



## Insect (Hexapoda) diversity in the oceanic archipelago of Fernando de Noronha, Brazil: updated taxonomic checklist and new records

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### ABSTRACT

Hexapods, commonly known as insects, are a neglected taxonomic group in the Fernando de Noronha archipelago, with unanswered questions about their species richness and the ecological processes in which they are involved (e.g., colonization, introduction, establishment, and extinction). Herein, we provide an updated Hexapod checklist with current nomenclatural combinations. The entomofauna of the Fernando de Noronha archipelago is currently composed of 453 species in 21 orders. The orders, and their respective number of species, are: Blattaria (9), Coleoptera (118), Collembola (29), Dermaptera (3), Diplura (1), Diptera (134), Embioptera (1), Hemiptera (29), Hymenoptera (59), Isoptera (2), Lepidoptera (25), Mantodea (1), Neuroptera (3), Odonata (5), Orthoptera (11), Phasmatodea (1), Phthiraptera (6), Psocoptera (3), Siphonaptera (1), Thysanoptera (10), and Zygentoma (2). The archipelago has 263 new taxon records (family + genera + species). Thirty-eight species (3.39%) were described from local specimens and most of them are likely endemic species. This study more than doubles our knowledge (from the previous 190 records) of the entomofauna in this large Brazilian archipelago. This study also provides a baseline for studies on its conservation status and for implementing future environmental management programs.

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## Introduction

The Brazilian oceanic archipelago of Fernando de Noronha is located in the equatorial South Atlantic region (latitude  $3^{\circ}45'S$  to  $3^{\circ}57'S$ ; longitude  $32^{\circ}19'W$  to  $32^{\circ}41'W$ ) (Fig. 1A). It is under the jurisdiction of the state of Pernambuco, but it is also a federal preservation area

(i.e., National Park) under management of the Instituto Chico Mendes de Conservação da Biodiversidade - ICMBio (agency of the Brazilian Ministry of Environment). Fernando de Noronha is located c. 360 km from the nearest coastline (the Brazilian State of Rio Grande do Norte). The archipelago is entirely volcanic in origin and has never been connected to the mainland. The total land area is 18.4 km<sup>2</sup>, of which



**Figure 1** Fernando de Noronha archipelago. A: localization on the northeastern coast of Brazil; B: Sueste beach; C: Malaise trap, Townes model (Atalaia trail); D: net sweeping (Rata Island); E: Malaise trap, Gressitt & Gressitt model (Capim-Açú trail); F: bird nests (Rata Island); G: Light trap, UV and mercury lamps (Golfinhos trail); H: pitfall trap (Sancho trail); I: yellow pan trap (Golfinhos trail); J: net sweeping over dunes (area around the Fernando de Noronha harbor).

16.9 km<sup>2</sup> is the main island (Lopes and Ulbrich, 2015), and the remaining area is distributed among 20 smaller islands, of which Rata Island is the largest with 0.8 km<sup>2</sup>.

The archipelago has suffered major ecological disturbances due to several human interventions. In 1737, fortifications were built, and the archipelago was transformed into a penal colony for almost 200 years. During this period, a large part of the native vegetation was devastated while exotic plants and animals were introduced to serve as food (Teixeira et al., 2003; Serafini et al., 2010). The human population in the archipelago increased significantly in 1942 through military occupation (i.e., World War II). Afterwards, significant changes were observed in the archipelago due to:

- Several insecticide applications campaigns (i.e., DDT) for mosquito-control;
- Wild animal introductions, such as the Teju lizard (*Salvator merrianae* Duméril & Bibron) and the Mocó cavy (*Kerodon rupestris* Wied-Neuwied);
- Release of birds seized in trade fairs and public markets of Recife (i.e., Saffron finch (*Sicalis flaveola* (Linnaeus)), House Sparrow (*Passer domesticus* (Linnaeus)), and the White-bellied seedeater (*Sporophila leucoptera* (Vieillot));
- Introduction of domestic species (i.e., cats, cattle, chickens, dogs, goats, horses, and pigs) as well as synanthropic insects carried by humans in ships and airplanes.

Among the impacts caused by these introduced animals were vegetation destruction, dissemination of zoonoses, competition, and predation, which may have led to the local extinction of many native species before they could be recorded in the scientific literature. During the 1980's, tourism intensified in the archipelago and is now a major economic activity. As a result, the archipelago faces challenges to minimize the impact on its biota, prompting the need for inventories of its fauna and flora. None of the current actions (application of insecticides, introduction of exotic fauna, tourism, etc.) have been or are being monitored for their impact on insect fauna, leaving unanswered questions about species richness and the ecological processes in which they are involved (e.g. introduction, establishment, and extinction).

According to Mohr et al. (2009), the greatest impact was on the flora of the archipelago, with the removal of most of the native forest and the introduction of hundreds of exotic plant species. With each species introduced in the form of seedlings, there came the possibility of introducing several guest species with it. For each native species that faced extinction, there was the possibility of extinction of several associated guest species. The native entomofauna was certainly altered, or even partially extinct, long before it was studied or recorded. However, there is still considerable endemism in the archipelago, with an estimate of around 35% of the plant species and 30% of the insect species being endemic (Carbonell, 1996). There are only a few studies that cover the insects of the Fernando de Noronha archipelago. The first records were of fifty-seven insect species by Kirby (1890), 21 species by Waterhouse (1890), and five species by Ridley (1890), for a total of 83 recorded species. The next publications related to insects of Fernando de Noronha were by Carvalho and Becker (1957) with Hemiptera (Heteroptera), followed by Cobos (1959) and Sherer (1960) with Coleoptera, and Alvarenga (1962) with Coleoptera, Diptera, Hemiptera, and Hymenoptera. De Santis and Diaz (1975) published a paper on parasitic Hymenoptera, Kerr and Cabeda (1985) published a paper on the introduction of three species of Meliponini (Apidae), and Malagodi et al. (1986) of an Apini bee species. Mesquita and Matteo (1991) reported four species of Odonata, two as first records, and Carbonell (1996) described one species of Orthoptera. After the year

2000, there were several papers related to hexapods in the Fernando de Noronha archipelago: Couri et al. (2008), Oliveira et al. (2009, 2010), Rohde et al. (2010) and Carmo and Vasconcelos (2014, 2016) on Diptera; Abrantes et al. (2010), Palácios-Vargas et al. (2013), Lima and Zeppelini (2015), Zeppelini and Oliveira (2016), Brito et al. (2017), Schneider et al. (2018) and Cipola et al. (2019, 2020) on Collembola; and Ribeiro and Lima (2015) on Hymenoptera.

Most of the species recorded from the archipelago were identified around 130 years ago and, unfortunately, some were either misidentified, only identified to genus, or had doubtful identifications based on immature specimens. Due to current knowledge, these records require a nomenclatural and identification update.

This paper is the first of a long-term project that aims to record as many insect species, native and non-native, as possible for the Fernando de Noronha archipelago. This project will contribute with local biodiversity knowledge, which will be useful for the National Park management, for biodiversity monitoring, and for determining community structure, species richness and the ecological services involved. New records and species will be described by different collaborators as soon as the recently collected samples are sorted, distributed, and identified.

The current publication presents an updated checklist of the hexapod orders and families previously recorded from the Fernando de Noronha archipelago with the addition of 263 new records at family, genus or species level, raising the species count for the archipelago to 453.

## Material and methods

The Fernando de Noronha archipelago has a tropical oceanic climate (Awi - Köppen classification). The temperature ranges from 23.5°C to 31.5°C, with an annual mean of 27°C (IBAMA, 2006) and annual precipitation of 1,400 mm, but with large interannual variability. It is characterized by a less rainy season, with a mean precipitation of 27.2 mm/month (August–January), and a rainy season, with a mean precipitation of 211.7 mm/month (March–July). The archipelago has a harsh environment, lacking a permanent source of fresh water, with low vegetation diversity, and shallow soil with little water retention (Freitas et al., 2013). Native flora, characterized as seasonally deciduous vegetation, is sparse and primarily represented by bushes and herbs, with several introduced plant species (Teixeira et al., 2003).

Some taxa were previously identified only to genus (Kirby, 1890; Ridley, 1890; Waterhouse, 1890) or are currently identifiable only to family or genus level. These taxa are cited under their respective orders to highlight that they are still under study and will eventually be identified to species in separate publications.

Insect orders, and families within each order, are presented in alphabetical order. The list of species presented here is based on previous literature and the study of material from recent sampling events in the archipelago. Species names are presented in their current nomenclatural status, followed by author and year and when followed by the asterisk "\*" indicate that the type-locality is the Fernando de Noronha archipelago. After the species names, previous combinations related to previous records from the archipelago, and current synonyms are presented. The number (or approximated number) and sex (when known) of recently collected specimens is listed under "Material examined". If enough voucher specimens become available, they will be distributed among the main Brazilian collections; otherwise, the specimens are divided between **INPA**, Instituto Nacional de Pesquisas da Amazônia, Manaus, Amazonas and the collections of each researcher responsible for the taxon (taxa). Collections are: **CEMT**, Setor de Entomologia da Coleção Zoológica, Universidade Federal de Mato Grosso, Cuiabá, Mato Grosso; **CERPE**, Coleção Entomológica da Universidade Federal Rural

de Pernambuco, Recife, Pernambuco; **CHNUFPI**, Coleção de História Natural da Universidade Federal do Piauí, Floriano, Piauí; **CZMA**, Coleção Zoológica do Maranhão, Caxias, Maranhão; **DZRJ**, Coleção Entomológica Prof. José Alfredo Pinheiro Dutra, Departamento de Zoologia, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Rio de Janeiro; **DZUP**, Coleção Entomológica Padre Jesus Santiago Moure, Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Paraná; **MNRJ**, Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Rio de Janeiro; **MZUSP**, Museu de Zoologia da Universidade de São Paulo, São Paulo, São Paulo; **UFAM**, Coleção Paulo F. Bührnheim, Universidade Federal do Amazonas, Manaus, Amazonas; and **UFPEL**, Universidade Federal de Pelotas, Pelotas, Rio Grande do Sul. The collection of the **NHMUK**, Natural History Museum, London, United Kingdom, is the depositary of the Ridley collection. The author(s) responsible for determining the current nomenclatural status, the combinations related to previous records, and the synonymy accounts for each order is(are) identified between square brackets (i.e., [Responsible:]) after each order name. When there was no specialist available to update the nomenclature, combinations and synonymy in a particular family, the information provided for each taxon is presented as originally cited in the literature and between quotation marks (i.e., “ ”). Species with doubtful identification and bionomic data from previous papers are discussed under “Remarks”. Whenever possible, the locality names cited in historical records are matched and updated to locality names currently used in the Fernando de Noronha’s main island, with the “old” name presented between “curly brackets” (i.e. { }), based on the information and map of Lea (1888).

Beside scientific publications, this paper includes a few internet species records of pests (Marinho, 2015) and disease vectors (Marinho, 2018). Works citing only insect orders are briefly mentioned only to highlight the occurrence of these taxa in the archipelago.

