

Summary

Meerkats (*S. suricatta*) are social mongooses inhabiting semiarid habitats in southern Africa. They are desert adapted animals with a high thermal conductance allowing them to forage during hot ambient temperatures. Cold stress, which they are very sensible to, is avoided through behavioural adaptation, where the animals' dens play an important role as a suitable microhabitat. As the local temperate climate differs evidently from the suricats' native semiarid habitat, the effect of abiotic factors (weather conditions), and additionally, biotic factors on the distribution and habitat use of the animals in their new enclosure was to be examined. The new enclosure is considerably bigger than the old one (480 m² compared to about 20 m²), and 11 percent of the total area are covered by several umbrellas, to some a heatlamp is attached to. Therefore choices are provided to the animals, concerning the use of artificially heated areas.

Being social is attributed to suricates because of four distinct cooperative behaviours (babysitting, feeding pups, raised guarding and social digging), serving not an animals individual sake but that of the entire group. All group-members participate to these behaviours with varying contributions, that are dependent on age, sex, weight and daily weight gain, respectively.

The question if varying contributions to these social behaviours are to be found in zoo-living meerkats was the second topic of this work.

The animals were observed from the end of July 2003 to January 2004, representing 396 observation hours total. The spatial use was examined by means of scan sampling, social behaviour by focal animal sampling (Martin & Bateson 1986).

It could be shown that (ambient) temperature and (ground) wetness had a strong influence on the distribution of the meerkats within their enclosure, whereas visitor density and the distribution of sun and shadow were of minor importance. Habitat use could be correlated to the corresponding ambient temperatures. Activities bearing the risk of heat loss were performed more often in summer than in winter, activities possible in artificially heated areas in the enclosure were to be observed more frequently during wintertime.

The habitat use was interpreted as behavioural adaptation of “thermoregulatory cost minimization”. Meerkats have a narrow thermoneutral zone (lower critical temperature 30°, upper 33°C), in which the basal metabolic rate is low compared to the mass-specific expectation, but if ambient temperatures are below the lower critical temperature, the animals’ energetic costs of thermoregulation increase quickly, due to suricats’ high thermal conductance. These costs are minimized via behavioural adaptation.

Relatively varying contributions to the cooperative behaviours were related to the helpers’ age and sex, according to findings from previous studies in the wild. The observed data had to be interpreted cautiously, as the observation methods differed to those of the cited studies, and sample size was small. Literature data suggests, that females contribute more to the rearing of the young, whereas males spend more time guarding. These trends could be affirmed by the current study.