

# A case of nocturnal activity in the diurnal southwestern fence lizard *Sceloporus cowlesi*

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The southwestern fence lizard *Sceloporus cowlesi* Lowe & Norris 1956, belongs to the *Sceloporus undulatus* complex of species (Leaché & Reeder, 2002). It is distributed in south-western USA and north-central Mexico (Leaché & Reeder, 2002; Leaché, 2009) where it inhabits deserts, grasslands, shrublands, forests, rocky areas (Jones & Lovich, 2009; Leaché & Reeder, 2002) and anthropogenic biomes that include urban areas (pers. obs.). The species has been characterised as strictly diurnal (Jones & Lovich, 2009). Most reptiles are either diurnal or nocturnal but there are reports of typically diurnal reptiles being active at night (Baxter-Gilbert et al., 2021; Duncan et al., 2003).

On four days in May 2022 (23, 25, 26, & 30), I observed a young adult *S. cowlesi* active at night in the city of Albuquerque, New Mexico, USA (35° 6'6.2712" N, 106° 39'50.2524" W) at a location illuminated by artificial light during the night (Fig. 1A). The time and air temperature of these four observations were 21:31 h - 23.3 °C, 21:58 h - 22.2 °C, 21:43 h - 22.8 °C, and at 20:44 h - 23.9 °C. On all occasions the individual was detected 'basking' on the pavement (Fig. 1B) and when approached it fled to a Texas red yucca (*Hesperaloe parviflora*; Fig. 1C). On the third day, 2 minutes after the individual fled, it was then observed returning to the pavement. Apparently, this is the first documented account of recurrent nocturnal activity in *S. cowlesi*, although *Sceloporus jarrovi* and *Sceloporus virgatus* exhibit crepuscular activity in south-eastern Arizona (Duncan et al., 2003).

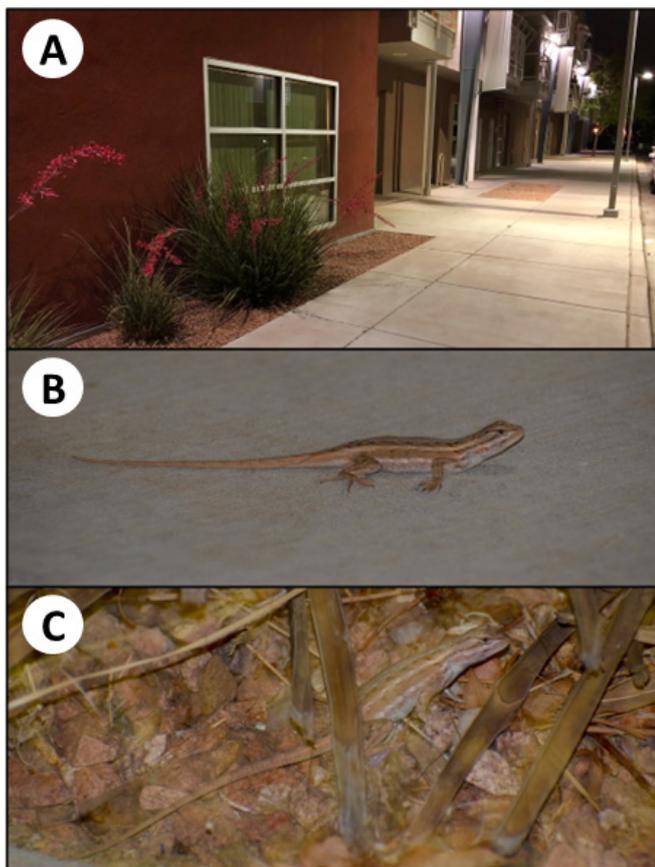
The potential benefits associated with opportunistic nocturnal behaviour in lizards include extended activity in the evening in warm climates (Duncan et al., 2003), avoidance of diurnal predators, the availability of nocturnal prey items (Gordon et al., 2010), and night-light niche expansion (Amadi et al., 2021; Maurer et al., 2019). While it is relatively rare that the same species exhibit both diurnal and nocturnal behaviours, human activities and anthropogenic related environmental changes are providing an opportunity for animals to extend what may be crepuscular behaviour into the night time (Gaynor et al., 2018). However, studies evaluating patterns of nocturnality by predominantly diurnal species are still scarce.

## ACKNOWLEDGEMENT

Thanks to Jacob A. Trujillo for the English revision of the manuscript.

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**Figure 1.** *Sceloporus cowlesi* individual displaying nocturnal activity in Albuquerque (New Mexico, USA) - **A.** General view of the location where the observations took place (25 May 2022), **B.** Basking on the pavement (26 May 2022), **C.** Seeking refuge in a Texas red yucca (*Hesperaloe parviflora*; 26 May 2022).

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Accepted: 30 June 2022