This project received the Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio) the collecting license number 62.821. Two short-term insect sampling efforts occurred. The first from 2 to 9 June 2019 and the second from 20 to 27 February 2020. The collected specimens are from the following locations in the archipelago: Abreus trail, Atalaia trail (Fig. 1C), Boldró region, Cachorros beach, Capim-Açu trail (Fig. 1E), mangrove, Caracas region, Golfinhos trail, Rata Island (Figs 1D, F), Sancho trail, Sueste beach (Fig. 1B), Vila dos Remédios urban area, and Xaréu dam. Specimens were collected through passive methods, using Malaise traps of different sizes and models [i.e. two Townes (Townes, 1972) (Fig. 1C) and two Gressitt and Gressitt (1962) (Fig. 1D) models], yellow pan traps over the soil (Fig. 1I), pitfall traps buried in the ground at rim level (Fig. 1H), window traps suspended over trails (with hanging shallow troughs containing water and a few drops of liquid soap), bait traps, Shannon traps with fruit and meat baits, modified McPhail traps (using pet bottles) with juice fruits, and CDC UV led light traps. Active collecting used entomological nets (Fig. 1J), electric vacuum aspirators for small insects under bark and stones, light trapping using a white sheet lit by a 250-watt mercury vapor and 40-watt UV lamps (Fig. 1G), animal bait (i.e. horse) to attract hematophagous horse flies and mosquitoes, and selective searching of specimens on soil and vegetation using a soft forceps. Details for each method can be found in Almeida et al. (2012). Additionally, three sites on the main island were selected for continuous collection using interception traps based on the following criteria: accessibility, diversity of vegetation, low degree of exposure to human activities, and geographical position inside the National Park area. Human impact on collecting sites was categorized as low since the three areas are open to tourism with guides and to scientific and management activities only. The three sites are: 1) Dolphins trail, near the information and control

desk, using two interception traps, model Townes placed around 100 meters of distance of each other; 2) next to the lookout at dolphins bay, using one interception trap, model Gressitt and Gressitt and; 3) on the Capim-Açu trail, also using one interception trap, model Gressitt and Gressitt (Fig. 1E). Collections were made for nine months, from June 2019 to February 2020.

Specimens were labelled, preserved in small containers with 92–96° ethanol, and temporarily stored in the ICMBio laboratory on the main island. The collected material was later transported to the INPA Invertebrate Collection in Manaus, Amazonas, where each sample was sorted and then sent to the taxon’s specialist.

## Results

The checklist presented below more than doubles the number of species records for Fernando de Noronha, from the previous 190 records to 453 records (being 42 identified to family, 138 identified to genus and 273 to species), with 263 new family, genus or species records. There are 21 orders and 179 families currently recorded from the Fernando de Noronha archipelago (Table 1). Thirty-eight species (8.39%) were described from local specimens and most of these are, most likely, endemic to the archipelago. Diptera is the most speciose order (134 species), followed by Coleoptera (118 species) and Hymenoptera (59 species).

Ridley (1890) recorded an unidentified species of *Machilis* Latreille, 1832 (then as *Thysanura*, currently *Archaeognatha*) with the following note “single specimen of a very small brown specimen taken under a stone at the base of the Peak, but by an accident it was destroyed”. Unfortunately, the author did not give any further description which could be associated with a representative of the *Archaeognatha*. Recent sampling efforts in Fernando de Noronha, focused on the mentioned microhabitat (i.e., under stones), recovered only specimens of Nicoletiidae (*Zygentoma*, see below), which closely fit the “very small brown” characteristic described by Ridley (1890). Thus, we believe this genus was a misidentification, with this previous record of *Machilis* referring to a species of Nicoletiidae, very common under stones in the archipelago, and that the order *Archaeognatha* is not present in Fernando de Noronha.

Several of our recently collected specimens, mostly in the orders Coleoptera, Diptera, Hemiptera, Hymenoptera and Lepidoptera, are yet to be identified. Although unidentified, with some likely to have been previously recorded, most of them surely represent new records for the archipelago.

## BLATTARIA [Responsible: J.A. Rafael]

This order has four families, seven genera and nine species recorded from Fernando de Noronha. One species, described from local specimens, seems to be endemic, and three worldwide species are here recorded for the first time. The classification follows Pellens and Grandcolas (2008, 2020).

### Blaberidae

*Panchlora nivea* (Linnaeus, 1758)

*Ichnoptera lucida* Walker, 1868: Kirby (1890); Alvarenga (1962).

Remarks. “A single immature specimen, probably belonging to this species. Taken under stones, base of Peak” (Kirby, 1890). Adult specimens still need to be found and examined in order to confirm/correct this species record.

**Table 1** Orders and number of families, species, new records and species described based on local specimens in Fernando de Noronha archipelago.

Order	Families	Species	New records	Described species based on local specimens
Blattaria	4	9	3	1
Coleoptera	35	118	80	12
Collembola	12	29	2	2
Dermaptera	3	3	0	
Diplura	1	1	0	
Diptera	40	134	108	
Embioptera	1	1	1	
Hemiptera	18	29	12	3
Hymenoptera	34	59	21	15
Isoptera	2	2	2	
Lepidoptera	8	25	8	1
Mantodea	1	1	1	
Neuroptera	2	3	3	
Odonata	2	5	0	
Orthoptera	5	11	1	4
Phasmatodea	1	1	1	
Phthiraptera	3	6	6	
Psocoptera	2	3	3	
Siphonaptera	1	1	1	
Thysanoptera	2	10	10	
Zygentoma	2	2	0	
<b>Total</b>	<b>179</b>	<b>453</b>	<b>263</b>	<b>38</b>

*Pycnoscelus surinamensis* (Linnaeus, 1758)

*Leucophaea surinamensis*: Kirby (1890); Alvarenga (1962).

Material examined. 19♀.

Remarks. Peridomestic and parthenogenetic species found in gardens, plantations, and chicken/cattle housing (Pellens and Grandcolas, 2008).

#### Blattidae

*Periplaneta americana* (Linnaeus, 1758)

*Periplaneta americana*: Kirby (1890); Alvarenga (1962).

Material examined. 1♀.

*Periplaneta australasiae* (Fabricius, 1775), **new record**

Material examined. 1 third instar nymph.

*Periplaneta fuliginosa* (Serville, 1839), **new record**

Material examined. 1♀ collected in urban area.

#### Corydiidae

*Euthyrrhapha pacifica* (Coquebert, 1804)

*Euthyrrhapha pacifica*: Kirby (1890); Alvarenga (1962).

#### Ectobiidae

*Blatella germanica* (Linnaeus, 1758), **new record**

Material examined. 2♀ collected in urban commercial food establishments.

*Chorisonneura poststriga* (Walker, 1868)

*Phyllodromia poststriga*: Kirby (1890); Alvarenga (1962).

Material examined. +20 specimens.

Remarks. Specimens somewhat yellowish and the only collected Pseudophyllodromiinae with this color in Fernando de Noronha can be conspecific with the specimen(s) identified previously as *C. poststriga* by Kirby (1890). Identification must be confirmed or corrected.

*Liosilpha incommoda* (Kirby, 1890)\*

*Blatta incommoda*: Kirby (1890); Alvarenga (1962).

Remarks. "Similar to *B. orientalis* Linnaeus, but much smaller, the tegmina much larger, and the pronotum longer" (Kirby, 1890).

**COLEOPTERA** [Responsible: A. Asenjo, A. de M. Bello, F.Z. Vaz-de-Mello, J.O. Silva-Júnior, M.L. Monné, M.A. Monné, P.C. Grossi, and R. Sobral]

This is the second richest order in the Fernando de Noronha archipelago, with 35 families and 118 species records. Twelve species were described from local specimens and most of them seem to be endemic. Eighty taxa (families, genera or species) are here recorded for the first time.

#### Aderidae

*Aderus* sp., **new record**

Material examined. +10 specimens.

#### Anthribidae

*Araecerus fasciculatus* (De Geer, 1775), **new record**

Material examined. +10 specimens.

Remarks. This cosmopolitan coffee bean weevil affects a wide range of stored products and some field crops.

#### Bostrichidae

*Xyloperthella transvena* (Lesne, 1900)

*Xylopertha* sp.: Waterhouse (1890).

*Xylionulus transvena*: Alvarenga (1962).

Material examined. +50 specimens.

Remarks. "Three specimens. Probably an introduced species. Four millimetres in length; reddish yellow, shining, with the rough anterior

part of the thorax brown and the apex of the elytra pitchy. The elytra finely punctured at the base, strongly punctured posteriorly; the posterior declivity also strongly punctured, with three nodes on its upper margin on each elytron" (Waterhouse, 1890).

#### Brentidae

*Brentus* sp. (Brentinae), **new record**

Material examined. 1 specimen.

*Coelocephalapion* sp. (Apioninae), **new record**

Material examined. 7 specimens.

#### Buprestidae

*Agrilus oceanicus* Cobos, 1959\*

*Agrilus oceanicus*: Alvarenga (1962).

Material examined. 3 specimens.

*Chrysobothris* sp., **new record**

Material examined. 5 specimens.

*Micrasta alvarengai* Cobos, 1959\*

*Micrasta alvarengai*: Alvarenga (1962)

Material examined. 3 specimens.

#### Carabidae

*Paraclivina* sp., **new record**

Material examined. 3 specimens.

*Tachys* (*Paratachys*) sp., **new record**

Material examined. 4 specimens.

#### Cerambycidae

*Achryson surinamum* (Linnaeus, 1767), **new record**

Material examined. 15♂, 12♀.

*Aegomorphus jaspideus* (Germar, 1823), **new record**

Material examined. 2♂, 2♀.

*Aegomorphus ridleyi* (Waterhouse, 1890)\*

*Acanthoderes ridleyi*: Waterhouse (1890); Alvarenga (1962).

Material examined. 2♂, 1♀.

Remarks. "These flew into light in the evening, and were very plentiful.

They made a loud squeaking noise when caught" (Waterhouse, 1890).

*Anelaphus souzai* (Zajciw, 1964)

*Anelaphus souzai*: Monné (1993)

Material examined. 21♂, 18♀.

*Lepturges* (*Chaeturges*) *laetus* Melzer, 1928, **new record**

Material examined. 2♂, 5♀.

*Mallodon spinibarbis* (Linnaeus, 1758)

*Stenodontes spinibarbis*: Alvarenga (1962).

Material examined. 1♂, 2♀.

*Oreodera* sp., **new record**

Material examined. 1 specimen.

*Oxymerus aculeatus lebasii* Dupont, 1838, **new record**

Material examined. 30♂, 7♀.

*Trypanidius isolatus* Waterhouse, 1890\*

*Trypanidius isolatus*: Waterhouse (1890); Alvarenga (1962).

Remarks. "These came to light, but were rarer, only two being taken" (Waterhouse, 1890).

#### Cerylonidae

*Euxestus erythacus* (Chevrolat, 1863), **new record**

Material examined. 1 specimen.

#### Chrysomelidae

*Amblycerus nigromarginatus* (Motschulsky, 1874) (Bruchinae)

*Amblycerus nigromarginatus*: Alvarenga (1962).

Material examined. 4 specimens appear to be conspecific with the specimen identified as *A. nigromarginatus* by Alvarenga (1962).

*Chaetocnema fernandoensis* Sherer, 1960\* (Galerucinae Alticini)

*Chaetocnema fernandoensis*: Sherer (1960); Alvarenga (1962).

