

ABSTRACT

In this study I investigated the reproductive biology and pollination ecology of *Aloe peglerae*, an endangered endemic succulent species of the Magaliesberg Mountain Range in South Africa. The aim was to determine the pollination system of *A. peglerae*, the effects of flowering plant density on plant reproduction and the suitable microhabitat conditions for this species.

Aloe peglerae possesses floral traits that typically conform to the bird-pollination syndrome. Pollinator exclusion experiments showed that reproduction is enhanced by opportunistic avian nectar-feeders, mainly the Cape Rock-Thrush (*Monticola rupestris*) and the Dark-capped Bulbul (*Pycnonotus tricolor*). Insect pollinators did not contribute significantly to reproductive output. Small-mammals were observed visiting flowers at night, however, the importance of these visitors as pollinators was not quantified in this study.

Interannual variation in flowering patterns dictated annual flowering plant densities in the population. The first flowering season represented a typical mass flowering event resulting in high seed production, followed by a second low flowering year of low seed production. Reproductive success was significantly related to flowering plant densities at a spatial scale of 30.0-35.0m in 2011, corresponding to the scale at which flowering plant density influenced diurnal (bird) visitation rates (25.0-40.0m). In the second flowering season, neither plant reproduction nor diurnal visitation rates were related to flowering plant densities. Nocturnal (small-mammal) visitation rates were not related to flowering plant densities in both years and this is perceived to be a reflection of the smaller home/forage range of small-mammals. However, further investigation is required to confirm the hypothesis that small-mammal visitations contribute to reproductive success in *A. peglerae*.

Aloe occupancy was generally associated with “safe site” microhabitat conditions (i.e. high rock cover, low grass cover and biomass). This is expected to be a fire-survival strategy of *A. peglerae*, where the persistence of individual plants in less vulnerable microsites over time is favoured. However, plant morphology might also confer adaptations, such as vegetative recovery at the apical meristem, to tolerate the harsh effects of fire.