Notes on daily activity patterns in *Teius teyou* (Squamata: Teiidae) in the dry Chaco

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ABSTRACT - Previous studies have indicated that *Teius teyou* is more active during the hottest hours of the day. Here we show that in the Paraguayan Chaco *T. teyou* avoids high temperatures in the summer. We observed that *T. teyou* is more active in the morning with temperatures around 30ºC, and less active between 13:00 and 15:00 h when temperatures were in the range 36 to 39ºC.

INTRODUCTION

The whip-tailed lizards *Teius* are a genus of green lizards from South America, characterised by the presence of only four toes (Cei, 1993; Carreira et al., 2005). *Teius teyou* is mainly distributed in the xerophytic environments of Chaco formations in Argentina, Bolivia, and Paraguay (Cei, 1993; Cabrera, 2012) where it actively searches for prey (insects and other arthropods) and fruits (Varela & Bucher, 2002) during daytime (Álvarez et al., 1992; Cappellari et al., 2007). Members of the genus are fast runners with Cei (1993) indicating *T. teyou* can run bipedally and is active in the hottest hours of the day. *T. teyou* is heliothermic employing sun basking to achieve preferred body temperatures. Nevertheless, heliotherms must avoid excessively high body temperatures and in this short note we provide information of basking patterns of *T. teyou* along a roadside edge including during the hottest hours of the day.

METHOD

The observations were made during the summer between 16th and 20th December, 2013 at the Estancia Agropecuaria "Solito" (24.290833°S, 58.837222°W, datum= WGS84), Presidente Hayes Department, Paraguay. Observations were daily between 08:00 and 20:00hrs, at intervals of 1.5 to 2 hours. A total of seven observations were made per day giving a total of n = 35. The monitoring was made along a transect of 1200 m length, where the number of specimens of *T. teyou* (no discrimination was made between males and females or age class) at both sides was recorded (Fig. 1).

The study area was a dirt road that transversed a typical xerophytic Chaco environment, with clay soils, thorny forests (abundance of cactus and bromeliads), and almost no herbaceous understory (see ground view in Fig. 1). Annual precipitations varies from 800 to 1,000 mm and mean annual temperature between 24° and 25° C. Climatic data were (daily and by hour) taken from World Weather Online (www. worldweatheronline.com) based on General Bruguez Meteorological Station (50.9 km from the study area).

Figure 1. Study area showing the 1200 m transect (red line) on a road, along which specimens of *T. teyou* were monitored. Darker green areas belong to dry forest, and light green surfaces represent grasslands. Left upper corner: detail of the ground view showing the vegetation.

RESULTS AND DISCUSSION

We observed the first individuals of *T. teyou* around 08:00. Most lizards (24) were observed between 10:00 and 10:30 (Fig. 2). With increasing temperatures, the activity of *T. teyou* was reduced. The numbers of observed lizards started to rise again in later afternoon but generally activity was lower than in mid-morning (Fig. 2). After sunset a few individuals remained active in the remaining light.

Andrade et al. (2004) found that diurnal activity in the Teiid lizard *Salvator merianae* begins once environmental temperature approach those experienced by lizards in their burrows, which remains warmer than overnight external temperature. More studies are required to establish if this also applies to *T. teyou*. As it can be seen in Fig. 2, activity of *T. teyou* decreased during the hottest hours of the day

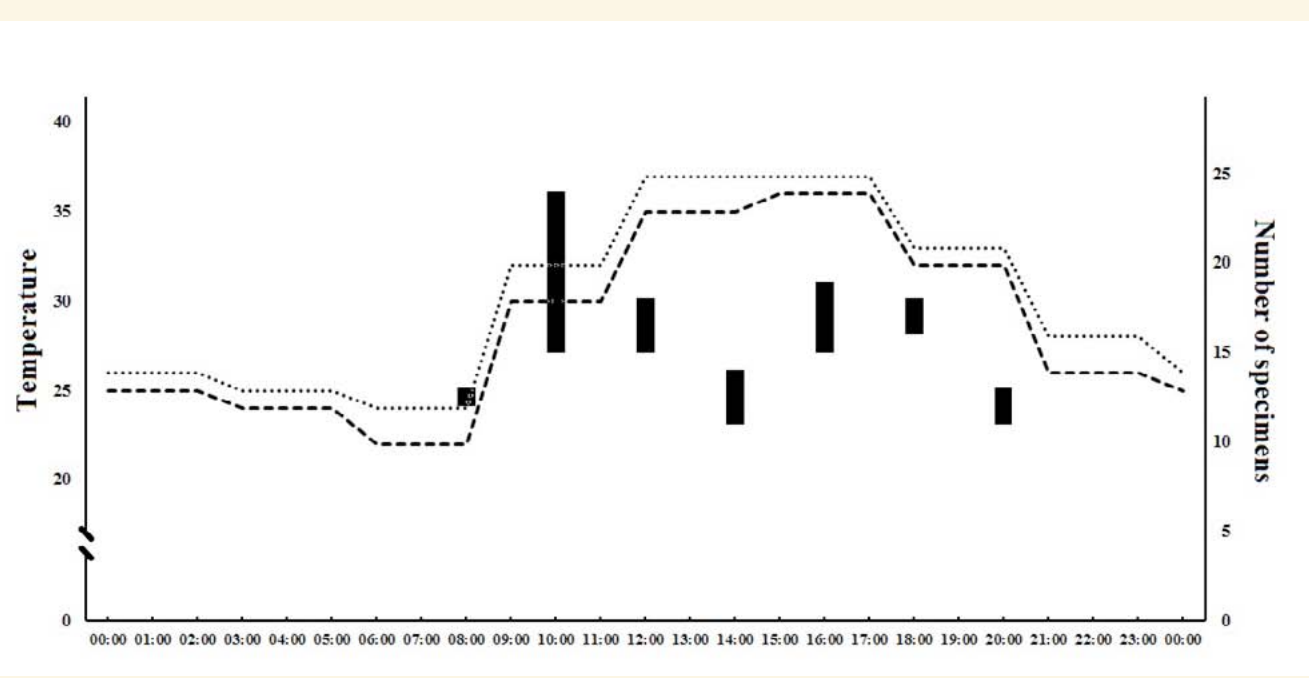

Figure 2. Graph showing activity pattern of *T. teyou* throughout the day (black bars) related to minimum (dashed line) and maximum (dotted line) temperature in ºC.

and once favourable body temperatures were attained they avoided excessive heat by resting in burrows or among vegetation; activity was reduced when the air temperatures were in the range 36-39ºC. This spatiotemporal pattern was also observed in the genus Ameiva (Rivera-Vélez & Lewis, 1994; Blair, 2009) and in some other South American lizards including *Liolaemus occipitalis* (Bujes & Verrastro, 2008). However, in contrast the highest activity in *Ameiva ameiva* in Caatinga was between 1200 and 1500hrs (Sales et al., 2011). In conclusion, *T. teyou* apparently demonstrated activity patterns that were temperature dependent.

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