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INVASIVE PALM SQUIRRELS IN OMAN: ASSESSING DISTRIBUTION AND POTENTIAL THREATS THROUGH CITIZEN SCIENCE

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Abstract Invasive species disrupt ecosystems and threaten biodiversity by outcompeting native species. In Oman, the introduced palm squirrel (*Funambulus pennantii*) has adapted to seasonally dry habitats, particularly orchards and villages, with a strong dietary preference for *Phoenix dactylifera* (date palm fruit). Since date palms account for 80% of fruit crops and half of Oman's agricultural land, the potential impact of these squirrels warrants investigation. This study aimed to assess the species' distribution, potential threats, and future range expansion under land-use changes while promoting citizen engagement in environmental stewardship. A Citizen Science approach was used, leveraging social media platforms (Twitter, Instagram, WhatsApp, Gmail) and face-to-face interviews with government officials, date factory owners, and shopkeepers. Between 2016 and 2023, 157 locations were documented, showing expansion from northern governorates to the south. A species distribution model (SDM) was developed using Maxent 3.4.4 with 19 environmental variables from WorldClim (~1 km resolution). Citizen science data indicated that most *F. pennantii* records were from urban areas, suggesting its persistence is facilitated by gardens, infrastructure, and water sources. The overlap between recorded hotspots and predicted suitable habitats suggests the species is well-established. Isolated records from Al Dhahira, Al Dakhliyah, and Ash Sharqiyah North in 2023 may indicate ongoing range expansion. The SDM identified a narrow high-suitability zone along the northeast coast, widening inland into two areas. In conclusion, *F. pennantii* thrives in Omani urban environments, benefiting from food, shelter, and water, while its presence near agricultural areas—particularly date palm plantations—poses economic risks. Species distribution modeling suggests continued expansion, particularly in central Oman.

Keywords Invasive species, Oman, squirrel, Citizen Science