

# A new species of pincer wasps of *Deinodryinus* Perkins (Hymenoptera, Dryinidae) from oceanic archipelago of Fernando de Noronha, Brazil

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**Abstract.** The first record of the genus *Deinodryinus* Perkins and the description of a new species *Deinodryinus noronhensis* **sp. nov.** from oceanic archipelago of Fernando de Noronha (Brazil) are performed. Additionally, an illustration of the new species and a modified key are presented together with a discussion on the *Deinodryinus* records for the northeastern region of Brazil.

**Keywords.** Chrysoidea; Brazilian fauna; *Deinodryinus noronhensis* **sp. nov.**; Northeast; Parasitoid wasp.

## INTRODUCTION

Anteoninae Perkins 1912 is one of the largest subfamily of Dryinidae, with a worldwide distribution. It includes fossil and extant species (Olmí *et al.*, 2019; Martins & Olmi, 2021). Currently, this subfamily includes seven genera, four of them extant and three fossils. In the Neotropical region, four of them are known: *Anteon* Jurine, 1807, *Deinodryinus* Perkins, 1907, *Lonchodryinus* Kieffer, 1905 and *Metanteon* Olmi, 1984 (Martins & Olmi, 2021).

*Deinodryinus* Perkins has a worldwide distribution (Olmí *et al.*, 2019; Martins & Olmi, 2021). It is the fourth most speciose genus of Dryinidae and comprises about 168 species in the world, 115 in the Neotropical region and 39 in Brazil (Martins, 2015; Olmi *et al.*, 2019; Martins & Olmi, 2021). The hosts of this genus are Cicadellidae (Hemiptera, Auchenorrhyncha) (Guglielmino *et al.*, 2013; Martins & Olmi, 2021).

The Dryinidae fauna of Brazil was neglected for many years, making many regions still unexplored: one of them is the archipelago of Fernando de Noronha. Recently the Hexapoda fauna of the Fernando de Noronha archipelago was studied by Rafael *et al.* (2020) and listed 453 terrestrial species and morphospecies. In this study about 50 specimens of Dryinidae were collected and identify in family level and reported the first record of this taxon from archipelago (Rafael *et al.*, 2020). Two specimen of Dryinidae belonging to *Deinodryinus*

genus and recognized as a new species. Here is presented the first records of Dryinidae species and described of new species for science.

## MATERIAL AND METHODS

Two female specimens of *Deinodryinus* were studied. They were collected with Malaise trap in the Brazilian oceanic archipelago of Fernando de Noronha, located in the equatorial South Atlantic region (03°51'17"S, 32°26'26"W). The specimens studied here are deposited in the following collections below:

**DZUP:** Coleção Entomológica Pe. Jesus Santiago Moure, Universidade Federal do Paraná, Curitiba, Paraná, Brazil (Dr. Gabriel A.R. Melo).

**INPA:** Instituto Nacional de Pesquisas da Amazônia, Manaus, Amazonas (Dr. Marcio Oliveira).

Identification was performed using the key proposed by Olmi & Virla (2014). The morphological terminology follows Olmi & Virla (2014), except for venation, which follows Brothers (2011), and integumental sculpture, which follows Harris (1979).

In the descriptions, the following abbreviations are used: **POL**, refers to the minimum distance between the inner edges of the lateral ocelli; **OL**, refers to the minimum distance between the inner edges of the lateral ocellus and the median ocellus; **OOL**, refers to the minimum distance

from the outer edge of a lateral ocellus to the eye inner margin; **OPL**, refers to the minimum distance from the posterior edge of a lateral ocellus to the occipital carina; **TL**, refers to the minimum distance from the posterior edge of an eye to the occipital carina.

Label information was transcribed as follows: a backslash (\) indicates different lines on the label.

Colour images were obtained using a LEICA® DFC295 digital camera attached to the stereoscopic microscope Leica M125 and processed with Zerene Stacker software (1.04 version build). Scanning electron photomicrographs (SEM VEGA3 TESCAN) were made in the Center of Electron Microscopy of the Universidade Federal do Paraná. Figures were prepared using Adobe Photoshop (version 11.0).

