes, Gordon's wild cats, Houbara bustard, birds of prey and Spiny-tailed lizards.
 - Feral and invasive species, e.g. *Prosopis juliflora*
- 3- Evaluating the extent of damage caused by off-road recreational driving.
- 4- Increasing the accuracy of ecological maps and consequently habitat classifications.

Methodology:

After having the full set (Drone + Software) flights will be strictly limited to the 225km² DDCR to avoid legal and privacy issues.

- Calibrating the airborne equipment over different altitudes, time of day and meteorological parameters to assess its abilities and limitations.
- Routine monitoring at selected elevations, to obtain spatio-temporal data of plant species and dune structure and possibly of some animals.

Each designated flight pattern will be recorded once per week for a year.

Expected Output:

Temporal / Spatial baseline data of vegetation and dune change, related to topographic data; if the opportunity arises to study ephemeral species, then spatial distribution and growth of ephemerals over their lifespan.