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New record of an alien snake *Pantherophis guttatus* (Squamata: Colubridae) in the state of Pernambuco, Brazil

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Locality. - Municipality of São Lourenço da Mata (7 °57'55.4"S 35°03'52.2"W) (29°47'38.5"S, 67°59'05.8"W), in the Area de Proteção Ambiental Aldeia Beberibe. Data: May 3, 2020. Sighted and photographed by the Interdisciplinary Amphibian and Reptile Laboratory Team. Images deposited in the Herpetological Collection of the Interdisciplinary Laboratory of Amphibians and Reptiles (LIAR 123).

Comment.- The Convention on Biological Biodiversity (CBD) defines exotic species as "those which occur outside past or present natural ranges". Invasive alien species, therefore, are defined as "species whose introduction and/or dispersion threaten biological diversity". These can be introduced intentionally and unintentionally, through introduction and dispersion pathways and vectors (Sampaio and Schmidt, 2013; Davis, 2009).

Biological invasions are considered one of the main threats to biodiversity, resulting in native population declines, environmental, economic and human health risks, as well as ecosystemic risks (GISP, 2007; Leão *et al.*, 2011; Vasconcellos, 2001). Among invasive vertebrates, reptiles are not very representative in Brazilian lists, in terms of the number of taxa recorded in natural environments, with lizard and testudines representatives both reported in protected areas (Instituto Hórus, 2021). Concerning snakes, few records are available of those introductions (Fonseca *et al*, 2014; Assis *et al.*, 2018), however a well-established list of exotic pets is available on social networks (Magalhães and São-Pedro, 2012; Evangelista, 2015; Alves *et al.*, 2019) is noted for this group, comprising an imminent risk of introduction (Eterovic and Duarte, 2002; Fonseca *et al.*, 2017).

The snake *Pantherophis guttatus* (Linnaeus, 1766), popularly known as the corn snake, it is a semi-arboreal snake belonging to the Colubridae family, small in size (about 1800 mm in total length), distributed throughout North America, inhabiting forested, open and urban environments preying on small mammals, birds, amphibians and reptiles (Fisher and Csurhes, 2009; Hammerson 2007). It is sold as a pet in many countries and, according to Magalhães and São-Pedro (2012), pet escapes and abandonments are the main cause of this species introduction in natural environments. In Brazil, it has been registered so far by Fonseca *et al.* (2014) in a Conservation Unit and in an urban area located in a residential complex, both in the Atlantic Rainforest domain in the state of Bahia. The aim of this study was, therefore, to document another *P. guttatus* record, the first in a natural environment in the state of Pernambuco.

On May 3rd 2021 one corn snake individuals was rescued by the Environmental Military Police - CIPOMA team, in an open natural area within a Sustainable Use Conservation Unit located in the Atlantic Rainforest domain, the Area de Proteção Ambiental Aldeia Beberibe, an environmental protection area in the municipality of São Lourenço da Mata (7 °57'55.4"S 35°03'52.2"W) (Fig. 1). The specimen was measured with a measuring tape, weighed using a digital scale, sexed and later sent to a containment box awaiting disposal, to be carried out by the Centro de Triagem e Reabilitação de Animais Silvestres - CETRAS Tangará. The specimen was a male, its total length was 65 cm, 54 cm snout vent length and 11 cm tail length, weighing 36 g (Fig. 1).

Pantherophis guttatus as an exotic traded species constitutes a crime according to Brazilian law (Fonseca *et al.*, 2017). The records of corn snakes

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Figure 1. A and B – Map indicating the *Pantherophis guttatus* record at the Aldeia Beberibe Conservation Unit; C – Specimen screening (biometry); D and E – Full body image of the animal.

reported here may have originated from the illegal trade practices of intentionally released pets or them escaping captivity, corroborating Alves *et al* (2019). According to Assis *et al.* (2018) this species holds generalists ecological habits, this way the lack of control in its creation and comercy of these exotic species may result in an invasive exotic species in the atlantic rain forest in a short extent of time.

In general, *P. guttatus* records in natural environment are scarce, although the unnatural presence of the species in the Brazilian territory through the pet market has been previously reported and constitutes a threat (Alves *et al.*, 2019). As it feeds on prey similar to native species, this species can pose a threat to the local avifauna (Kraus and Carvalho 2001; Hayes *et al.*, 2004), and other snake species with regard to *Cryptosporidium* parasitism (Xiao *et al.*, 2004). According to Fonseca *et al.* (2017), as species *Pantherophis guttatus*, *Python regius and Python bivittatus* were identified as species exhibiting greater probability of establishment and dispersion, considering species distribution model results and

specific attribute evaluations. The ecological niche modeling has been widely used in the attempt to foresee potential invasion sites and is an important tool to conservational biology.

In Brazil, the issue of biological invasions still requires further research and is not widely known by most Conservation Units (CUs) managers. CUs are protected territorial spaces which aim to maintain biodiversity, natural and cultural resources through legal and institutional mechanisms (Brito, 2008) and the introduction of exotic species should be the target of attention and management to "monitor", "prevent", "control" or eradicate exotic species that threaten ecosystems and their biota (CBD, Article 80).

Risk analysis protocols are some of the available strategies for screening potential invaders, which can also be applied to assess the risk of introduced species and limit or prohibit their importation or trade (Instituto Horus, 2021). Detecting potential invaders before they are introduced is necessary to prevent the spread and impact that invasive alien species can have on natural ecosystems (Rosa *et al.*, 2018).

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