## RESULTS

### Taxonomy

#### Genus *Deinodryinus* Perkins, 1907

#### *Deinodryinus noronhensis* sp. nov.

#### Figs. 1-2

**Diagnose:** Body predominantly testaceous (Figs. 1A-F), fore wing with two dark transversal bands (Fig. 1A); head with dense pilosity in face and part of frons (Fig. 1B); vertex granulate, except ocellar triangle smooth (Fig. 1C); pronotum with lateral margin granulate and anterior margin rugose (Figs. 1D-E, 2A); posterior surface of propodeum rugose (Fig. 1F); 5th protarsomere with two rows of lamellae and apex with two distinct long lamellae (Fig. 2B); stigmal vein of fore wing with 2r-rs shorter than 3Rs&4Rs (Fig. 1A).

**Description:** Female holotype (Fig. 1A), fully winged, body length 3.95 mm.

**Color:** Head testaceous, except mandible, clypeus and face whitish (Fig. 1B); antenna testaceous; mesosoma brown testaceous (Figs. 1A, D-E); legs yellow testaceous, except pro and metafemur testaceous (Figs. 1A, E); fore wing with two dark transversal bands and testaceous pterostigma (Fig. 1A); metasoma brown testaceous (Fig. 1A).

**Pubescence:** Head with face and with dense whitish pilosity (Fig. 1B); clypeus with dense and shorter whitish pilosity (Fig. 1B); gena and vertex with fine and sparse pilosity (Fig. 1B); antenna with dense and shorter pilosity; pronotum with short and dense whitish pilosity in dorsal surface (Figs. 1A, D-E); mesoscutum and mesoscutellum with sparse and whitish pilosity (Fig. 1D); metanotum with erect pilosity in central surface (Fig. 1D); mesopleuron with shorter and dense pilosity (Fig. 1E); metapleuron with dense pilosity (Fig. 1E); propodeum with shorter and dense pilosity (Figs. 1E-F); metasoma with fine, short and sparse pilosity in terga and externum, except in the last tergum and externum.

**Structures and sculpture:** Head granulate, except anterior surface of ocellar triangle smooth (Fig. 1C); gena granulate; occipital carina complete (Fig. 1C); frontal line absent (Fig. 1C); pronotum with lateral margin granulate and anterior margin rugose, with transversal impression in the anterior margin and disc plane and granulate (Figs. 1D-E, 2A); mesoscutum with anterior margin smooth and median and posterior surfaces granulate (Fig. 1D); notauli incomplete reaching about 0.9× length of mesoscutum (Fig. 1D); mesoscutellum granulate (Fig. 1D); metanotum smooth, except transversal carina on lateral margin (Fig. 1D); mesopleuron granulate (Figs. 1D-E, 2A); metapleuron rugose (Fig. 1E); propodeum reticulate rugose (Fig. 1F).

**Structure and proportions:** Head with vertex plane (Fig. 1C). Ocellar ratio: OL = 9, POL = 7, OOL = 18, OPL = 20, TL = 20. Antennomeres in following proportions: 28: 15: 35: 23: 18: 18: 15: 14: 13: 19. Protarsomeres in following proportions: 20: 6: 15: 42: 62. Enlarged claw slightly shorter than protarsomere 5 (59: 62) (Fig. 2B). Protarsomere 5 with two rows of lamellae and apex with short lamellae, except two long. Claw of the middle and posterior legs with basal expansion very developed. Tibial spurs 1:1:2. Stigmal vein of fore wing with 2r-rs shorter than 3Rs&4Rs (25: 29). Dorsal surface of propodeum longer than posterior (30: 40).

