## Eco-physiological responses of ungulates towards heat and drought in the Damaraland desert of Namibia



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Due to global climate change and overly use by humans, many ecosystems are under the threat of desertification. <u>How do wildlife species respond to heat and drought in natural ecosystems</u>? Are they capable to withstand increasing aridity and the increasing encroachment of humans into their habitats? To answer these questions, we study the spatial movements and dietary preferences of oryx (*Oryx gazella*) and springbok (*Antidorcas marsupialis*) in the Namib desert. Here, we present our methodological approach and some preliminary data.

## 1) <u>GPS TELEMETRY</u>

#### **Current work:**

- $\rightarrow$  GPS collars on 7 adult female oryx
- $\rightarrow$  1 fix every seven hours
- → Study period: April-August 2011

Map 1: LoCoH Home ranges of 3 collared oryx.



### 2) <u>STABLE ISOTOPES</u>

#### **Current work:**

→ Isotopic analysis of horn and tissue material to quantify the diet (carbon), the habitat use (nitrogen) and the source of water (hydrogen)



## **3) OBSERVATION**

#### **Current work:**

→ Daytime and night time observations by binoculars and thermal camera



LoCoH Home Range (Km <sup>2</sup> )	9215	<b>9251</b>	9278
LoCo 90%	7,69	10,52	5,89

 Table 1: LoCoH Home ranges in Km<sup>2</sup>

#### **Future work**

 $\rightarrow$ Seasonal variation of home ranges in



**Figure 1:** Percentage contribution of shrub and grasses to the diet of Oryx and Springbok



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# →Habitat characterization Random selection of plots quantified for vegetation (diversity, cover, biomass)

% cover
% shrub
% grass
% visibility
° slope







#### **Future work**

→Quantification of vegetation during wet season
→Use of thermal camera to study

response to drought

- →Additional collaring of 3 more oryx and
  10 springbok
- →Species-specific differences in spatial movements

**Figure 2:** Isotope ratios in horn keratin layers as a life-time record of dietary choice in ungulates

#### **Future work:**

 $\rightarrow$ Tissue collection

 $\rightarrow$  Stable isotope analysis at the IZW

thermoregulatory behaviour of ungulates  $\rightarrow$  Use of NDVI satellite

values to validate biomass estimates



ochen Richters 2005

Our ultimate goal is to ...

- $\rightarrow$  better understand the adaptations of desert animals,
- → help in conserving biodiversity in desert environments,
- $\rightarrow$  provide criteria for the sustainable use of ungulates in extreme habitats,
- $\rightarrow$  help local communities in their survival and conservation efforts



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