Material examined. 57 specimens of this leaf beetle species fit the original description; plus 17 specimens: v.1954, Moacir Alvarenga (CEMT).

*Longitarsus* sp. (Galerucinae, Alticini), **new record**

Material examined. 2 specimens.

*Cryptocephalus* sp. (Cryptocephalinae), **new record**

Material examined. 1 specimen.

*Megacerus* (*M.*) *cf. porosus* (Sharp, 1885) (Bruchinae)

*Bruchus porosus*: Waterhouse (1890); Alvarenga (1962).

Material examined. +20 specimens fit the photos of the specimens from Fernando de Noronha deposited in the NHMUK.

Remarks. "Two imperfect male specimens, which may be referable to *B. porosus* Sharp from Guatemala, the type of which (unique) is a female. The brown colour is rather more suffused over the elytra, and the punctures are not quite so large. The pectinations of the antennae are very long" (Waterhouse, 1890).

*Merobruchus* sp. 1 (Bruchinae), **new record**

Material examined. 10 specimens.

*Merobruchus* sp. 2 (Bruchinae), **new record**

Material examined. 8 specimens.

*Pachybrachis* sp., **new record**

Material examined. +30 specimens.

#### Coccinellidae

*Azya* sp. **new record**

Material examined. +10 specimens.

*Chilocorus nigritus* (Fabricius, 1798), **new record**

Material examined. 10 specimens collected on *Malvaviscus* sp.

*Hyperaspis* sp., **new record**

Material examined. 1 specimen.

*Scymnobia pernambucensis* Giorgi & Gonzáles, 2014, **new record**

Material examined. +20 specimens.

*Scymnus* (*Pullus*) *cerinotum* Gordon, 2000, **new record**

Material examined. 13 specimens.

*Scymnus* (*Pullus*) *rubicundus* Erichson, 1847

*Scymnus* sp.: Waterhouse (1890).

Material examined. +60 specimens.

Remarks. "Two examples of a species resembling the Indian *S. xeranipelinus* Mulsant, but a trifle smaller (1½ millim.); uniform brownish yellow, with golden pubescence; punctuation of the elytra close, fine but distinct; metasternum very strongly punctured" (Waterhouse, 1890). The two specimens from Fernando de Noronha, previously identified as *Scymnus* sp. by Waterhouse (1890), were deposited in the NHMUK and subsequently identified in that collection as *S. rubicundus*. This pilose species is highly variable in colour, from entirely yellow to entirely black with several intermediary patterns. The yellow morph recently collected fits the photos of the specimen from Fernando de Noronha deposited in the NHMUK.

*Scymnus (Pullus) sp.*, **new record**

Material examined. 5 specimens, head entirely yellow.

Corylophidae, **new record**

Material examined. +20 specimens.

Curculionidae

*Ambrosiodmus* sp. (Scolytinae), **new record**

Material examined. +30 specimens.

*Chalcodermus* sp. (Molytinae), **new record**

Material examined. 1 specimen.

*Coptuomorpha* sp. (Conoderinae), **new record**

Material examined. +20 specimens.

*Cryptocarenum* sp. (Scolytinae), **new record**

Material examined. +30 specimens.

*Cryptorhynchus* sp. 1 (Cryptorhynchinae), **new record**

Material examined. 5 specimens.

*Cryptorhynchus* sp. 2 (Cryptorhynchinae), **new record**

Material examined. 14 specimens.

*Euplatypus parallelus* (Fabricius, 1801) (Platypodinae)

*Platypus parallelus*: Waterhouse (1890); Alvarenga (1962).

Material examined. +100 specimens.

Remarks. The specimens fit the photos of the specimens from Fernando de Noronha deposited in the NHMUK.

*Euscapes postfasciatus* (Farmaire, 1849) (Cryptorhynchinae), **new record**

Material examined. 1 specimen.

*Heilipus* sp. (Molytinae), **new record**

Material examined. 1 specimen.

*Hypothenemus plumeriae* (Nördlinger, 1856) (Scolytinae)

*Stephanoderes plumeriae*: Alvarenga (1962).

Material examined. +20 specimens.

*Pandeleiteius* cf. *albus* (Hustache, 1923) (Entiminae), **new record**

Material examined. 8 specimens: v.1954, Moacir Alvarenga (CEMT).

*Pantomorus* sp. (Entiminae), **new record**

Material examined. 1 specimen.

*Pappista manihoti* (Marshall, 1925) (Cryptorhynchinae)

*Coelosternus manihoti* (sic): Alvarenga (1962).

Material examined. 2 specimens.

Remarks. Specimens of this cassava borer weevil, recorded previously by Alvarenga (1962) in Fernando de Noronha, appear to be conspecific with *P. manihoti*.

*Pycnarthrum setulosum* Waterhouse, 1890\* (Scolytinae)

*Pycnarthrum setulosum*: Alvarenga (1962).

Material examined. 2 specimens match the photos of the specimens from Fernando de Noronha deposited in the NHMUK.

Remarks. "It was bred from the bark of the endemic fig-tree, from a specimen out of the garden of the Residency" (Waterhouse, 1890).

*Sitophilus oryzae* (Linnaeus, 1763) (Dryophthorinae)

*Sitophilus oryzae*: Waterhouse (1890); Alvarenga (1962).

Remarks. "Introduced. It is very destructive to the maize-grains, so that in the store-rooms the maize is covered with a thick layer of sand to prevent their attacks" (Waterhouse, 1890).

*Stenancylus* sp. (Cossoninae), **new record**

Material examined. 2 specimens.

?*Tomicus* sp. (Scolytinae)

Remarks. "This dubious record from Fernando de Noronha was based on "two immature specimens belonging to this or an allied genus; very pale yellow, 1½ millim. in length" (Waterhouse, 1890).

*Xyleborinus* sp. (Scolytinae), **new record**

Material examined. 5 specimens.

*Xyleborus volvulus* (Fabricius, 1775) (Scolytinae)

*Xyleborus torquatus* Eichhoff, 1868: Alvarenga (1962).

Material examined. 33 specimens.

*Zascelis* sp. (Cryptorhynchinae), **new record**

Material examined. 4 specimens.

Dermestidae

*Dermestes ater* De Geer, 1774

*Dermestes felinus* Fabricius, 1787: Waterhouse, 1890.

*Dermestes ater*: Alvarenga (1962).

Dryopidae

*Pelonomus* sp., **new record**

Material examined. +50 specimens.

Dytiscidae

*Copelatus* sp. (Copelatinae), **new record**

Material examined. +10 specimens.

Elateridae

*Aeolus* sp., **new record**

Material examined. 1 specimen.

*Cardiophorus insularis* Cobos, 1959\*

*Cardiophorus insularis*: Alvarenga (1962).

Material examined. 23 specimens.

*Dicrepidius* sp., **new record**

Material examined. 12 specimens.

*Physorhinus erythrocephalus* (Fabricius, 1801)

*Physorhinus erythrocephalus*: Cobos (1959); Alvarenga (1962).

Material examined. +40 specimens.

*Pyrearinus alvarengai* (Cobos, 1959)\*

*Pyrophorus alvarengai*: Alvarenga (1962).

Material examined. 1 specimen.

## Eucnemidae

*Dromaeolus* sp., **new record**

Material examined. 8 specimens.

## Histeridae

*Carcinops* sp., **new record**

Material examined. 11 specimens, collected in decomposing trunk.

## Hybosoridae

*Chaetodus* cf. *venezolanus* Martínez, 1994, **new record**

Material examined. 10 specimens.

## Hydrophilidae

*Dactylosternum abdominale* (Fabricius, 1792)

*Dactylosternum abdominale*: Waterhouse (1890); Alvarenga (1962).  
Material examined. 19 specimens collected in rotten fungi.

*Enochrus* (*Methydus*) *coarctatus* (Gredler, 1863)

*Philhydus marginellus* Fabricius, 1792: Waterhouse (1890);  
Alvarenga (1962).

*Pelosoma* sp., **new record**

Material examined. 1 specimen.

*Tropisternus* (*Strepitornus*) sp., **new record**

Material examined. 8 specimens.

## Laemophloeidae

*Rhabdophloeus* sp., **new record**

Material examined. +20 specimens.

## Latridiidae

*Dienerella* sp., **new record**

Material examined. +15 specimens.

## Melolonthidae

*Ligyris cuniculus* (Fabricius, 1801), **new record**

Material examined. 6 specimens; plus 12 specimens: v.1954. Moacir Alvarenga (CEMT).

*Phileurus valgus* (Olivier, 1789), **new record**

Material examined. 4 specimens.

*Strategus* sp.

*Strategus antaeus*: Waterhouse (1890); Alvarenga (1962).

Remarks. It seems likely that the *S. antaeus* records in Waterhouse (1890) were a misidentification. The original biological information based on specimens from Fernando de Noronha is transcribed here: "Its larvae were found under rubbish in the Capim-Açu trail {Sapate} with the fragments of the perfect insect, which we did not succeed in taking alive" (Waterhouse, 1890). *Strategus antaeus* is an Eastern North American species that does not occur south of the United States (Ratcliffe, 1976) and it is likely a misidentification or a *Lapsus*. Since Waterhouse (1890)

stated that he compared to "North and Central-American species", it is possible that it was a species with much broader distribution, reaching Northern Brazil, such as *S. aloeus* (Linnaeus, 1758) (Ratcliffe, 1976), or *S. surinamensis* Burmeister 1847, which is also present in North and Northeastern Brazil and with a more similar size to the true *S. antaeus* (*S. aloeus* is usually bigger). Fragments cited by Waterhouse could not be located in the NHMUK collection and no other specimens from Fernando de Noronha were found in that collection.

## Mordellidae (Mordellinae, Mordellini)

*Mordella* sp. 1, **new record**

Material examined. +30 specimens.

*Mordella* sp. 2, **new record**

Material examined. 2 specimens.

*Mordella* sp. 3, **new record**

Material examined. 1 specimen.

*Mordellistena* sp., **new record**

Material examined. +100 specimens; plus 6 specimens: v.1954, Moacir Alvarenga (CEMT).

*Tomoxia* sp., **new record**

Material examined. 1 specimen.

## Mycetophagidae

*Litargus tetraspilotus* LeConte, 1856, **new record**

Material examined. 8 specimens.

*Typhaea stercorea* (Linnaeus, 1758), **new record**

Material examined. 12 specimens: v.1954, Moacir Alvarenga (CEMT), identified by M. Barclay.

## Nitidulidae

*Colopterus* sp., **new record**

Material examined. 6 specimens.

*Epuraea* (*Heptoncus*) sp.

*Epuraea?* sp.: Waterhouse (1890).

Material examined. +10 specimens.

Remarks. "A single specimen of a very small species (1¼ millim.) somewhat resembling *Epuraea limbata*, but a little narrower, with the margins not expanded, light brown, finely pubescent, closely and very finely punctured; each elytron having two fine, widely separated, impressed striae. Abdomen covered by the elytra" (Waterhouse, 1890). Although we have not seen Waterhouse's specimen, recently collected specimens belong to *Epuraea* (*Heptoncus*). Therefore, using a conservative approach, we consider them to be the same species.

*Mystrops* sp., **new record**

Material examined. 1 specimen.

*Stelidota ferruginea* Reitter, 1873, **new record**

Material examined. 1 specimen.