**Male:** Unkown.

**Distribution:** Brazil (Pernambuco).

**Type material: BRAZIL, Pernambuco: Holotype:** ♀, Brasil, Pernambuco, Fernando de Noronha, Capim-Açu \ 3°51'17"S 32°26'26"W, \ 23.vii-7.viii.2019, Malaise, \ G, J. A. Rafael, F. Limeira-\ de-Oliveira, L. C. Castro (INPA). **Paratype: BRAZIL, Pernambuco:** 1♀, Brasil, Pernambuco, Fernando de Noronha, Capim-Açu \ 3°51'17"S 32°26'26"W, \ 21.viii-8.ix.2019, Malaise G, \ J. A. Rafael, F. Limeira-de-\Oliveira, L. C. Castro (DZUP).

**Etymology:** The name *noronhensis* is a Latinized word meaning 'from Archipelago Fernando de Noronha', where this species has been collected.

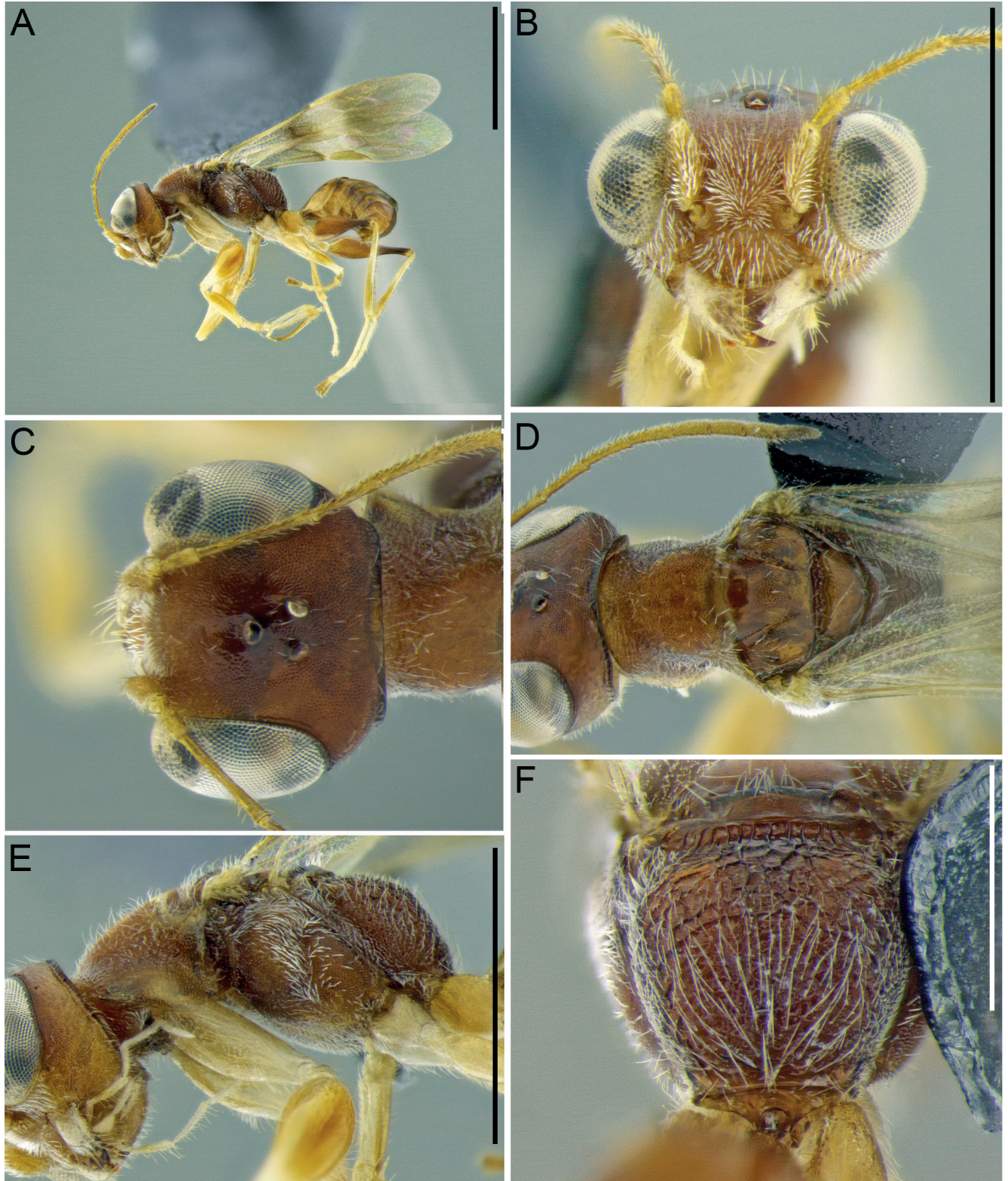
**Remarks:** Among the Neotropical species of *Deinodryinus*, *D. noronhensis* sp. nov. is close to *D. diaphanus* Olmi (1984) by the body totally testaceous, at most with petiole black, head granulated, without areolae or carina, notauli almost reaching posterior margin of mesoscutum. However, the new species differs from it by the following characters: head with face with little pilosity; vertex granulate, except ocellar triangle smooth (in *D. diaphanus*, head with vertex punctate, unsculptured among punctures); fore wing with two dark transversal bands (in *D. diaphanus* fore wing hyaline); stigmal vein of fore wing with 2r-rs shorter than 3Rs&4Rs (in *D. diaphanus* with 2r-rs longer than 3Rs&4Rs).



