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NOTES ON GEOGRAPHIC DISTRIBUTION

First records of *Oxybelis fulgidus* (Daudin, 1803) (Serpentes, Colubridae) from the state of Goiás, Brazil

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Abstract. *Oxybelis fulgidus* (Daudin, 1803), Green Vine Snake, is a colubrid with a broad distribution from southern Mexico through Central America to northern South America, including Amazonia and the Cerrado. We report the first record of occurrence of *O. fulgidus* from the state of Goiás, Brazil. We also provide an updated distribution map of the species.

Key words. Central Brazil, Cerrado, Green Vine Snake, reptile, species distribution

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INTRODUCTION

The colubrid genus *Oxybelis* Wagler, 1830 (Serpentes, Colubridae) comprise 11 species (Torres-Carvajal et al. 2021) and is widely distributed, occurring from the extreme southwestern United States (southern Arizona) through Central America (including some islands) in South America, including southeastern Brazil and the western Andean region (Nogueira et al. 2019; Jadin et al. 2020; Torres-Carvajal et al. 2021). *Oxybelis* species are divided into two main evolutionary groups: one composed of *Oxybelis fulgidus* (Daudin, 1803) and *Oxybelis wilsoni* Villa & McCranie, 1995, while the other is formed by *Oxybelis brevirostris* (Cope, 1961) together with the *Oxybelis aeneus* (Wagler, 1824) species complex. Species of the genus *Oxybelis* are associated mainly with the open formations of the Americas, including Cerrado sensu stricto (savannah woodland), Campo (grasslands), Cerradão (dense savannah woodland), and gallery forest (Jadin et al. 2020; Torres-Carvajal et al. 2021).

Oxybelis species exhibit characteristics typically related to an arboreal habits, such as a laterally compressed and slender body (Henderson and Binder 1980). However, unlike what is commonly found in arboreal snake species, *Oxybelis* species are predominantly diurnal (Henderson 1974; Henderson and Binder 1980; Santos-Costa et al. 2015; Harrington et al. 2018). Their feeding habits use strategies appropriate for capturing arboreal prey, consisting mainly of small lizards and birds, as well as occasional insects, amphibians, and small mammals (Auguste et al. 2021; Costa et al. 2022; Oliveira et al. 2023).

In Brazil, two *Oxybelis* species have been recorded: *O. aeneus*, which occurs in open and forest formations and has the largest geographic range, with records in the Amazon, Cerrado, Caatinga, and Pantanal ecoregions (Nogueira et al. 2019; Guedes et al. 2023), and *O. fulgidus*, which has a more restricted distribution in Brazil, with records concentrated in the Amazon region but with recent reports from open vegetation formations of central Brazil, particularly within the Cerrado domain (Nogueira et al. 2019; Sena et al. 2022).

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METHODS

We report seven records of *Oxybelis fulgidus* obtained during vegetation clearance in a gallery forest carried out in 2021 and 2022 in a mine site within the Cerrado biome. As the species is readily identifiable in the field, only the specimen that sustained injuries as a result of the clearing activities was collected and euthanized. These new records and the collected specimen are the result of a fauna-rescue program conducted in the course of vegetation removal (license number #19640973 provided by Secretaria de Estado de Meio Ambiente e Desenvolvimento Sustentável). The specimen was captured and euthanized, then fixed in a 10% formaldehyde solution and preserved in 70% ethanol before being deposited in the Zoological Collection of

the Federal University of Goiás (ZUFG). We reviewed the literature for occurrence data of *O. fulgidus* in Brazil (Nogueira et al. 2019; Sena et al. 2022) and created an updated distribution map for the species using QGIS v. 3.16.9 (QGIS Development Team 2021) (Figure 2).

Data resources. The occurrence data reported in this paper are deposited at GBIF, the Global Biodiversity Information Facility, and are available at https://doi.org/10.15468/k2vhhm.

RESULTS

***Oxybelis fulgidus* (Daudin, 1803)**
Figures 1, 2

New record. BRAZIL — Goiás • Minaçu; 13°28'47"S, 048°30'38"W; elev. 939 m a.s.l.; 19.V.2022; Cunha G. leg.; adult sex indet., ZUFG1701.

We found another six individuals in the study area: three in 2021 and three in 2022. These seix specimens were identified in the field and not collected (Table 1).