## Oedemeridae

*Copidita* sp.

Material examined. +50 specimens.

Remarks. "Several examples of a species which I am unable to determine. Yellowish, usually with slight grey shade on the elytra" (Waterhouse, 1890).

#### Phalacridae, Phalacrinae

##### *Stilbus* sp., **new record**

Material examined. 1 specimen.

#### Ptiliidae

##### *Ptinella* sp., **new record**

Material examined. 5 specimens.

#### Ptinidae

##### *Calymmaderus* sp., **new record**

Material examined. 1 specimen.

##### *Petalium* sp., **new record**

Material examined. 18 specimens; plus 12 specimens: v.1954, Moacir Alvarenga (CEMT).

##### *Tricorynus* sp., **new record**

Material examined. 8 specimens.

#### Scarabaeidae, (all Aphodiinae)

##### *Ataenius* cf. *attenuator*, **new record**

Material examined. 1 specimen.

##### *Ataenius* cf. *cribrithorax* Bates, 1887, **new record**

Material examined. 1 specimen.

##### *Ataenius* cf. *gracilis* (Melsheimer, 1845), **new record**

Material examined. 1 specimen.

##### *Ataenius noronhai* Stebnicka, 2007\*

*Ataenius scutellaris* Harold, 1867: Alvarenga (1962) (misident. see remarks below).

*Ataenius* sp.: Waterhouse (1890).

Material examined. 5 specimens.

Remarks. This species is very similar to *A. scutellaris*, and several specimens collected by Alvarenga are part of the type-series of *A. noronhai*. Thus, the *A. scutellaris* records of Alvarenga (1962) are actually *A. noronhai*.

##### *Ataenius opatrinus* Harold, 1867

*Ataenius opatrinus*: Alvarenga (1962)

Remarks. This record is dubious (Alvarenga, 1962), likely based on a misidentification. Neither Stebnicka (2001) nor recent collections found any specimens of this species-group in Fernando de Noronha.

##### *Labarrus pseudolividus* (Balthasar, 1941), **new record**

Material examined. 2 specimens.

##### *Platytomus* cf. *parvulus* (Chevrolat, 1864), **new record**

Material examined. 4 specimens.

#### Silvanidae

##### *Cathartus quadricollis* (Guérin-Ménéville, 1829), **new record**

Material examined. 20 specimens.

#### Staphylinidae

##### *Baeocera* sp., **new record**

Material examined. 2 specimens.

##### *Belonuchus* sp.

Remarks. This was identified only to genus level based on "a single specimen, closely resembling *B. formosus* Grav[enhorst] [actually *Belonuchus rufipennis* (Fabricius) (Fauvel, 1877)] of Brazil, but smaller, 2¼ lines [14 mm] in length. It was found in a decomposing rat" (Waterhouse, 1890).

##### *Carpelimus* (*Carpelimus*) *nigrita* (Wollaston, 1857)

*Trogophloeus* sp.: Waterhouse (1890).

Material examined. +10 specimens.

Remarks. NHMUK voucher specimen from Fernando de Noronha was identified as *Trogophloeus nigrita* Wollaston [currently in *Carpelimus* (Gildenkov, 2010)]. The specimen from the NHMUK was photographed by Rafael Sobral and compared with recently collected specimens.

##### *Coproporus* sp., **new record**

Material examined. 2 specimens.

##### *Euconnus* sp., **new record**

Material examined. 5 specimens.

##### *Euplectus* sp., **new record**

Material examined. 20 specimens.

#### Tenebrionidae

##### *Aesthetus tuberculatus* Waterhouse, 1890\*

*Aesthetus tuberculatus*: Alvarenga (1962).

Material examined. 47 specimens.

Remarks. "These were found under stones and bark in the woods of the Capim-Açu trail {Sapate}" (Waterhouse, 1890). We recently found many specimens on dead trees at night, and observed that this species is unable to fly. The specimens fit the photos of the specimens from Fernando de Noronha deposited in the NHMUK.

##### *Alphitobius diaperinus* (Panzer, 1796)

*Alphitobius diaperinus*: Alvarenga (1962).

##### *Alphitobius laevigatus* (Fabricius, 1781)

*Alphitobius laevigatus*: Alvarenga (1962).

Material examined. 2 specimens.

##### *Blapstinus punctulatus* Solier, 1851

*Blapstinus* sp.: Waterhouse (1890).

*Blapstinus punctulatus*: Alvarenga (1962).

Material examined. 1 specimen.

Remarks. The recently collected specimen fits the photo of the specimen from Fernando de Noronha deposited in the NHMUK.

##### *Blapstinus ridleyi* Waterhouse, 1890\*

*Blapstinus ridleyi*: Alvarenga (1962).

##### *Hemasodes batesi* (Waterhouse, 1890)\*

*Epitragus batesii* (sic): Waterhouse (1890).

*Hemasodes batesii*: Alvarenga (1962).

Remarks. "Numerous examples of this species from the Amazons are labelled in Mr. F. Bates's collection with the name "*E. batesii*, Mäkl.", but the species does not appear to be described" (Waterhouse, 1890).

*Listronychus* sp.1, **new record**

Material examined. 1 specimen.

*Listronychus* sp.2, **new record**

Material examined. 1 specimen.

Zopheridae

*Aulonium* sp., **new record**

Material examined. 1 specimen.

*Hyporrhagus marginatus* Fabricius, 1792

*Hyporrhagus marginatus*: Waterhouse (1890); Alvarenga (1962).

Material examined. 8 specimens appear to be conspecific with the specimen identified as *H. marginatus* by Waterhouse (1890) and deposited at NHMUK.

Remarks. "A single example of this West-Indian species in the flowers of an acacia in the garden" (Waterhouse, 1890).

*Nematidium* sp., **new record**

Material examined. 1 specimen.

**COLLEMBOLA** [Responsible: E.C.A. de Lima and D. Zeppelini]

This order has twelve families, 14 genera and 29 species recorded from Fernando de Noronha. Two species were described from local specimens and three species are here recorded for the first time. The checklist is based on Lima and Zeppelini (2015), however, some confusion has been observed and some taxonomic updates are necessary. Three genera were previously misidentified (Lima and Zeppelini, 2015) and they are being excluded from the Fernando de Noronha record, namely *Cryptopygus* Willem, 1901, *Desoria* Agassiz & Mayer, 1841 and *Lepidonella* Yosii, 1960.

Bourletiellidae

*Prorastriopes* sp.

Remarks. Identified only to genus level (Lima & Zeppelini, 2015).

Brachystomellidae

*Brachystomella agrosa* Wray, 1953

*Brachystomella agrosa*: Lima and Zeppelini (2015).

Collophoridae

*Collophora terrabrazilis* (Zeppelini and Brito, 2013)

*Collophora terrabrazilis*: Lima and Zeppelini (2015); Brito et al. (2017).

Dicyrtomidae

*Calvatomina* sp.

Remarks. Identified only to genus level (Lima and Zeppelini, 2015).

Entomobryidae

*Entomobrya atrocincta* Schött, 1896

*Entomobrya atrocincta*: Lima and Zeppelini (2015); Brito et al. (2017).

*Lepidocyrtus nigrosetosus* Folsom, 1927, **new record**

*Lepidocyrtus* sp. (Setogaster): Lima and Zeppelini (2015).

*Pseudosinella flatua*: Lima and Zeppelini (2015); Brito et al. (2017).

*Lepidocyrtus violaceus* Fourcroy, 1785

*Lepidocyrtus violaceus*: Lima and Zeppelini (2015).

*Pseudosinella biunguiculata* Ellis, 1967

*Pseudosinella* sp.: Lima and Zeppelini (2015)

*Pseudosinella aera*: Lima and Zeppelini (2015); Brito et al. (2017)

*Pseudosinella biunguiculata*: Cipola et al. (2020).

*Seira dowlingi* (Wray, 1953)

*Seira dowlingi*: Cipola et al. (2019).

*Seira musarum* Ridley, 1890\*

*Seira musarum*: Abrantes et al. (2010); Lima and Zeppelini (2015); Brito et al. (2017); Cipola et al. (2019).

Remarks. "Very abundant between the wet bases of the petioles of the bananas, at the base of the Peak and it is most probable that this species was introduced in the bananas" (Ridley, 1890).

Hypogastruridae

*Acherontiella* sp.

Remarks. Identified to genus level based on a species soon to be described (Lima and Zeppelini, 2015).

*Willemia* sp.

Remarks. Identified to genus level based on a species soon to be described (Lima and Zeppelini, 2015).

*Xenylla yucatanana* Mills, 1938

*Xenylla yucatanana*: Lima and Zeppelini (2015).

Isotogastruridae

*Isotogastrura mucrospatulata* Palacios-Vargas, Lima & Zeppelini, 2013\*

*Isotogastrura mucrospatulata*: Lima and Zeppelini (2015).

Remarks. This species is known only from sand in the intertidal zone of the Fernando de Noronha islands.

Isotomidae

*Folsomides* sp.

Remarks. Identified only to genus level (Lima and Zeppelini, 2015).

*Folsomina* sp.

Remarks. Identified only to genus level (Lima and Zeppelini, 2015).

*Hemisotoma thermophila* (Axelson, 1900)

*Hemisotoma thermophila*: Lima and Zeppelini (2015).

*Isotomiella* sp.

Remarks. Identified only to genus level (Lima and Zeppelini, 2015).

*Isotomodes* sp.

Remarks. Identified only to genus level (Lima and Zeppelini, 2015).

*Proisotoma* sp.

Remarks. Four morphospecies were identified to genus level (Lima and Zeppelini, 2015).

## Neanuridae

*Arlesia* sp.

Remarks. Identified to genus level based on a species soon to be described (Lima and Zeppelini, 2015).

*Friesea* sp.

*Friesea cubensis*: Lima and Zeppelini (2015) (error).

Remarks. The *Friesea cubensis* Potapov & Banasko, 1985 record was a misidentification and a new species will soon be described in its place.

## Neelidae

*Megalothorax laevis* Denis, 1948, **new record**

*Megalothorax minimus*: Lima and Zeppelini (2015).

Remarks. Schneider et al. (2018) and Papác (pers. commun.) confirmed the wide distribution of *M. laevis* in intertropical regions of the Americas (southern parts of Mexico, Panama, Brazil and the Fernando de Noronha islands). Although the species has no other record in Brazil, all *Megalothorax minimus* records from Brazil should be reviewed based on the study of Schneider et al. (2018).

## Paronellidae

*Cyphoderus agnotus* Börner, 1906

*Cyphoderus agnotus*: Lima and Zeppelini (2015).

*Cyphoderus caetetus* Zeppelini & Oliveira, 2016

*Cyphoderus caetetus*: Zeppelini and Oliveira (2016).

*Cyphoderus* sp.: Lima and Zeppelini (2015).

*Cyphoderus innominatus* Mills, 1938

*Cyphoderus innominatus*: Lima and Zeppelini (2015).

*Cyphoderus similis* Folsom, 1927

*Cyphoderus javanus*: Lima and Zeppelini (2015).

## Sminthurididae

*Sminthurides aquaticus* Bourlet, 1842

*Sminthurides aquaticus*: Lima and Zeppelini (2015).

*Sphaeridia pumilis* (Krausbauer, 1898)

*Sphaeridia pumilis*: Lima and Zeppelini (2015).