Following the description of *D. noronhensis* **sp. nov.**, the key to the females of the Neotropical *Deinodryinus* published by Olmi & Virla (2014) should be modified by replacing couplet 9 as follows:

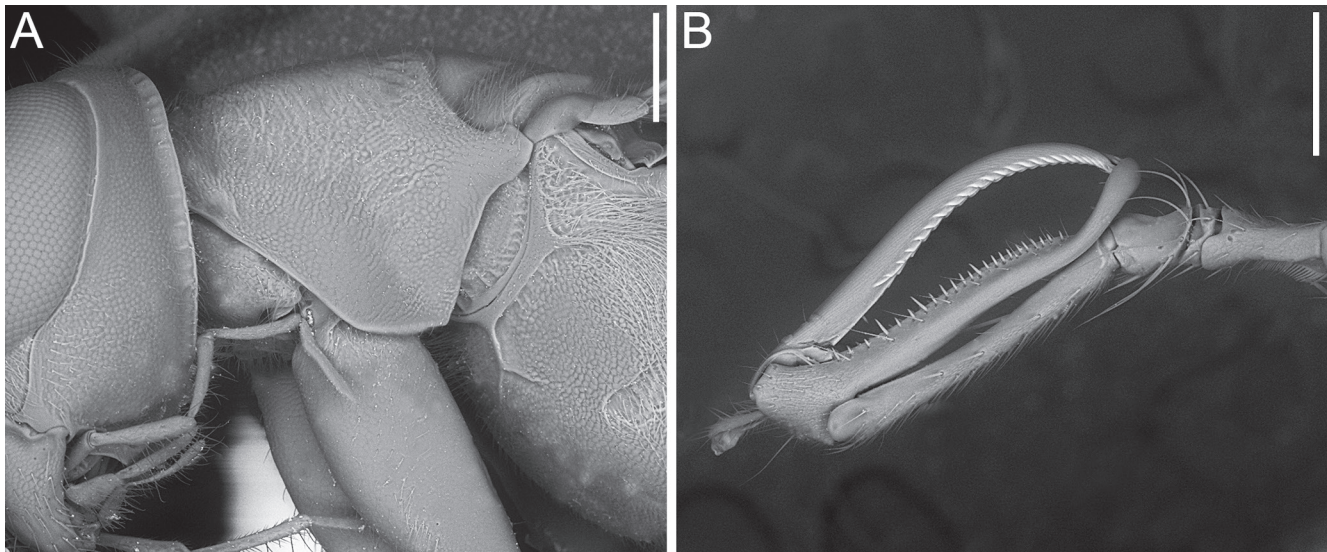
- 9. Body totally testaceous, at most with petiole black .....9'
- At least propodeum black ..... 10