Identification. Individuals were identified according to the morphological traits described by Peters and

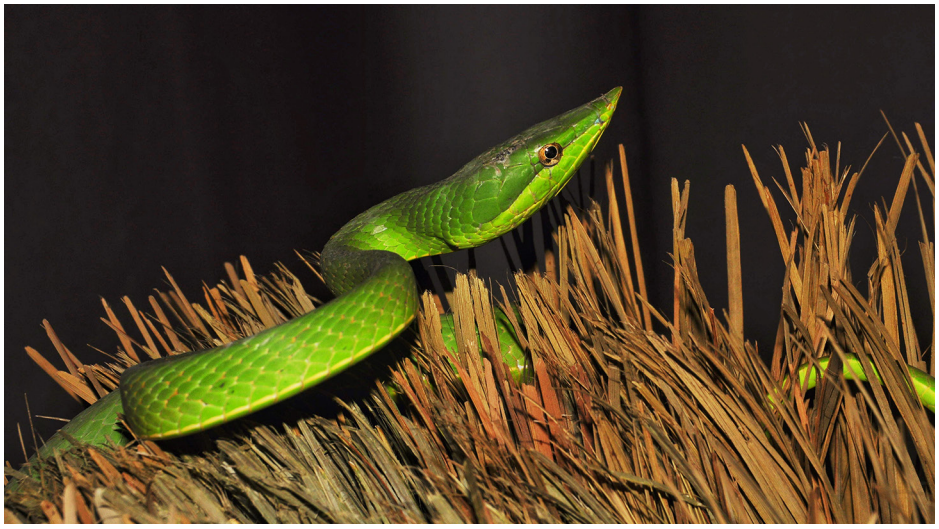

Figure 1. *Oxybelis fulgidus* (ZUFG1701) from Minaçu, Goiás, Brazil.

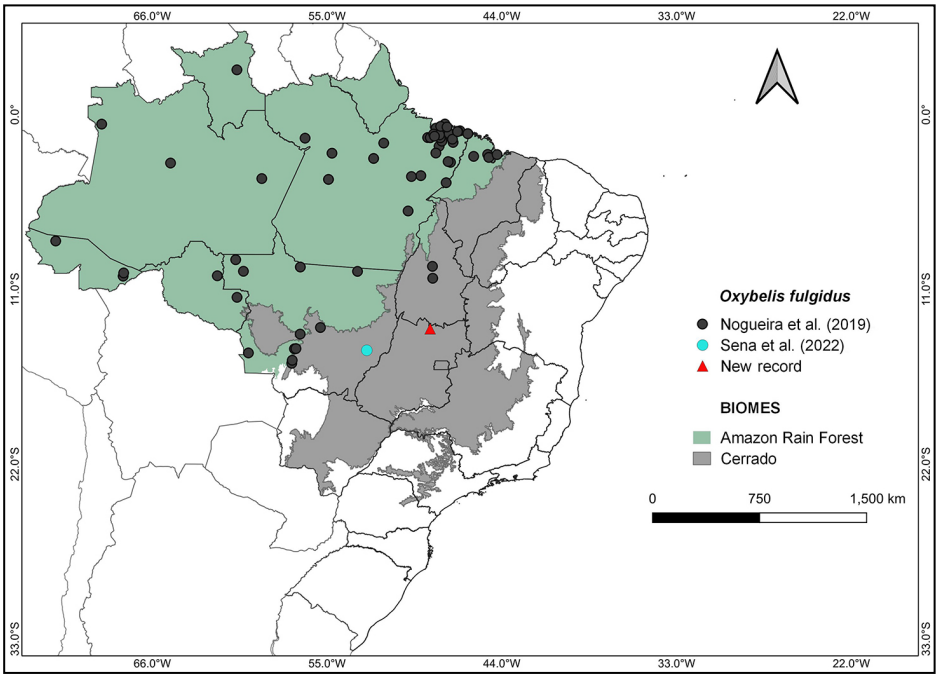

Figure 2. Geographic distribution of *Oxybelis fulgidus* in Brazil based on Nogueira et al. (2019) and Sena et al. (2022) and including the new record from the municipality of Minaçu, Goiás, Brazil.

Table 1. Georeferenced records of *Oxybelis fulgidus* in Minaçu, Goiás. *Voucher specimen.