**DERMAPTERA** [Responsible: R.A. Heleodoro]

This order is represented by three families, three genera and three species.

## Anisolabididae

*Euborellia annulipes* (Lucas, 1847)

*Anisolabis antoni* (Dohrn, 1864): Kirby (1890); Alvarenga (1962).

*Anisolabis janeirensis* (Dohrn, 1864): Kirby (1890); Alvarenga (1962).

Material examined. 4 nymphs, 6♂, 5♀ under sargassum; 4 nymphs, 1♂ under *Sula dactylata* Reinchbach nest; 2 nymphs, 1♂, 1♀ on main island ground; 1♂ under cattle dung; 1♀ under tree bark.

Remarks. Based on recently collected specimens, the previous records of *E. antoni* and *E. janeirensis* of Kirby (1890) are considered to be misidentifications of *E. annulipes*. This cosmopolitan species is widely spread across the archipelago with no variation in female and male genitalia, which are very different from those described for *E.*

*antoni* and *E. janeirensis*. This is the first record of this species being found under cattle dung and tree bark, denoting an incredible capability to adapt to new micro-habitats.

## Labiduridae

*Labidura riparia* (Pallas, 1773).

*Labidura riparia*: Kirby (1890); Alvarenga (1962).

## Pygidicranidae

*Pygidicrana notigera* (Stål, 1860)

*Pygidicrana notigera*: Kirby (1890); Alvarenga (1962).

Material examined. 1♀ nymph, Sancho trail, under tree bark.

Remarks. This is the first record of this species being collected under tree bark.

**DIPLURA** [Responsible: J.A. Rafael and S.P. de Lima]

The only species of Diplura recorded from the archipelago is probably a misidentification, since the species was described from Mexico. Except for the original record, no other specimens of this order were collected in Fernando de Noronha.

## Japygidae

*Mixojapyx saussurei* (Humbert, 1868), misidentification?

*Japyx saussurii*: Kirby (1890); Alvarenga (1962).

Remarks. "A single specimen of what I believe to be a young example of this little animal was obtained under a stone in the Capim-Açu trail {Sapate} woods" (Ridley, 1890). It is doubtful that the specimen was correctly identified. According to Reddel (1985) this genus is widespread in North America and *M. riggii* Silvestri, 1948 is the only species reported from South America. Adult specimens from the Fernando de Noronha archipelago need to be collected and studied in order to confirm or correct this species identity.

**DIPTERA** [Responsible: A. Camargo, C. Dalmorra, C.A. Mello-Patiu, C.J.B. de Carvalho, D.W.A. Marques, F. Limeira-de-Oliveira, F.S.P. de Godoi, F.A.C. Pessoa, G.F.G. Miranda, H.F. Flores; J.A. Rafael, L.R.P. Gomes, M.S. Couri, M.S. Gottschalk, M.M.M. Soares, M.S. Rafael, R.S. Gomes Hutchings, R.A. Rocha, R.C. Corrêa, R.W. Hutchings, S.D. dos Santos; S.P. de Lima and V.C. Silva]

Presently this is the richest order in the Fernando de Noronha archipelago with 40 families and 134 species recorded. The 108 new records presented here indicate that the group is still under-collected. Most of the records are of synanthropic species and no endemic species were identified so far.

## Agromyzidae

*Agromyza* sp. 1, **new record**

Material examined. 3♂, 4♀.

*Agromyza* sp. 2, **new record**

Material examined. 3♂.

## Asilidae

*Ommatius orenoquensis* Bigot, 1876, **new record**

Material examined. 3♂, 1♀.

*Schildia gracillima* (Walker, 1855), **new record**

Material examined. 1♂.

Asteiidae, **new record**

Material examined. 2 specimens.

Bombyliidae, **new record**

Material examined. 1 specimen.

## Calliphoridae

*Chrysomya megacephala* (Fabricius, 1794)*Chrysomya megacephala*: Carmo and Vasconcelos (2016).

Material examined. 2♂, 4♀.

*Cochliomyia macellaria* (Fabricius, 1775)*Cochliomyia macellaria*: Couri et al. (2008); Carmo and Vasconcelos (2016).

Material examined. 11♂, 5♀.

*Lucilia eximia* (Wiedemann, 1819)*Lucilia eximia*: Couri et al. (2008); Carmo and Vasconcelos (2016).

Material examined. 2♀.

## Canacidae

*Tethina xanthopoda* (Williston, 1896), **new record**

Material examined. 12♂, 15♀.

Cecidomyiidae, **new record**

Material examined. +100 specimens.

## Ceratopogonidae

*Atrichopogon* spp., **new record**

Material examined. 115♂, 1009♀ represent at least two morpho species.

*Culicoides guyanensis* Floch & Abonnenc, 1942, **new record**

Material examined. 2♂, 29♀.

*Culicoides paraensis* (Goeldi, 1905), **new record**

Material examined. 2♀.

*Culicoides venezuelensis* Ortiz & Mirsa, 1950, **new record**

Material examined. 10♂, 60♀.

*Culicoides* spp., **new record**Material examined. 14♀ represent two morpho species of the group *C. debilipalpis*.*Dasyhelea* spp., **new record**

Material examined. More than 150 specimens represent three morpho species.

*Forcipomyia* spp., **new record**

Material examined. More than 550 specimens represent six morpho species.

*Stilobezzia* sp., **new record**

Material examined. 3♂ 4♀.

Chironomidae, **new record**

Material examined. +100 specimens.

## Chloropidae

*Apallates* sp., **new record**

Material examined. 3♂, 6♀.

*Eugaurax* sp., **new record**

Material examined. 1♀.

*Hippelates* sp., **new record**

Material examined. 6♂, 15♀.

*Liohippelates* sp., **new record**

Material examined. 30♂, 32♀.

*Monochaetoscinella* sp., **new record**

Material examined. 12♂, 15♀.

*Pseudeurina* sp., **new record**

Material examined. 19♂, 10♀.

## Clusiidae

*Sobarocephala* sp., **new record**

Material examined. 10♂, 14♀.

## Culicidae

*Culex (C.) quinquefasciatus* Say, 1823*Culex pipiens fatigans* Wiedemann, 1828: Alvarenga (1962); Couri et al. (2008).

Material examined. 1♂.

*Aedes (Ochlerotatus) taeniorhynchus* (Wiedemann, 1821)*Aedes (Ochlerotatus) taeniorhynchus*: Alvarenga (1962).

Material examined. 30♂, 282♀.

*Aedes (Stegomyia) aegypti* (Linnaeus, 1762)*Aedes (Stegomyia) aegypti*: Cordeiro et al. (2008); Regis et al. (2014).

Material examined. 17 specimens.

*Mansonia (Mansonia) fonsecai* (Pinto, 1932), **new record**

Material examined. 1♂.

*Mansonia (Mansonia) titillans* (Walker, 1848), **new record**

Material examined. 2♂.

## Dolichopodidae

*Achrdocera excavata* (Van Duzee, 1924), **new record**

Material examined. 12♂.

*Amblypsilopus* sp., **new record**

Material examined. 2♂, 3♀.

*Asyndetus* sp., **new record**

Material examined. 3♂, 1♀.

*Chrysotus brevicornis* Van Duzee, 1933, **new record**

Material examined. 31♂.

*Chrysotus crosbyi* Van Duzee, 1924, **new record**

Material examined. 7♂.

- Chrysotus spectabilis* (Loew, 1861), **new record**  
Material examined. 12♂.
- Chrysotus* sp., **new record**  
Material examined. 19♂.  
Remarks. One morpho species of the *C. excisus* group.
- Condylostylus longicornis* (Fabricius, 1775)  
*Psilopus metallifer* Walker, 1849: Kirby (1890); Alvarenga (1962).  
Material examined. 5♂.
- Condylostylus ornaticauda* Van Duzee, 1931, **new record**  
Material examined. 26♂, 12♀.
- Condylostylus* sp., **new record**  
Material examined. 2♂, 2♀.
- Dactylomyia* sp., **new record**  
Material examined. 5♂, 21♀.
- Lyroneurus suavis* Loew, 1857, **new record**  
Material examined. 5♂, 6♀.
- Medetera* spp., **new record**  
Material examined. 5♂, 6♀ represent two morpho species.
- Paraclius quadrinotatus* Aldrich, 1902, **new record**  
Material examined. 1♂.
- Paraclius* sp., **new record**  
Material examined. 34♂, 20♀.  
Remarks. One morpho species of the *P. ovatus* group.
- Drosophilidae**
- Chymomyza* sp., **new record**  
Material examined. 1♂, 1♀.
- Drosophila ananassae* Doleschall, 1858  
*Drosophila ananassae*: Oliveira et al., 2010.  
Material examined. 86♂, 57♀.
- Drosophila bromeliae* Sturtevant, 1921, **new record**  
Material examined. 1♂, 1♀.
- Drosophila malerkotliana* Parschad & Paika, 1964  
*Drosophila malerkotliana*: Oliveira et al. (2009).  
Material examined. 3727♂, 5326♀.
- Drosophila melanogaster* Meigen, 1830  
*Drosophila melanogaster*: Oliveira et al., 2010.
- Drosophila nasuta* Lamb, 1914, **new record**  
Material examined. 424♂, 485♀.
- Drosophila simulans* Sturtevant, 1919  
*Drosophila simulans*: Oliveira et al., 2009; Rohde et al., 2010.  
Material examined. 19♂, 30♀.
- Drosophila zottii* Vilela, 1983  
*Drosophila zottii*: Oliveira et al., 2010.
- Leucophenga* sp., **new record**  
Material examined. 252 specimens.  
Remarks. Two species identified only to genus level.
- Rhinoleucophenga brasiliensis* (Lima, 1950), **new record**  
Material examined. 297♂, 373♀.
- Rhinoleucophenga lopesi* Malogolowkin, 1946, **new record**  
Material examined. 9♂, 4♀.
- Scaptodrosophila latifasciaeformis* (Duda, 1940)  
*Scaptodrosophila latifasciaeformis*: Oliveira et al., 2010.  
Material examined. 144♂, 42♀.
- Zaprionus indianus* Gupta, 1970  
*Zaprionus indianus*: Oliveira et al. (2009).  
Material examined. 115♂, 106♀.
- Ephydriidae**
- Athyroglossa glaphyropus* Loew, 1878, **new record**  
Material examined. 1♂, 1♀.
- Scatella obscura* Williston, 1896, **new record**  
Material examined. 3♂, 9♀.
- Paralimna decipiens* Loew, 1878, **new record**  
Material examined. 7♂, 6♀.
- Fanniidae**
- Fannia pusio* (Wiedemann, 1830)  
*Fannia pusio*: Couri et al. (2008).  
Material examined. 14♂, 549♀.
- Hippoboscidae**
- Microlynchia* cf. *pusilla* (Speiser, 1902), **new record**  
Material examined. 2 specimens.  
Remarks. Collected in Malaise traps.
- Stilbometopa* cf. *impressa* (Bigot, 1885), **new record**  
Material examined. 2 specimens.  
Remarks. Collected in Malaise traps.
- Stilbometopa* cf. *podopostyla* Speiser, 1904, **new record**  
Material examined. 2♀.  
Remarks. Collected in Malaise traps.
- Hybotidae**
- Elaphropeza* sp., **new record**  
Material examined. 4♂, 5♀.
- Keroplastidae, new record**  
Material examined. +10 specimens.
- Lauxaniidae**
- Camptoprosopella equatorialis* Shewell, 1939, **new record**  
Material examined. 1♂.
- Pachyopella* cf. *flavida* (Wiedemann, 1824), **new record**  
Material examined. +100♂, +200♀.
- Poecilominettia* sp. 1, **new record**  
Material examined. +100♂, +200♀.
- Poecilominettia* sp. 2, **new record**  
Material examined. +100♂, +200♀.  
Remarks. Specimens with femora brown; apical pair of scutellar setae darker around alveoli; abdomen yellow with lateral margin of tergites darker, sternite 8 black.
- Lonchaeidae, new record**  
Material examined. +50 specimens.

