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# First record of Scymnini (Coleoptera: Coccinellidae), with *Scymnus* (*Pullus*) *rubicundus* Erichson, 1847, in Alagoas, Brazil

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## A B S T R A C T

Scymnini Mulsant, 1846 (Coleoptera: Coccinellidae) is a cosmopolitan group of inconspicuous beetles, and *Scymnus* Kugelann is the richest genus of this tribe, with more than 700 species in 10 subgenera occurring worldwide, being *Pullus* Mulsant its the most species-rich group. Although all Scymnini genera have been revised for South America, this tribe has not yet been recorded for Alagoas. This article aims to address this gap by providing the first record of *Scymnus* in this state of Brazil, along with an identification key for Scymnini genera in Northeastern Brazil. In January 2025, two specimens of Coccinellidae were collected in Arapiraca, mesoregion of Alagoas, an area characterized by a hot semi-arid climate. The collected beetle is *Scymnus* (*Pullus*) *rubicundus* Erichson, 1847, thus the first record of Scymnini for Alagoas. Records such as these are valuable for our better understanding of the tiny, inconspicuous Coccinellidae, a family of economically important beetles. Knowing this, we also provide an identification key for Scymnini genera from Northeastern Brazil.

## RESUMO

Scymnini Mulsant, 1846 (Coleoptera: Coccinellidae) é um grupo cosmopolita de besouros discretos, e *Scymnus* Kugelann é o gênero mais rico desta tribo, com mais de 700 espécies em 10 subgêneros ocorrendo em todo o mundo, sendo *Pullus* Mulsant seu grupo mais diverso. Embora todos os gêneros de Scymnini tenham sido revisados para a América do Sul, esta tribo ainda não foi registrada para Alagoas. Este artigo visa preencher essa lacuna ao apresentar o primeiro registro de *Scymnus* para este estado do Brasil juntamente com uma chave de identificação para os gêneros de Scymnini do Nordeste brasileiro. Em janeiro de 2025, dois espécimes de Coccinellidae foram coletados em Arapiraca, mesorregião de Alagoas, área caracterizada por um clima semiárido quente. O besouro coletado é *Scymnus* (*Pullus*) *rubicundus* Erichson, 1847, portanto o primeiro registro de Scymnini para Alagoas. Registros como este são valiosos para nossa melhor compreensão acerca desses minúsculos e discretos Coccinellidae, uma família de besouros importantes economicamente. Sabendo disso, também fornecemos uma chave de identificação para os gêneros de Scymnini do Nordeste do Brasil.

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## Introduction

Scymnini Mulsant, 1846 (Coleoptera: Coccinellidae) is a cosmopolitan group of inconspicuous lady beetles. Five genera of this tribe are found in South America, and they have all been recently revised for the continent (Gordon, 1996; 2000; González & Gordon, 2002; Gordon, 2007): *Carinoscymnus* Gordon, 2007; *Clitostethus* Weise, 1885; *Nephaspis* Casey, 1899; *Scymnobius* Casey, 1899; and *Scymnus* Kugelann, 1794.

*Scymnus* is by far the richest genus of this tribe, with more than 700 species in 10 subgenera. The only subgenus of *Scymnus* naturally occurring in the Neotropics is *Pullus* Mulsant, 1846. *Scymnus* (*Pullus*) is the most speciose group of *Scymnus*, with about 450 species distributed worldwide, 30 species in South America (Gordon, 2000) and 10 species in Brazil (Almeida et al., 2025)—*S.* (*P.*) *bennetti* Gordon, 2000; *S.* (*P.*) *cerinotum* Gordon, 2000; *S.* (*P.*) *demerarensis* Gordon, 2000; *S.* (*P.*) *fryi* Gordon, 2000; *S.* (*P.*) *gnomus* Gordon, 2000; *S.* (*P.*) *kraussi* Gordon, 2000; *S.* (*P.*) *loewii* Mulsant, 1850; *S.* (*P.*) *murilloi* Gordon, 2000; *S.* (*P.*) *rubicundus* Erichson, 1847; and *S.* (*P.*) *spanglerorum* Gordon, 2000.

*Scymnus* is similar to other inconspicuous genera of lady beetles found in Brazil (*Carinoscymnus* Gordon, 2007; *Nephaspis* Casey, 1899; *Scymnus* Kugelann, 1794; *Scymnobius* Casey, 1899), but can be distinguished from them by the following characters: (1) maxillary apical segment not securiform; (2) prosternal process not projected anteriorly; (3) pronotum without longitudinal carina at margins; (4) antenna without first antennomere expanded; and (5) abdominal postcoxal lines complete. This last aspect may also separate *Scymnus* (*Pullus*) from the exotic *Scymnus* (*Scymnus*), the only other subgenus with record for South America (González et al., 2019).