- 9': Head with face with densely pilosity; vertex punctate, unsculptured among punctures; fore wing hyaline; stigmal vein with 2r-rs longer than 3Rs&4Rs .....*D. diaphanus* Olmi
- Head with face with little pilosity (Figs. 1B-C), vertex granulate, except ocellar triangle smooth (Fig. 1C); fore wing with two dark transversal bands (Fig. 1A); stigmal vein of fore wing with 2r-rs shorter than 3Rs&4Rs ..... *D. noronhensis* **sp. nov.**



**Figure 1.** *Deinodryinus noronhensis* **sp. nov.** holotype female. (A) habitus, lateral view; (B) head, frontal view; (C) head, dorsal view; (D) mesosoma, dorsal view; (E) mesosoma, lateral view and (F) propodeum, posterior view. Scale bar: (A-C) 1.0 mm, (D-E) 1.0 mm and (F) 0.5 mm.





**Figure 2.** Electron micrography of external morphology of the holotype of *Deinodryinus noronhensis* **sp. nov.**: (A) pronotum and part of mesosoma, lateral view; (B) Chela, lateral view. Scale bar: (A-B) 200 µm.

## DISCUSSION

*Deinodryinus* species are recorded in several South American countries including several Brazilian states (Olmí & Virla, 2014; Martins, 2015; Martins & Olmi, 2021). In Brazil, specifically for the Northeast region, nine species are known and distributed in four different states (Table 1): five of them recorded for Bahia, two for Pernambuco, one for Ceará and one for Maranhão (Olmí & Virla, 2014).

Little knowledge of the distribution of Dryinidae species in Brazil is due to the fact that there has never been a specialist in this group of wasps for this country and most of the known species were sent abroad and studied by Dr. Massimo Olmi.

Recently this scenario has changed and several species have been recorded and some of them have been described for different genera of Dryinidae for the Neotropical region including Brazil (Olmí & Virla, 2014; Martins *et al.*, 2015a, b, 2020; Martins, 2015, 2018, 2019; Martins & Krinski, 2016; Martins & Domahovski, 2017a, b; Martins & Olmi, 2021; Martins & Perioto, 2021; Speranza *et al.*, 2019; Olmi *et al.*, 2020). Although the genus

*Deinodryinus* is one of the most diverse in the Neotropical region with 114 known species, only 39 are recorded for Brazil, among which two, *D. pratapolensis* and *D. brasiliensis*, were recently described (Martins, 2015; Martins & Olmi, 2021).

The discovery of *D. noronhensis* **sp. nov.** shows how much effort is needed to expand the knowledge of the Dryinidae fauna in almost regions from Brazil. The description of the first species of Dryinidae for the Fernando de Noronha Archipelago and the new records of other Hexapoda presented by Rafael *et al.* (2020) shows how important knowledge about the invertebrate fauna is to maintain this conservation area so that more species of Dryinidae and other insects in this area can be recognized.

**CONFLICTS OF INTEREST:** Author declare there are no conflicts of interest.

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**Table 1.** *Deinodryinus* species recorded for Northeast from Brazil (Olmí & Virla, 2014).

Species	Brazil states
<i>Deinodryinus albopictus</i> Olmi, 1984	Bahia
<i>Deinodryinus iphis</i> Olmi, 1991	Bahia
<i>Deinodryinus latens</i> Olmi, 1991	Bahia
<i>Deinodryinus noyesi</i> Olmi, 1984	Bahia
<i>Deinodryinus townesi</i> Olmi, 1984	Bahia
<i>Deinodryinus huggerti</i> Olmi, 1991	Ceará
<i>Deinodryinus speciosus</i> Olmi, 1984	Maranhão
<i>Deinodryinus amoenus</i> Olmi, 1984	Pernambuco
<i>Deinodryinus vagans</i> Olmi, 1984	Pernambuco
<i>Deinodryinus noronhensis</i> <b>sp. nov.</b>	Pernambuco – new records

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