## Milichiidae

*Desmometopa* sp. 1, **new record**

Material examined. 7♂, 1♀.

Remarks. Specimens predominantly black, except basal half of palpus yellow; trochanter, first and second tarsomeres yellow; coxae, femora, tibiae and distal tarsomeres brown; tergites 2-3 laterally brown. Gena nearly 1/7 height of the eye. Proboscis nearly 2X the width of the head. Male cerci large and prominent.

*Desmometopa* sp. 2, **new record**

Material examined. 1♀.

Remarks. Specimens predominantly dark brown, except frons with black M-shaped vitta, palpus brown, halter whitish, trochanter, first and second tarsomeres yellow; coxae, femora, tibiae and distal tarsomeres brown. Gena nearly 1/9 the height of the eye. Proboscis nearly 1.3X the width of the head.

*Desmometopa* sp. 3, **new record**

Material examined. 3♀.

Remarks. Specimens predominantly black, except palpus brown; halter whitish; fore coxa yellow; first, second and third tarsomeres yellow; coxae, femora, tibiae and distal tarsomeres dark brown; tergites brown. Gena nearly 1/9 the height of the eye. Proboscis nearly 1.5x the width of the head.

*Milichiella* sp., **new record**

Material examined. 2♀.

Remarks. 4 fronto-orbital setae. Notch and emargination in posterior margin of eye large. Oral vibrissa well developed, plus 3-4 subvibrissal setae. Proboscis yellow, short. Basal half of palpus yellow. Antenna black. Mesonotum shiny black. 2 dorsocentral setae. Halter light brown. Sternites 6 and 7 rectangular.

*Pholeomyia* sp. 1, **new record**

Material examined. 1♂.

Remarks. 4 fronto-orbital setae. Vibrissal angle not prominent. Oral vibrissa well developed, plus 2-3 subvibrissal setae. Proboscis short. Palpus brown. Antenna dark brown. 2 dorsocentral setae, close together on posterior slope of mesonotum. Halter brown. Tergites dark brown.

*Pholeomyia* sp. 2, **new record**

Material examined. 16♀.

Remarks. 4 fronto-orbital setae. Vibrissal angle prominent. Oral vibrissa well developed, plus 2 subvibrissal setae. Proboscis short. Palpus brown. Antenna dark brown. 2 dorsocentral setae, close together on posterior slope of mesonotum. Halter light brown. Tergites dark brown.

## Muscidae

*Atherigona orientalis* Schiner, 1868

*Atherigona orientalis*: Couri et al. (2008).

Material examined. 148♂, 776♀.

*Cyrtoneuropsis rescita* (Walker, 1861)

*Cyrtoneuropsis rescita*: Couri et al. (2008).

Material examined. 42♂, 99♀.

*Gymnodia debilis* (Williston, 1896)

*Brontaea debilis*: Couri et al. (2008).

Material examined. 1♀.

*Gymnodia quadristigma* (Thomson, 1869)

*Brontaea quadristigma*: Couri et al. (2008).

Material examined. 12♂, 63♀.

*Hydrotaea aenescens* (Wiedemann, 1830), **new record**

Material examined. 3♂, 4♀.

*Musca domestica* Linnaeus, 1758

*Musca domestica*: Couri et al. (2008).

Material examined. 6♂, 1♀.

*Neodexiopsis cera* Snyder, 1958, **new record**

Material examined. 421♂, 1273♀.

*Stomoxys calcitrans* (Linnaeus, 1758), **new record**

Material examined. 2♀.

*Synthesiomyia nudiseta* (Wulp, 1883)

*Synthesiomyia nudiseta*: Couri et al. (2008).

Material examined. 2♂, 11♀.

Mycetophilidae, **new record**

Material examined. +20 specimens.

## Phoridae

*Chonocephalus* sp., **new record**

Material examined. 5 specimens.

*Conicera* sp., **new record**

Material examined. +10 specimens.

*Dohrniphora* sp., **new record**

Material examined. 15 specimens.

*Megaselia* sp., **new record**

Material examined. +20 specimens.

*Metopina* sp., **new record**

Material examined. 4 specimens.

## Pipunculidae

*Eudorylas* sp., **new record**

Material examined. 3♀.

Psychodidae, **new record**

Material examined. +20 specimens.

## Ropalomeridae

*Willistoniella* sp., **new record**

Material examined. 1♂.

## Sarcophagidae

*Helicobia morionella* (Aldrich, 1930), **new record**

Material examined. 15♂, 11♀.

*Oxysarcodexia thornax* (Walker, 1849).

*Oxysarcodexia thornax*: Couri et al. (2008); Carmo and Vasconcelos (2016).

Material examined. 64♂, 179♀.

*Peckia (P.) chrysostoma* (Wiedemann, 1830)

*Peckia (P.) chrysostoma*: Couri et al. (2008); Carmo and Vasconcelos (2016).

Material examined. 67♂, 122♀.

*Sarcophaga calida* Wiedemann, 1830

*Sarcophaga calida*: Kirby, 1890.

*Nephochaetopteryx calida*: Alvarenga (1962); Couri et al. (2008).

Remarks. Presently *incertae sedis* according to Carvalho-Filho et al. (2013). This species was not recorded by Couri et al. (2008) and, so far, there are no continental records.

*Tricharaea (Sarcophagula) occidua* (Fabricius, 1794)

*Tricharaea occidua*: Couri et al. (2008); Carmo and Vasconcelos (2016).

Material examined. 192♂, 466♀.

*Tricharaea (Sarothromyia) femoralis* (Schiner, 1868), **new record**

Material examined. 1♀.

Scatopsidae, **new record**

Material examined. +50 specimens.

Scenopinidae

*Scenopinus* sp. 1, **new record**

Material examined. 1♂, 3♀.

Remarks. Male middle tergites with wide membranous band on posterior margins.

*Scenopinus* sp. 2, **new record**

Material examined. 1♂, 2♀.

Remarks. Male middle tergites with narrow membranous band on posterior margins.

Sciaridae, **new record**

Material examined. +100 specimens.

Sepsidae

*Archiseopsis pusio* (Schiner, 1868), **new record**

*Palaeosepsis* sp.: Couri et al. (2008).

Material examined. 54♂, 40♀

*Microsepsis furcata* (Melander & Spuler, 1917), **new record**

Material examined. 507♂, 200♀.

Sphaeroceridae

*Chespiritos* sp., **new record**

Material examined. 2 specimens.

*Coproica* sp., **new record**

Material examined. +10 specimens.

*Druciatus* sp., **new record**

Material examined. 3 specimens.

*Parasphaerocera* sp., **new record**

Material examined. +10 specimens.

Stratiomyidae

*Euryneura elegans* Williston, 1888, **new record**

Material examined. 15♂, 20♀.

Remarks. Previously recorded at family level based on two unidentified specimens (Couri et al., 2008).

*Hermetia illucens* (Linnaeus, 1758), **new record**

Material examined. 1♂.

*Microchrysa bicolor* (Wiedemann, 1830), **new record**

Material examined. 9♂, 7♀.

*Sargus thoracicus* Macquart, 1834, **new record**

Material examined. 1♀.

Syrphidae

*Allograpta exotica* (Wiedemann, 1830), **new record**

Material examined. 2♂, 2♀.

*Copestylum chalybescens* (Wiedemann, 1830)

*Copestylum neotropicum* Thompson, 1976

*Temnocera vesiculosa* (Fabricius, 1805): Kirby (1890); Alvarenga (1962).

Material examined. 49♂, 23♀.

Remarks. Based on the number of specimens recently collected of *C. chalybescens*, it seems likely that the records in Kirby (1890) and Alvarenga (1962) as *Temnocera vesiculosa* (presently a synonym of *Copestylum neotropicum*) have been based on a misidentification. On this species, Kirby (1890) remarks "Flying over herbage in the sun, and also taken on the flowers of the cabbage in the garden".

*Dioprosopa clavata* (Fabricius, 1794), **new record**

Material examined. 9♂, 9♀.

*Eumerus obliquus* (Fabricius, 1805), **new record**

Material examined. 1♀.

Remarks. This genus is originally from the Old World and was introduced into the Americas. Larvae from this genus are known to attack a variety of plants of economic importance (e.g. carrots, narcissus, onions, potatoes) which might explain their introduction to the Americas (i.e., through the transportation of commercial plants attacked by their larvae). This species was identified using the key of Seguy (1961). *Eumerus obliquus* was previously recorded from Brazil (Marinoni and Morales, 2007; Morales and Marinoni, 2020), but this is the first record from northeastern Brazil.

*Ornidia obesa* (Fabricius, 1775), **new record**

Material examined. 2♀.

*Palpada vinetorum* (Fabricius, 1799), **new record**

Material examined. 1♀.

*Toxomerus dispar* (Fabricius, 1794), **new record**

Material examined. 1♂, 2♀.

*Victoriana* sp., **new record**.

Material examined. 1♂, 9♀.

Remarks. This species was previously part of the genus *Ocyptamus* Macquart, 1834, but is nowadays placed in the genus *Victoriana* (Miranda et al., 2020) and is part of the species group *V. attenuata*.

Tabanidae

*Tabanus occidentalis* Linnaeus, 1758, **new record**

Material examined. 34♂, 23♀.

Remarks. Previously recorded at family level based on one unidentified specimen (Couri et al., 2008).

*Tabanus pungens* Wiedemann, 1828, **new record**

Material examined. 40♀.

Tephritidae, **new record**

Material examined. 25 specimens.

Tipulidae, **new record**

Material examined. +50 specimens.

Ulidiidae

*Euxesta* aff. *stigmatias* Loew, 1868, **new record**.

Material examined. 2♂, 5♀.

*Euxesta* sp. 1, **new record**

Material examined. 20♂, 25♀.

*Euxesta* sp. 2, **new record**

Material examined. +20♂, 30♀.

*Notogramma* sp., **new record**

Material examined. +20♂, 20♀.

*Xanthacrona bipustulata* Wulp, 1899, **new record**

Material examined. 37♂, 19♀.

Remarks. Previously recorded at family level as Otitidae based on 18 unidentified specimens (Couri et al., 2008).

**EMBLIOPTERA** [Responsible: P.J.C. Pinto]

Represented by one family, one genus and one unidentified species.

Archembiidae

*Pararhagadochir* sp., **new record**

Material examined. 28 nymphs, 1♂ subadult, 4♀.