Despite the revision of all its genera for South America (Gordon, 1996; 2000; González & Gordon, 2002; Gordon, 2007) and recent collection efforts in the State (Oliveira et al., 2022), Scymnini has not yet been recorded for Alagoas. Since the distribution and diversity of species impact political decisions, this paper aims to address this gap by presenting the first record of *Scymnus* for this State of Brazil and providing an identification key for Scymnini genera from Northeastern Brazil.

## Material and methods

In January 2025, two adult Coccinellidae were handpicked by the second author JPC in an urban area of the Municipality of Arapiraca (-9.752778, -36.673889; 240 m a.s.l.), mesoregion of the Sate of Alagoas, Brazil. This area is characterized by a hot semi-arid climate (BSh) according to the Köppen-Geiger climate classification (Kottek et al., 2006; Beck et al., 2023).

The beetles were identified using a key to *Scymnus* (*Pullus*) species of South America (Gordon, 2000). Genitalia were dissected, cleared in 10% KOH, and examined. The material examined was double mounted with the genitalia in microvials and deposited in the Coleção



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Entomológica Padre Jesus Santiago Moure (DZUP), Universidade Federal do Paraná, Curitiba, Paraná, Brazil (Curator: Lúcia Massutti de Almeida).

A Leica DMC 2900 digital camera coupled with a Leica M205 C compound stereomicroscope was used to photograph adults and genitalia. Images were edited using Adobe Photoshop CC 2019, version 20.0 (7-day free trial).

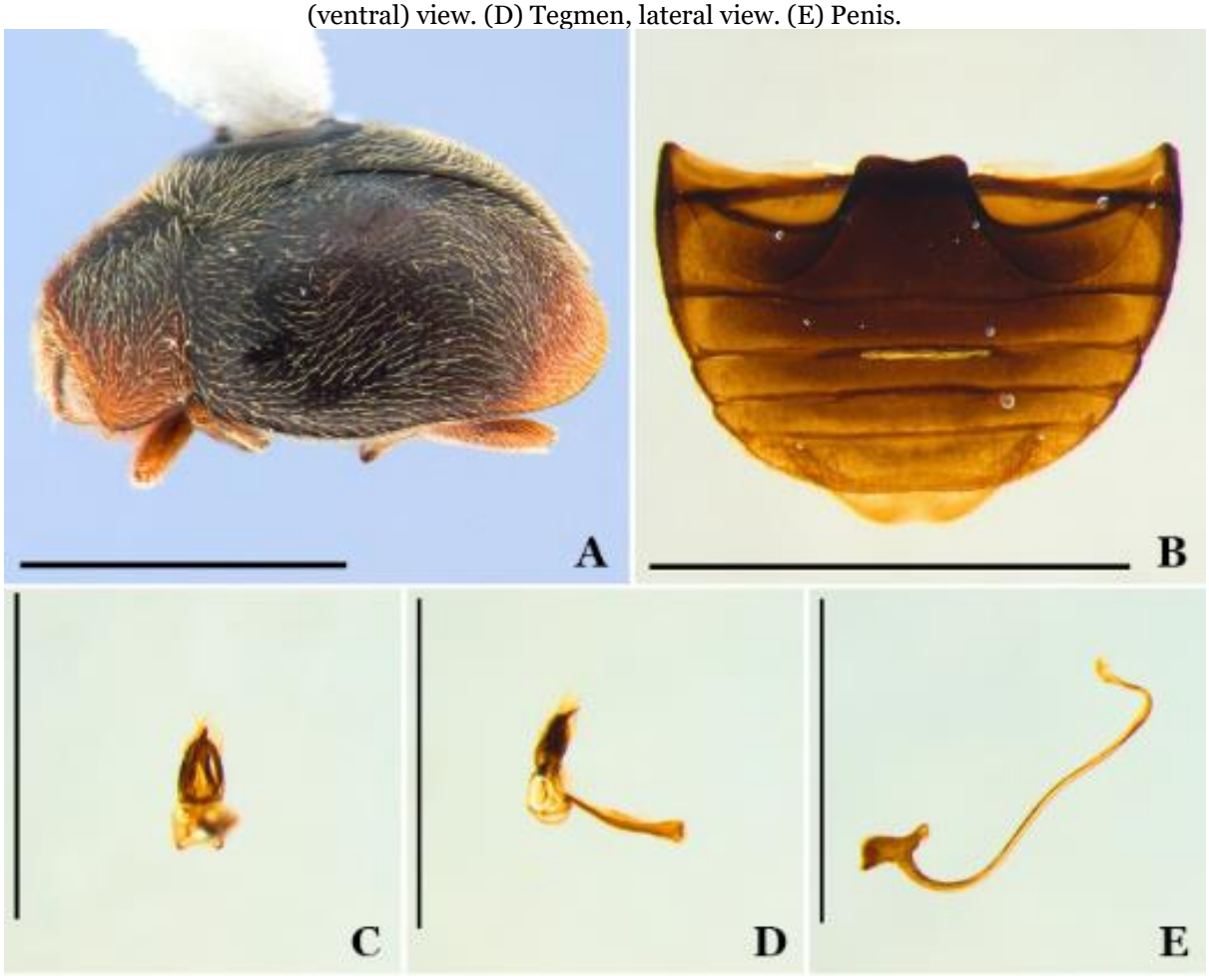
The morphological terminology is according to Ślipiński (2007). The classification of Coccinellidae follows Che et al. (2021).