Records	Date	Geographic coordinates	Municipality	Type of environment
1	01.VI.2021	13°29'55.78"S, 048°30'49.38"W	Minaçu	Cerrado sensu stricto
2	21.IX.2021	13°29'44.21"S, 048°30'53.86"W	Minaçu	Gallery forest
3	19.X.2021	13°29'53.70"S, 048°31'12.97"W	Minaçu	Cerrado sensu stricto
4*	19.V.2022	13°28'47.34"S, 048°30'38.96"W	Minaçu	Gallery forest
5	20.V.2022	13°28'32.64"S, 048°30'38.64"W	Minaçu	Gallery forest
6	20.V.2022	13°28'46.15"S, 048°30'37.34"W	Minaçu	Gallery forest
7	21.V.2022	13°28'40.24"S, 048°30'34.38"W	Minaçu	Gallery forest

Orejas-Miranda (1970) and Rivas et al. (2024). These include an elongate, slender head, pointed snout, and a uniform green dorsal body surface. Females tend to have a longer snout–vent length (SVL) and are heavier than males according to Henderson (1982) and Scartozzoni et al. (2009). The collected specimen had an SVL of 1290 mm, a tail length of 600 mm, and a total length of 1890 mm length. Scale counts are as follows: dorsal scales 17-17-13; ventral scales 206; and subcaudal scales 144. The specimen weighed 384 g.

The only other *Oxybelis* species in Brazil is *O. aeneus*, but it can be easily distinguished from *O. fulgidus* by the relatively uniform light-brown body (both dorsally and ventrally) with scattered, small, black dots; this is in contrast to the uniform green color of *O. fulgidus* (Henderson and Binder 1980; Torres-Carvajal et al. 2021).

DISCUSSION

The geographical distribution of *Oxybelis fulgidus* was believed to be restricted to the Amazon regions and transition zones between Cerrado and Amazon, with records of occurrence in the states of Rondônia, Amapá, Acre, Roraima, Amazonas, Pará, Tocantins, Mato Grosso, Maranhão and Piauí (Nogueira et al. 2019; Sena et al. 2022; Guedes et al. 2023). The Our new records from the municipality of Minaçu, Goiás, expand the distribution of the species by approximately 352 km south of Palmas, Tocantins, the nearest previously known locality, and by about 455 km north of Nova Xavantina, Mato Grosso (Henderson and Binder, 1980; Torres-Carvajal et al. 2021) (Figure 2). Therefore, the new record of *O. fulgidus* is the first from Goiás and the first confirmed occurrence of this species in central Brazil; it significantly expands the known geographic distribution of the species.

Although *O. fulgidus* is a common snake in tropical forests, its presence in the Cerrado, especially in fragments of gallery forests, reinforces the importance of these ecosystems for the maintenance of local biodiversity. By harboring species shared with neighboring forest biomes, gallery forests contribute to regional biodiversity. Thus, gallery forests provide suitable habiat for forest species to expand their distribution to predominantly non-forest biomes (Brandão and Araujo 2001).

The record of *O. fulgidus* from the Cerrado has importance for future conservation strategies for this species, and new data, such as those presented here, are essential in advancing our understanding of the Cerrado's critically underdocumented herpetological diversity. Providing details of each occurrence contributes to a better understanding of the natural history of the Cerrado. While important information on reptile species has been generated in recent years, particularly on their geographical distribution, significant knowledge gaps persist (Diniz-Filho et al. 2005; Bini et al. 2006). Goiás faces considerable challenges in preserving its biodiversity, particularly due to the intense anthropogenic pressures from agriculture, mining, and infrastructure development that compromise the integrity of native vegetation.

In recent years, reptile databases have been largely built upon natural history notes. These databases are important to scientific research and hold considerable potential to reduce persistent knowledge gaps in herpetology (Schalk and Cove 2018; Grundler 2020; Martins 2021; Teodoro et al. 2022). Our study, in providing new records of *O. fulgidus* in the Cerrado and Goiás, not only contributes to a better understanding of the local fauna but also broadens current knowledge of the species and suggests that its distribution may be considerably broader than previously recognized. Our findings offer valuable insights for the implementation of conservation measures in this highly threatened and ecologically diverse region.

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ADDITIONAL INFORMATION

Conflict of interest

The authors declare no conflicting interests.

Ethical statement

No ethical statement is reported.

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Author contributions

Conceptualization: RRS, RMO, CBD-C and SFA. Data curation: RRS and CSB. Visualization: RRS and CSB. Writing – review and editing: RRS, RMO, CBD-C, SFA, NQC and CSB.

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Data availability

All data that support the findings of this study are available in the main text. The occurrence data reported in this paper are also deposited at GBIF, the Global Biodiversity Information Facility, and are available at https://doi.org/10.15468/k2vhhm.

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