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The distribution and urban occurrence of the elusive Southern African hedgehog (Atelerix frontalis)

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Abstract

The southern African hedgehog (*Atelerix frontalis*) is the only native hedgehog species in South Africa. The published distribution of *Atelerix frontalis* is based on old occurrence records and few studies have investigated the species' current range or fundamental niche. In addition, *Atelerix frontalis* commonly exist in many urban areas but it is unclear what resources the species requires to survive and reproduce in these environments. Knowledge of the species' climatic envelope and resource requirements will enable us to assess the risk of population decline, protect the geographic areas expected to sustain future populations and estimate the innate ability of the species to respond to environmental change. My research focused on establishing the fundamental niche of *Atelerix frontalis*, as well as assessing their ability to cope with climatic and anthropogenic change. I assessed these ideas by obtaining *Atelerix frontalis* occurrence records (via museums, FreeMe Rehabilitation Centre and public reported sightings) and conducting species distribution modelling, resource selection analysis and assessment of demographic patterns in urban environments. The species distribution models indicated that *Atelerix frontalis* occurred predominately in climatic regions with dry, cold winters and wet summers, climatic conditions that correspond with the savanna and grassland biomes of South Africa. The range of suitable habitats for *Atelerix frontalis* can be expected to decline in the future, although high lying areas, such as the Drakensberg mountain range, may offer suitable refugia to sustain populations. *Atelerix frontalis* were common in urban environments, and within the Greater Johannesburg area, they favoured Egoli granite grassland vegetation and albic plinthosol soils. My research suggests that *Atelerix frontalis* often occurred in close proximity to roads and human settlements, resources that are likely to be selected for feeding and dispersal opportunities. Urban *Atelerix frontalis* sightings were closer to all the environmental features selected than the general population, indicating behavioural plasticity through niche differentiation. *Atelerix frontalis* demographic data indicated post-torpor breeding in spring and summer, as well as juvenile dispersal in late summer and autumn. Urban dwelling *Atelerix frontalis* populations appeared to be sustainable, with the majority of *Atelerix frontalis* recovered by FreeMe Rehabilitation Centre in good body condition. *Atelerix frontalis* survival and persistence in South Africa seems precarious given the species fundamental niche requirements and the extensive anthropogenic transformation of savanna and grassland biomes. However the species' ability to survive and reproduce in urban environments may greatly benefit future populations, through exploitation of refugia in transformed urban habitats.