

OBSERVATION OF NOCTURNAL COPULATION UNDER ARTIFICIAL LIGHT IN THE BROWN ANOLE *ANOLIS SAGREI* (SQUAMATA: DACTYLOIDAE)OBSERVACIÓN DE COPULACIÓN NOCTURNA BAJO LUZ ARTIFICIAL EN EL ANOLIS CAFÉ *ANOLIS SAGREI* (SQUAMATA: DACTYLOIDAE)RAMÓN ISAAC ROJAS-GONZÁLEZ<sup>1</sup> \*

<sup>1</sup>Dirección General Adjunta de Investigación Pesquera en el Atlántico, Instituto Nacional de Pesca y Acuicultura, Av. México 190 Col Del Carmen, Coyoacán, Ciudad de México, México.

Correspondent: isaacrojasg@gmail.com

Received: 2021-01-06. Accepted: 2021-04-26.

**Resumen.**— Se reporta la observación de cópula nocturna en *Anolis sagrei* bajo luz artificial; además de las conductas alimenticias, las conductas reproductivas también pueden ser afectadas por la luz artificial nocturna en esta especie invasora explotadora de ambientes urbanos.

**Palabras clave.**— Conducta sexual, lagartija diurna, lagartija invasora, nicho de luz nocturna.

**Abstract.**— Nocturnal copulation of *Anolis sagrei* under artificial light is reported; aside from feeding behaviors, reproductive behaviors can also be affected by artificial night light on this invasive urban exploiter species.

**Keywords.**— Diurnal lizard, invasive lizard, night-light niche, sexual behavior.

Nocturnal artificial light has different effects on herpetofauna associated to urban areas (Perry & Fisher, 2006; Perry et al., 2008; Maurer et al., 2019; Thawley & Kolbe, 2020). In lizards, the concept of "night-light niche" is used for the relatively new habitat created by the presence of artificial lights at night (Garber, 1978; Thawley & Kolbe, 2020). This term basically explains the advantages for diurnal animals of extending the foraging time and take advantage of potential prey attracted by artificial light (e.g. Zozaya et al., 2015). There is limited information on the effects of nocturnal artificial light on different aspects of lizard ecology such as reproduction, thermoregulation, growth and diverse ecological interactions (Thawley & Kolbe, 2020).

*Anolis sagrei* is a diurnal invasive lizard widely distributed in the Yucatán Peninsula, generally associated with areas that present human disturbance (Lee 1996; Álvarez-Romero et al. 2008). There are previous records of nocturnal foraging activity associated with artificial light for *Anolis sagrei* in Bahamas (Schwartz & Henderson, 1991), Florida, USA (Meshaka et al., 2004), Quintana Roo, México (Badillo-Saldaña et al., 2016), Guatemala (Brown & Arrivillaga, 2017), and Yucatan and Campeche, México (pers. obs.). An anecdotal observation of night copulation in *A. sagrei* at 0100 h in south Florida (Wilson and Porras, 1983) is the only

available record of nocturnal mating in these diurnal lizards under artificial light in field conditions.

Barely past sunset, at 1929 h on 25 May 2014, a couple of *Anolis sagrei* were observed copulating on a wall border (50 cm high) under artificial light (Fig. 1) at the Lerma Building of the Centro Regional de Investigación Pesquera (19° 49' 20.61" N, 90° 34' 33.32" O, 8 m s.n.m.) in Campeche, México. At night, in near zones without artificial lights, is commonly find sleeping or inactive anoles in tree branches.

Although this observation was opportunistic, similar to the reported by Wilson and Porras (1983) in South Florida, they did not mention whether the nocturnal mating event they observed occurred under artificial light. Thus, the observation presented here is the first confirmed record of nocturnal mating under artificial light in *A. sagrei*. It is remarkable because there are no other records of this nocturnal reproductive behavior in *Anolis* or in other diurnal lizards under artificial light. Artificial light conditions potentially increase the activity time; increasing feeding and reproductive times. This highlights the capacity of this lizard to exploit novel resources available in urban areas, and the potential role of artificial light in their success as an invasive



**Figura 1.** *Anolis sagrei* (Anolis café) copulando en la noche bajo luz artificial en la Ciudad de Campeche, México.

**Figure 1.** *Anolis sagrei* (Brown anoles) copulating at night under artificial light in Campeche City, Mexico.

species, which may be a result of acclimation or physiological adaptation (Kolbe et al., 2013; Thawley & Kolbe, 2020).

Despite the increasing knowledge regarding the nighttime activity of *A. sagrei* (Schwartz & Henderson, 1991; Meshaka et al., 2004; Badillo-Saldaña et al., 2016; Brown & Arrivillaga, 2017), most observations refer to feeding activity. The recording of nocturnal copulation under artificial light highlights the possible effects of this type of light in activity times, influencing sexual behavior and other aspects of the biology of *A. sagrei*. The negative and positive impacts of artificial light may play a crucial role in determining which species invade and exploit urban environments (Thawley & Kolbe, 2020). It is necessary to carry out systematic research both in the field and laboratory, to elucidate the possible effects of artificial light at night on this abundant and invasive urban exploiter species.

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