

## Scientific Note

# First record of *Oxylygyrus nasutus* (Burmeister, 1847) (Coleoptera: Melolonthidae: Dynastinae) from Brazil, damaging plants of açai palm *Euterpe oleracea* Mart. (Arecaceae)

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**Abstract.** The açai palm plays major socioeconomic importance to human populations in North Brazil. Damages caused by pest insects in the orchards are among the main factors that limit açai production. Some representatives of Coleoptera are among the main pests that attack the açai palm. However, rhinoceros beetles (Dynastinae) had never been observed damaging açai plants. Here, we noticed the first occurrence of *Oxylygyrus nasutus* (Burmeister, 1847) (Melolonthidae: Dynastinae: Pentodontini) attacking young açai plants in the locality of Nova Colônia, Capitão Poço municipality, Pará state, Brazil. The species was observed digging tunnels in the soil near attacked plants. The damages happened through perforation localized at the basal stem part, where the beetles feed on the heart of the palm, preventing its development. This event is a wake-up call for local farmers to avoid the intervention of the edges of floodplains that could be the natural habitat of these insects. In addition, it also represents the first record of *O. nasutus* from Brazil.

**Keywords:** Amazon region, New Record, Pentodontini, Scarabaeidae.

The açai palm [*Euterpe oleracea* Mart. (Arecaceae)] is a native eastern Amazonian species from North Region of Brazil, where it forms dense populations in the Amazon River basin (Henderson et al. 1995; Henderson 2000). In that region, the fruit of açai play an important socioeconomic role, contributing widely to both food security and economy of local people (Yokomizo et al. 2012; Oliveira et al. 2015). The demand for açai fruit increased considerably since 1994 driven by the propaganda of high nutritional and energetic value contained in the açai drink, overcoming the regional limits to gain national and international markets (Souza et al. 2012). Profits obtained from açai fruit production reached US\$ 9.5 million in the last decade (CONAB 2020), and Pará state is the main Brazilian açai producer with 94.03% of the national participation (IBGE 2020). Due to commercial valuation of the species, many Brazilian producers have been investing in the expansion of cultivated areas (Oliveira et al. 2002).

One of the causes that might limit the açai productivity is the damage caused by pest insects, which have been increasingly frequent with the expansion of cultivated areas (Oliveira et al. 2002; Souza & Lemos 2004). Among these pest insects, 12 belong to Coleoptera, being nine members of Curculionidae [*Dynamis borassi* (Fabricius, 1801); *Euplatypus parallelus* (Fabricius, 1801); *Foveolus maculatus* O'brien, 2003; *Metamasius hemipterus* (Linnaeus, 1758); *Rhynchophorus palmarum* (Linnaeus, 1758); *Rhinostomus barbirostris* (Fabricius, 1775); *Xylosandrus compactus* (Eichhof, 1875); *Xyleborus ferrugineus* (Fabricius, 1801) and *Xyleborus volvulus* (Fabricius, 1775)]; two of Chrysomelidae [*Hemispherota tristis* (Boheman, 1850) and *Pachymerus nucleorum* (Fabricius, 1792)] and one of Scarabaeidae (*Macraspis pseudochrysis* Landin, 1956) (Jesus-Barros et al. 2013; Santos 2021).

Some beetles of the subfamily Dynastinae [Melolonthidae, *sensu* Cherman & Morón (2014)] (e.g., taxa of the genera *Golofa* Hope, 1837; *Oryctes* Illiger, 1798; *Scapanes* Burmeister, 1847; *Strategus* Kirby, 1828; *Xylotrupes* Hope, 1837) are recognized by feeding on Arecaceae members, being important pests of coconut (*Cocos nucifera* L.) and oil

palm (*Elaeis guineensis* Jacq.) plantations in Asia, Africa and Americas (Bedford 1976, 1980; Giblin-Davis 2001; Queiroz et al. 2017; Valouis et al. 2019). *Strategus aloeus* (Linnaeus, 1758) and *Golofa claviger* (Linnaeus, 1771) are two examples of rhinoceros beetles species known to attack coconut and oil palm crops in South America, particularly in Brazil (Martínez et al. 2014; Valouis et al. 2019). There are approximately 2,033 species belonging to Dynastinae worldwide (Schoolmeesters 2023) and Brazil hosts the greatest diversity of the subfamily in the Neotropical Region, encompassing 400 species distributed in 53 genera (Endrödi 1985; Gasca-Álvarez & Ratcliffe 2011; López-García et al. 2016; Duarte & Grossi 2022). Despite this, no Dynastinae member had been recorded attacking açai palm plants so far.

The South American genus *Oxylygyrus* Arrow, 1903 comprises 14 species classified within the tribe Pentodontini, of which eight are found in Brazil (Endrödi 1969; Dupuis 2010; 2016; 2017; Pinto-Júnior & Grossi 2018; Vaz-de-Mello & Grossi 2022). *Oxylygyrus* species are recognized by the acute and upturned anterior margin of clypeus; pronotum bearing a small tubercle close to middle of anterior margin; anterior area of pronotum with a longitudinal concavity (shallow in females); elytra with longitudinal rows of punctures; and tergite VII devoid of stridulatory striae (Endrödi 1969; 1985; Ratcliffe et al. 2020). Males of some species have the inner protarsal claw enlarged (Pinto-Júnior & Grossi 2018; Dupuis & Perrin 2020). *Oxylygyrus nasutus* (Burmeister, 1847) is recorded in Amazon rainforest from northward of South America (Dupuis 2017; Dupuis & Perrin 2020). Until now, *O. nasutus* was known only from Guyana and French Guiana (Dupuis 2016; 2017; Hielkema & Hielkema 2019; Dupuis & Perrin 2020). Despite the historical records of *O. nasutus* from southern Brazil (Endrödi 1969; 1985). Dupuis (2017) discovered this as a new species related but distinct from *O. nasutus* that was misidentified by Endrödi (1969; 1985), thus limiting the distribution of *O. nasutus* at that moment to French Guiana. Posteriorly, Dupuis & Perrin (2020) recorded it to Guyana.



Here, we confirmed the first record of *O. nasutus* from Brazil after observation of the species damaging young açai plants in the locality of Nova Colônia, Capitão Poço municipality, Pará state. A total of seven specimens, among males (Fig. 1) and females (Fig. 2), where collected and deposited in two collections: three males and one female at CERPE (Coleção Entomológica da Universidade Federal Rural de Pernambuco, Recife - PE, Brazil); and three females at MPEG (Museu Paraense Emílio Goeldi, Belém - PA, Brazil). The species determination was based on the configuration of male parameres (Fig. 3), following the specific diagnosis provided by Dupuis & Perrin (2020).

The record was made in March of 2022 during the Amazon rainy season in a varzea area characterized by a long flooding period. The adult specimens were noticed excavating tunnels until 8.0 cm deep in the soil near basis of the attacked plants (Fig. 4). A total of seven plants between 50-80 cm long were observed under attack (Fig. 5). Specimens of *O. nasutus* were caught ripping the stem basal part of the plants using the anterior legs, leading to a deep perforation of the damaged palms. Moreover, all attacked plants exhibited a rotting aspect in the target tissues. The attacks reached the heart of palm, which apparently interfered directly with the development and occasioned the death of plants (Fig. 6). Searches for oviposition, larvae and pupae were

performed near the plants but nothing was found.

Adults of Pentodontini are related to nocturnal behavior, being frequently attracted to light at night (Ratcliffe et al. 2020) and also recognized to feed on foliage, plant root, and organic matter in the soil. The larvae develop on soil, where feeding on humus or decaying leaves and trunks (Ratcliffe & Morón 1997). Some Pentodontini species [e.g., *Ligyris* (*Anagrylius*) *cuniculus* (Fabricius, 1801) and *Euethola humilis* (Burmeister, 1847)] are recorded as pests of other cultivated plants in Brazil, such as *Eucalyptus saligna* Smith (Myrtaceae) and *Oryza sativa* L. (Poaceae) (Ferreira & Barrigossi 2006; Bernardi et al. 2008). However, biological aspects and natural history of most species of Neotropical Pentodontini remain unknown (Dupuis & Perrin 2020).

The behavior noticed in this study represents the first case of a member of Pentodontini associated with *Arecaceae*. To prevent the occurrence of new attacks of *O. nasutus*, it is necessary to avoid anthropic disturbance of native vegetation in the establishment of the açai crop (Fig. 6). It is not clear if the behavior of *O. nasutus* was caused by environmental changes, or if the species already used açai palm plants as resource. Further studies are necessary to better understand these aspects.



**Figures 1-7.** *Oxylygyrus nasutus* (Burmeister, 1847) on açai palm in Brazil. 1) Male; 2) Female; 3) parameres in caudal view; 4) moment of the attack (red circle detail the presence of *O. nasutus*); 5) size of the açai plants; 6) perforated stem (red arrow); 7) crop area.



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## Authors' Contribution

PRMD made the species determination and participated with the organization, design, drafting of text and acquisition of the laboratorial photographs; AAM collaborated with the organization and drafting of the article; AARS collaborated in collection and acquisition of data; FJSD made the field photos and videos, and collaborated with the acquisition of data and critical contribution in the text; PCG collaborated with the critical revision of text.

## Conflict of Interest Statement

The authors declare no competing interests.

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