## Results and discussion

The specimens consist of two males of *Scymnus* (*Pullus*) *rubicundus* Erichson, 1847 (Fig. 1) (DZUP 327497-327498). This species differs from other members of the genus by: (1) lack of maculate pattern; (2) males without tubercle on first ventrite; (3) elytra with at least one row of subsutural punctures; (4) abdominal postcoxal line narrowly separated from posterior margin of ventrite; (5) metasternal punctures about as large as elytral punctures; and (6) dorsal color mostly dark (Gordon, 2000). This is the first record of Scymnini for the State of Alagoas.

**Figure 1**.

Male of Scymnus (Pullus) rubicundus Erichson, 1847 (DZUP 327497), collected in Arapiraca (-9.752778, -36.673889; 240 m a.s.l.), Alagoas, Brazil. (A) Habitus. (B) Abdomen. (C) Tegmen, inner (ventral) view. (D) Tegmen, lateral view. (E) Penis.



*Scymnus* (*Pullus*) *rubicundus* is distributed throughout most of South America, excluding Chile and southern Argentina, and it is the most frequently collected species in this continent (Gordon, 2000), but not even the tribe has been reported for Alagoas, possibly due to insufficient collection efforts or a lack of specialists in the area. However, this species has been recorded from other States in the Northeast Region of Brazil (Table 1). These records are valuable for improving our understanding of beetles that are economically important, including *Scymnus* species.

**Table 1**.

*Distribution by States of the Northeast Region of Brazil and host records of Scymnini Mulsant.*

| Scymnini species | State(s) | Prey(s) | Plant(s)/Crop(s) | Source(s) |
|---|---|---|---|---|
| *Carinoscymnus bachmanni* Gordon, 2007 | Maranhão | Not recorded | Not recorded | Gordon, 2007 |
| *Nephaspis cocois* Gordon, 1972 | Pernambuco | *Aleurodicus cocois* (Curtis, 1846) (Hemiptera: Aleyrodidae) | *Anacardium occidentale* L. (Anacardiaceae) | Arruda, 1970 |
| *Scymnobius pernambucensis* Giorgi & González, 2014 | Pernambuco | Not recorded | Cotton (Malvaceae) | Giorgi & González, 2014 |
| *Scymnus* (*Pullus*) *cerinotum* Gordon, 2000 | Pernambuco (Fernando de Noronha Archipelago) | Not recorded | Not recorded | Rafael et al., 2020 |
| *Scymnus* (*Pullus*) *demerarensis* Gordon, 2000 | Bahia | Not recorded | Not recorded | Gordon, 2000 |
| *Scymnus* (*Pullus*) | Paraíba | *Aphis gossypii* Glover, 1877 | Cotton (Malvaceae) | Malaquias et al., 2017 |



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| | | | | |
|---|---|---|---|---|
| *rubicundus* Erichson, 1847 | | (Hemiptera: Aphididae) | | |
| | Piauí | *Aphis craccivora* Koch, 1854 (Hemiptera: Aphididae) | *Phaseolus lunatus* L. (Fabaceae) | França et al., 2018 |
| | Pernambuco (Fernando de Noronha Archipelago) | Not recorded | Not recorded | Rafael et al., 2020 |
| | Alagoas | Not recorded | Not recorded | This paper |

Prey data are scarce, but in general Scymnini are important predators of agricultural pests such as Aleyrodidae and Aphididae (Hemiptera) (Gordon, 1996; 2000). Of the six Scymnini species found in Northeastern Brazil, only *Nephaspis cocois* Gordon, 1972 and *S.* (*P.*) *rubicundus* have known host records (Table 1).

Identifying the genera of Scymnini and the tribe itself can be confusing because it includes tiny, inconspicuous beetles that appear very homogeneous to the untrained eye. This tribe can be diagnosed by, among other things: (1) prosternum not expanded anteriorly; (2) apical maxillary palps not securiform; (3) dorsal surface pubescent, barely shiny; and (4) abdomen with six visible ventrites. To aid further research, this work also provides an identification key for the Scymnini genera from Northeastern Brazil.