Remarks. This order was recorded as food for the common small lizard "mabuaya", *Tachylepis atlantica*, but no family was previously identified (Rocha et al., 2009).

**HEMIPTERA** [Responsible: D.M. Takiya, D.R.R. Fernandes, J.A. Rafael, M.P.G. da Silva]

Represented by the three suborders (Sternorrhyncha, Auchenorrhyncha and Heteroptera), 18 families and 29 species. Three species, described from local specimens, seem to be endemic and 12 taxa (families, genera, and species) are new records.

Suborder Sternorrhyncha

Aleyrodidae, **new record**

Material examined. +20 specimens.

Remarks. Specimens were collected with interception traps and apparently all are conspecific.

Aphididae, **new record**

Material examined. +10 specimens.

Pseudococcidae

*Maconellicoccus hirsutus* (Green, 1908), **new record**

Material examined. +300 specimens.

Remarks. This species is a very common pest in vegetation and, previous to this study, was only known in Fernando de Noronha from internet records (Marinho, 2015, 2018).

Psyllidae, **new record**

Material examined. +200 specimens.

Remarks. Specimens were collected with interception traps and apparently all are conspecific.

Suborder Auchenorrhyncha

Cicadellidae

*Agallia configurata* Oman, 1933

*Agallia configurata*: Alvarenga, 1962.

*Agalliana sticticollis* (Stål, 1859)

*Galliana sticticollis*: Alvarenga (1962).

*Balclutha incisa* (Matsumura, 1902)

*Neosteles incisus*: Alvarenga (1962).

*Ciminius platensis* (Berg, 1879), **new record**

Material examined. 4♂, 4♀.

*Curtara* (*Curtara*) *samera* DeLong & Freytag, 1972, **new record**

Material examined. 2♂.

*Scaphytopius* (*Convelinus*) *marginelineatus* (Stål, 1859)

*Scaphytopius marginelineatus*: Alvarenga (1962).

*Tapajosa fulvopunctata* (Signoret, 1854)

*Oncometopia marginula* (Osborn, 1926): Alvarenga (1962).

Material examined. 2♂.

*Unerus colonus* (Uhler, 1895)

*Graminella colonus*: Alvarenga (1962).

Cicadidae, **new record**

Material examined. 10 specimens.

Delphacidae

*Peregrinus maidis* (Ashmead, 1890)

*Peregrinus maidis*: Alvarenga (1962).

*Syndelphax dissipatus* (Muir, 1926)

*Delphacodes dissipata*: Alvarenga (1962).

Dictyopharidae

*Nersia florens* Stål, 1862

*Nersia florens*: Alvarenga (1962).

Material examined. 13 specimens.

Membracidae

*Nicomia* sp., **new record**

Material examined. 1♂.

Tropiduchidae, **new record**

Material examined. 6 specimens.

## Suborder Heteroptera

Cydniidae, **new record**

Material examined. +20 specimens.

Lygaeidae, **new record**

Material examined. +30 specimens.

## Miridae

*Creontiades pallidus* (Rambur, 1839)

*Creontiades pallidus*: Carvalho and Becker (1957); Alvarenga (1962).  
Material examined. 6 specimens fit this species description.

*Garganus insularis* Carvalho & Becker, 1957\*

*Garganus insularis*: Carvalho and Becker (1957); Alvarenga (1962).  
Material examined. 2 specimens fit this species description.  
Remarks. Species originally described from Fernando de Noronha, and recently recorded from Costa Rica (Chérot and Carpintero, 2017).

## Pentatomidae

*Thyanta (Argosoma) testacea* (Dallas, 1851)

*Pentatoma testacea*: Kirby (1890); Alvarenga (1962).  
Material examined. +20 specimens. They seem to belong to this species.

Remarks. According to Rider and Chapin (1991), *T. testacea* is close to *T. patruelis* (Stål, 1859). There seems to be a clear geographical separation between the two species, with *T. testacea* restricted to northern South America and the Lesser Antilles, and *T. patruelis* occurring from northeastern Brazil and southern Peru towards the south. As Alvarenga (1962), we follow the identification of Kirby (1890) for the specimens from Fernando de Noronha.

## Rhopalidae

*Jadera coturnix rufoculis* (Kirby, 1890)\*

*Lygaeus rufoculis*: Kirby (1890); Alvarenga (1962).  
Material examined. 7 specimens.  
Remarks. "This highly-coloured bug occurred in large numbers upon the ground in the Capim-Açu trail {Sapate} under bushes of *Jacquinia*, but was local, only found in a few spots" (Kirby, 1890).

## Rhyparochromidae

*Ozophora variegata* (Kirby, 1890)\*

*Heraeus variegatus*: Kirby (1890); Alvarenga (1962).  
Material examined. 40 specimens.  
Remarks. Transferred from *Heraeus* to *Ozophora* by Scudder (1967).

*Ligyrocoris balteatus* Stål, 1874

*Ligyrocoris balteatus*: Kirby (1890); Alvarenga (1962).  
Material examined. 10 specimens.

*Pseudopachybrachius vinctus* (Say, 1831)

*Ligyrocoris bipunctatus* Kirby, 1890: Kirby (1890); Alvarenga (1962).

Tingidae, **new record**

Material examined. +20 specimens.

## Veliidae

*Microvelia pulchella* Westwood, 1834

*Rhagovelia incerta* Kirby, 1890: Kirby (1890); Alvarenga (1962).  
Material examined. 1 adult, 5 nymphs.

Remarks. Recently collected specimens were found at Xaréu lake and are probably conspecific with previous records.

**HYMENOPTERA** [Responsible: A. Somavilla, D.R. Parizotto, D.R.R. Fernandes, I.O. Fernandes, P.R. Bartholomay and T. Mahlmann]

The third richest order in the Fernando de Noronha archipelago, with 34 families and 59 species recorded. Fourteen species were described from local specimens, and most of them seem to be endemic, and 21 taxa (families, genera and species) are new records.

Four species of Apidae were introduced intentionally in the main island: three Meliponini, *Melipona compressipes fasciculata*, *M. subnitida* and *Scaptotrigona postica* (Kerr and Cabeda, 1985) and one Apini, *Apis mellifera ligustica* (Malagodi et al., 1986).

## Agaonidae

*Idarnes dispar* (Kirby, 1890)\*

*Ganosoma dispar*: Kirby (1890); Alvarenga (1962).  
*Idarnes dispar*: De Santis and Dias, 1975.

*Pegoscapus obscurus* (Kirby, 1890)\*

*Blastophaga obscura*: Kirby (1890); Alvarenga (1962).  
*Blastophaga (Secundeisenia) obscura*: De Santis and Dias, 1975.

Aphelinidae, **new record**

Material examined. +10 specimens.

## Apidae

*Apis mellifera ligustica* (Spinola, 1806)

*Apis mellifera ligustica*: Malagodi et al. (1986).  
*Apis mellifera mellifera*: Ribeiro and Lima (2015) (error).  
Material examined. +20 workers.

Remarks. Species originally from the Italian Peninsula. It has been commercially transported throughout the world and now occurs worldwide (Costa et al., 2012).

*Centris* aff. *trigonoides* Lepeletier, 1841, **new record**

Material examined. 6 ♀.

*Melipona (Melikerria) fasciculata* Smith, 1854

*Melipona compressipes fasciculata*: Kerr and Cabeda (1985).  
Material examined. +10 workers.

*Melipona (Melipona) subnitida* Ducke, 1910

*Melipona subnitida*: Kerr and Cabeda (1985).  
Material examined. +10 workers.

*Scaptotrigona postica* (Latreille, 1807)

*Scaptotrigona postica*: Kerr and Cabeda (1985).

Azotidae, **new record**

- Material examined. 3 specimens.
- Bethylidae, new record**  
Material examined. 5 specimens.
- Braconidae**
- Agathis alvarengai* De Santis, 1975\*  
*Agathis alvarengai*: De Santis (1975).
- Apanteles noronhai* De Santis, 1975\*  
*Apanteles noronhai*: De Santis (1975).
- Phanerotoma vidua* De Santis, 1975\*  
*Phanerotoma vidua*: De Santis (1975).
- Ceraphronidae, new record**  
Material examined. 8 specimens.
- Chalcididae, new record**  
Material examined. 21 specimens.
- Colletidae**
- Hylaeus* sp., **new record**  
Material examined. 6 specimens.
- Crabronidae**
- Enoplolindenius pugnans* (Smith, 1873), **new record**  
Material examined. 2♂, 1♀.
- Stictia signata* (Linnaeus, 1758)  
*Monedula signata*: Kirby (1890); Alvarenga (1962); Buys (2011).  
Material examined. 6 specimens.  
Remarks. "Very common on the sand-hills, where it makes its burrow" (Kirby, 1890)
- Tachysphex inconspicuus* (Kirby, 1890)\*  
*Tachytes inconspicuus*: Kirby (1890); Alvarenga (1962).
- Diapriidae, new record**  
Material examined. 11 specimens.
- Dryinidae, new record**  
Material examined. +50 specimens.
- Encyrtidae, new record**  
Material examined. +50 specimens.
- Eucharitidae, new record**  
Material examined. 8 specimens.
- Eulophidae**
- Euderus alvarengai* De Santis, 1975\*  
*Euderus alvarengai*: De Santis and Diaz (1975).
- Eupelmidae, new record**  
Material examined. 9 specimens.
- Eurytomidae, new record**  
Material examined. 11 specimens.
- Evaniidae**
- Evania appendigaster* (Linnaeus, 1758)  
*Evania laevigata* Latreille, 1807: Kirby (1890); Alvarenga (1962).  
*Evania appendigaster*: De Santis and Diaz (1975).  
Remarks. "A cosmopolitan species. The larvae of this genus are parasitic in the egg-capsules of Blattidae" (Kirby, 1890).
- Figitidae**
- Odonteucoila xanthopa* Kieffer, 1910  
*Odonteucoila xanthopa*: De Santis and Diaz (1975).  
*Zaeucoila robusta* (Ashmead, 1894)\*  
*Zaeucoila enneatoma* Diaz, 1975: De Santis and Diaz (1975); Buffington et al. (2017, synonymy).  
Remarks. Fernando de Noronha is the type-locality of *Zaeucoila enneatoma* Diaz, 1975 (De Santis and Diaz, 1975; Buffington et al., 2017).
- Formicidae**
- Camponotus* (*Myrmosphincta*) *sexguttatus* (Fabricius, 1793)  
*Camponotus bimaculatus* (Smith, 1858): Kirby (1890); Alvarenga (1962).  
Remarks. "Specimens collected under the wood of a Burra tree in the Capim-Açu trail {Sapate}" (Kirby, 1890).
- Camponotus* (*Tanaemyrmex*) *conspicuus* (Smith, 1858)  
*Camponotus* (*Myrmothrix*) *conspicuus*: Alvarenga (1962).
- Crematogaster dorsidens* Santschi, 1925  
*Crematogaster dorsidens*: Guénard et al. (2017).
- Monomorium salomonis* (Linnaeus, 1758)  
*Monomorium* (*Xenomyrmex*) *salomonis*: Kempf (1960, 1972); Alvarenga (1962).  
Remarks. The Fernando de Noronha locality is an interesting extension of the distribution of this species, which perhaps arrived in recent times. However, there are still no records of this species in the continental South America (Alvarenga, 1962).
- Odontomachus bauri* Emery, 1892, **new record**  
Material examined. 13♀ and 1 queen.
- Paratrechina longicornis* (Latreille, 1802)  
*Paratrechina longicornis*: Alvarenga (1962); Kempf (1972); Micheletti et al. (2020).
- Pheidole megacephala* (Fabricius, 1793)  
*Pheidole omnivora* Kirby, 1890: Alvarenga (1962).  
*Pheidole megacephala*: Alvarenga (1962); Kempf (1962, 1972); Brown Junior (1981); Micheletti et al. (2020).  
Remarks. "This species was exceedingly abundant in the houses, making nests in the earth between the bricks of the floor. It is very destructive, devouring all kinds of food, and even ate up the insects captured in the chip-boxes" (Kirby, 1890).  
Specimens in the NHMUK bearing the label "88/10", found with label "*Pheidole omnivora* Kirby" from Fernando [de] Noronha Island in the South Atlantic, are also *P. megacephala* and Brown was unable

to locate any *Pheidole omnivora* described by Kirby in the literature (Brown Junior, 1981).

*Pseudomyrmex cubaensis* (Forel, 1901)

*Pseudomyrmex cubaensis*: Ward (1989).

*Pseudomyrmex urbanus* (Smith, 1877)

*Pseudomyrmex urbanus*: Ward (1989).

*Solenopsis geminata* (Fabricius, 1804)

*Solenopsis geminata*: Alvarenga (1962).

*Tapinoma melanocephalum* (Fabricius, 1793)

*Tapinoma melanocephala*: Alvarenga (1962); Kempf (1972); Micheletti et al. (2020).

Material examined. 12♀.

*Tetramorium bicarinatum* (Nylander, 1846).

*Tetramorium bicarinatum*: Micheletti et al. (2020).

*Tetramorium guineense* (Bernard, 1953)

*Tetramorium guineense*: Guénard et al. (2017).

*Tetramorium simillimum* (Smith, 1851).

*Tetramorium simillimum*: Kempf (1975); Micheletti et al. (2020).

*Wasmannia auropunctata* (Roger, 1863)

*Wasmannia auropunctata*: Micheletti et al. (2020).

Material examined. 430♀.

Remarks. "In 2017 the species was identified as electric or little fire ant (*Wasmannia auropunctata*). Locals describe it as a recent introduction, possibly introduced in nursery stock from continental Brazil where it is native" (Micheletti et al., 2020).

#### Halictidae

*Augochlora (Augochlora) laevipyga* (Kirby, 1890)\*

*Augochlora laevipyga*: Alvarenga (1962).

*Augochlora (Augochlora) laevipyga*: Moure (2012).

*Halictus alternipes* Kirby, 1890: Alvarenga (1962); Moure (2012).

*Lasioglossum (Dialictus) atripyga* (Kirby, 1890)\*

*Dialictus (Chloraticus) atripyga*: Alvarenga (1962).

Material examined. 25♂, 50♀.

Remarks. "These Halicti were taken in the flowers of the melons and the *Oxalis*, and play an important part in the fertilization of the flowers in the island" (Kirby, 1890).

#### Ichneumonidae

*Venturia saxatilis* De Santis, 1975\*

*Venturia saxatilis*: De Santis (1975).

#### Megachilidae

*Megachile* sp., **new record**

Material examined. 3 specimens.

#### Mymaridae

*Cosmocomoidea nigriflagellum* (Girault, 1914)\*

*Gonatocerus h-luteum* (Ogloblin, 1938): De Santis and Diaz (1975); Triapitsyn et al. (2010, synonymy).

Remarks. Fernando de Noronha is the type-locality of *G. h-luteum* (Ogloblin) (Noyes, 2019; Zilch and Kohler, 2020).

#### Perilampidae

*Perilampus injactans* Brues, 1915

*Perilampus injactans*: De Santis and Diaz (1975).

#### Platygastridae, **new record**

Material examined. +50 specimens.

#### Pompilidae

*Pompilus nesophilus* Kirby, 1890\*

*Pompilus nesophilus*: Kirby (1890); Alvarenga (1962).

Remarks. "Taken flying over paths in the centre of the island, not common and difficult to catch" (Kirby, 1890).

#### Pteromalidae

*Neocatolaccus gahani* (Costa Lima, 1938)

*Eurydinoteloides gahani*: De Santis and Diaz (1975).

#### Scelionidae, **new record**

Material examined. +50 specimens.

#### Signiphoridae, **new record**

Material examined. 1 specimen.

#### Sphecidae

*Sceliphron asiaticum* (Linnaeus, 1758), **new record**

Material examined. 1♀.

#### Torymidae

*Podagrion sensitivus* De Santis, 1975\*

*Podagrion sensitivus*: De Santis and Diaz (1975).

#### Trichogrammatidae, **new record**

Material examined. 10 specimens.

#### Vespididae

*Polistes ridleyi* Kirby, 1890\*

*Polistes ridleyi*: Kirby (1890); Alvarenga (1962).

Material examined. 35♀, 01♂; plus 5♀: v.1954, Moacir Alvarenga (MZUSP). Holotype ♀, 8♀, 1♂ deposited in the NHMUK were studied.

Remarks. "The insect stings slightly, but only when much irritated; it plays a very important part in the fertilization of the flowers, especially the Cucurbitaceae" (Kirby, 1890). We studied the few specimens of both sexes collected by H. N. Ridley in 1887-1888, and some by M. J. Nicoll, during the Crawford Expedition of 1902, in the NHMUK, London.

**ISOPTERA**

Represented by two families and at least two genera and two species. Unidentified specimens were previously recorded as food for the small “mabuya” lizard, *Tachylepis atlantica* by Rocha et al. (2009). This is the first time that the families were identified.

**Calotermitidae, new record**

Material examined. 1 specimen.

**Nasutitermitidae, new record**

Material examined. +20 specimens.

**LEPIDOPTERA** [Responsible: M.M. Casagrande, O.H.H. Mielke, and E. Carneiro]

This order is represented by eight families and at least 25 species. One species, described from local specimens, seems to be endemic, and eight taxa (family, genera or species) are new records. Most of the species are nocturnal, which implies that more nocturnal and diurnal collections are required to properly sample the Lepidoptera fauna in this archipelago.

**Crambidae*****Asciodes* sp., new record**

Material examined. 1 specimen.

***Diaphania hyalinata* (Linnaeus, 1767)**

*Phakellura hyalinata*: Kirby (1890); Alvarenga (1962).

***Herpetogramma bipunctalis* (Fabricius, 1794)**

*Pachyzancla detritalis* (Guénee, 1854): Kirby (1890); Alvarenga (1962).

***Herpetogramma phaeopteralis* (Guénee, 1854)**

*Acharana phaeopteralis*: Kirby (1890); Alvarenga (1962).

***Hymenia perspectalis* (Hübner, 1796)**

*Hymenia perspectalis*: Kirby (1890); Alvarenga (1962).

Remarks. It is still necessary to study more material to confirm this species identity.

***Loxomorpha flavidissimalis* (Grote, 1877)**

*Opsibotys flavidissimalis*: Kirby (1890); Alvarenga (1962).

Remarks. *Loxomorpha flavidissimalis* was confused with *L. cambogialis* in the study of the Fernando de Noronha fauna (Lara-Villalón et al., 2016); these two species cannot be separated solely through external morphology. Specimens from Fernando de Noronha must be dissected and studied in order to ascertain this species identification.

***Palpita jairusalis* (Walker, 1859)**

*Margaronia jairusalis*: Kirby (1890); Alvarenga (1962).

***Samea ecclesialis* Guénee, 1854**

*Samea castellalis* Guénee, 1854: Kirby, 1890; Alvarenga, 1962.

***Terastia* sp., new record**

Material examined. 1 specimen.

**Erebidae*****Anticarsia gemmatalis* Hübner, 1818**

*Thermesia gemmatalis*: Kirby (1890); Alvarenga (1962).

***Eublemma recta* (Guénee, 1852)**

*Anthophila flammicincta* Walker, 1865: Kirby (1890); Alvarenga (1962).

***Melipotis perpendicularis* (Guénee, 1852)**

*Bolina bivittata* Walker, 1857: Kirby (1890); Alvarenga (1962).

Remarks. “The single specimen from Fernando de Noronha has a narrower band than any of the others; but it would require a series to show whether this character is constant in the locality, or a mere individual variation” (Kirby, 1890).

***Perasia* sp., new record**

Material examined. 1 specimen.

**Geometridae*****Glena* sp., new record**

Material examined. 1 specimen.

***Lobocleta fara* (Kirby, 1890)\***

*Acidalia fara*: Kirby (1890); Alvarenga (1962).

***Synchlora frondaria* (Guenée, [1858])**

*Nemoria denticularia* Walker, 1861: Kirby, 1890; Alvarenga, 1962.

**Lycaenidae*****Hemiargus hanno hanno* (Stoll, 1790)**

*Tarucus hanno*: Kirby (1890); Alvarenga (1962).

Material examined. +10 specimens

Remarks. “This little blue [butterfly] was very common on Rat and Main islands” (Kirby, 1890).

**Noctuidae*****Bagisara repanda* (Fabricius, 1793)**

*Anomis dispartita* Walker, 1857: Kirby (1890); Alvarenga (1962).

Remarks. Still requires confirmation.

***Condica* sp., new record**

Material examined. 1 specimen.

***Elaphria hypophaea* (Hampson, 1920), new record**

Material examined. 1 specimen.

***Helicoverpa armigera* (Hübner, 1805)**

*Heliothis armigera*: Kirby (1890); Alvarenga (1962).

Remarks. Official records of this species for the continent were presented in Czepak et al. (2013) and Specht et al. (2013).

**Pyralidae*****Etiella zinckenella* (Treitschke, 1832)**

*Mella zinckenella*: Kirby (1890); Alvarenga (1962).

***Pyralis manihotalis* Guénee, 1854**

*Pyralis manihotalis*: Kirby (1890); Alvarenga (1962).

**Sphingidae*****Agrius cingulata* (Fabricius, 1775), new record**

Material examined. 6 specimens.

Tineidae, **new record****MANTODEA** [Responsible: R.A. Heleodoro]

This order is represented by one family, one genus and one species, and is a new record for the archipelago.

## Thespididae

*Thesprotia infumata* (Audinet-Serville, 1839), **new record**

Material examined. 6♂, 1 nymph.

**NEUROPTERA** [Responsible: F.J. Sosa-Duque, R.J.P. Machado]

This order is represented by two families and three species, all new records for the archipelago.

## Chrysopidae

*Ceraeochrysa cornuta* (Navás, 1925), **new record**

Material examined. 1♀, 4♂.

*Ceraeochrysa dislepis* de Freitas & Penny, 2001, **new record**

Material examined. 3♀, 2♂.

## Coniopterygidae

*Coniopteryx (Scotoconiopteryx)* sp., **new record**

Material examined. +50 specimens.

**ODONATA** [Responsible: A.P. Pinto]

This order is represented by two families, five genera and five species.

## Coenagrionidae (Zygoptera)

*Ischnura capreolus* (Hagen, 1861)

*Ischnura (Ceratura) capreola*: Mesquita and Matteo (1991).

Material examined. 19♂, 25♀.

## