

HIGH DENSITY ROAD KILL EVENT OF *GYMNOPSIS MULTIPLICATA* AND FIRST ROAD KILL REPORT OF *DERMOPHIS GLANDULOSUS*, TWO CAECILIAN SPECIES IN COSTA RICA

EVENTO DE ALTA DENSIDAD DE ATROPELLOS EN *GYMNOPSIS MULTIPLICATA* Y PRIMER REPORTE DE ATROPELLO DE *DERMOPHIS GLANDULOSUS*, DOS ESPECIES DE CECÍLIDOS EN COSTA RICA

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Resumen.— Los cecílicos son el grupo menos conocido de los anfibios debido a su vida fosorial, lo que dificulta la búsqueda y estudio de estos organismos. Se ha observado que estos organismos tienden a emerger después de fuertes lluvias, debido a que sus madrigueras están inundadas y necesitan salir a la superficie en busca de oxígeno. Aquí se presenta el primer reporte de atropello para *Dermophis glandulosus* e informes adicionales de atropellos en *Gymnopsis multiplicata* en Costa Rica. En marzo de 2020, en la carretera a Pozos, Puriscal, Costa Rica, se encontraron un total de 23 cecílicos muertos en un tramo de carretera de 3.94 km. Esta inusual observación podría ser consecuencia de las fuertes lluvias reportadas en el área el día antes del evento. Ésta es la más alta densidad de atropellos en cecílicos reportada a nivel nacional.

Palabras claves.— Anfibios, atropellos, carreteras, cecílicos.

Abstract.— Caecilians are the least known group of amphibians due to their fossorial lifestyle, which make them difficult to find and study. It has been observed that these organisms tend to surface after heavy rains because their burrows are flooded and they need to breathe. Here I present the first roadkill report for *Dermophis glandulosus* and additional road kill reports of *Gymnopsis multiplicata* in Costa Rica. In March 2020, on the road to Pozos, Puriscal, Costa Rica, a total of 23 caecilians road kills were found on a 3.94km road segment. This unusual observation could be a consequence of heavy rains reported in the area the day before the event. This is the highest caecilian road kill density reported at national level.

Key words.— Amphibians, caecilians, road, road kill.

The run over of wildlife is one of the main consequences that occur worldwide due to the presence of roads (De la Ossa et al., 2015). In Costa Rica, amphibians have been the group most affected by accidents, representing 95% of the studied cases (Arévalo et al., 2017). Caecilians are the least studied group of the Amphibian class (Zardoya & Meyer, 2000). These amphibians present a series of morphological adaptations for fossorial life, due to their lifestyle, it is very difficult to find them in investigations (Gomes et al., 2012; Leenders, 2016).

On May 30, 2020, at 06:00 hours, in the town of Cañas Arriba, Santiago, Puriscal, San José (9.823398, -84.307946), a total of 23 caecilian roadkill carcasses were found in a fragment of 3.94 km of the road to Pozos. The geographical area is a rural steeped

area with an average temperature of 17 - 24°C, an elevation of 1.105 m a.s.l and average slope angles of 85° (Solano & Villalobos, 2001; SNIT, 2022). The land adjacent to the road is classified as mainly forest segments and pastures with scattered houses built along the roadside, <1% of urbanized area per Km² as established on a GIS analysis of the area performed on QGIS V.3.22 software (QGIS.org, 2022). Photographic records were taken from each of the individuals for registration and subsequent identification to the highest taxonomic resolution possible. Given the condition of the bodies, only 6 out of 23 individuals were identified. Six specimens of two species, from two different genera of the Dermophiidae family were identified. *Dermophis glandulosus* (Tylor, 1955) (n = 4) and *Gymnopsis multiplicata* (Cope, 1877) (n = 2) (Fig. 1). It is reported that the day before the event, it rained



Figura 1. Cecillido atropellado en la carretera a Pozos, Puriscal, San José, Costa Rica.

Figure 1. Caecilian road kill on the road to Pozos, Puriscal, San José, Costa Rica.

heavily in the area. I hypothesized that, as has been previously reported, due to the rain, their tunnels could have flooded, causing them to rise to the surface in search for oxygen, and were run over (Leenders, 2016). In this case, the most of the carcasses were found fresh.

This constitutes the first report focused exclusively on the roadkill of caecilians in Costa Rica, because they are usually only mentioned in studies focused on road kills, of whether amphibians or general fauna (Gutiérrez, 2017; Monge-Velázquez, 2017). In the only previous record available, Artavia (2015) reported 16 roadkill individuals of *G. multiplicata* in a road section of almost 95km during a sampling period of eight months in a distant area, which highlights the relevance of

this report. Both *G. multiplicata*, and *D. glandulosus* are listed as Least concern species (LC) by the IUCN Red List criteria (IUCN, 2021). However, the populations of *D. glandulosus* are decreasing (IUCN, 2021; Leenders, 2016). The finding of this number of road kills sets the question of whether in this area of the country they occur in high abundances or if they are also usually found on the ground frequently. Further research must be conducted to improve our knowledge about population size estimates, detailed geographic distributions and the impact of roadkill events on its population dynamics.

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