## Identification key to Scymnini genera from Northeastern Brazil

1 Pronotum with carinae on lateral margins (Fig. 2A) ..... *Carinoscymnus* Gordon, 2007

- Pronotum without carinae on lateral margins ..... 2

2 Antennae with enlarged first antennomere (Fig. 2B) ..... *Nephaspis* Casey, 1899

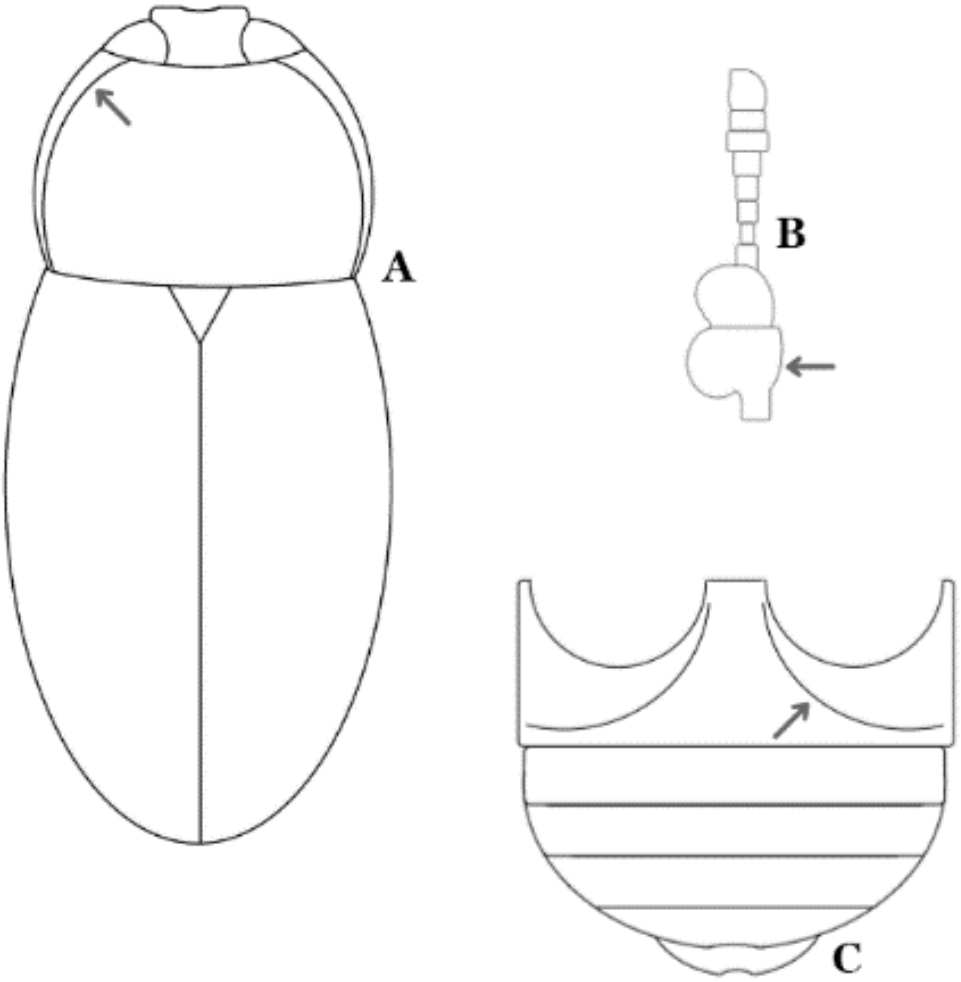
- Antennae without enlarged first antennomere ..... 3

3 Abdominal postcoxal lines complete, recurved (Fig. 1B) ..... *Scymnus* Kugelann, 1794

- Abdominal postcoxal lines incomplete (Fig. 2C) ..... *Scymnobius* Casey, 1899

**Figure 2**.

*Schematic representation of diagnostic morphological traits of Scymnini genera. (A) Carinoscymnus Gordon, 2007, lateral pronotal carina (arrow). (B) Nephaspis Casey, 1899, first antennomere distinctly enlarged (arrow). (C) Scymnobius Casey, 1899, abdominal postcoxal line (arrow).*




## Conclusion

This study documents the first occurrence of Scymnus (Pullus) rubicundus Erichson, 1847 in the State of Alagoas, Brazil, expanding the known distribution of the tribe Scymnini in Northeastern Brazil. The identification of two male specimens, distinguished by unique morphological traits such as the absence of a maculate pattern and a narrowly separated abdominal postcoxal line, highlights the importance of continued entomological surveys in underexplored regions. These findings contribute to a better understanding of the diversity



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and distribution of economically significant lady beetles in Brazil and provide a foundation for future research and conservation efforts targeting Coccinellidae in semi-arid environments.

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**Conflict of interest**

The authors declare that they have no financial, commercial, personal, or academic relationships that could be perceived as influencing the results or interpretation of this manuscript.

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**Data availability**

The data underlying the research are reported in the article

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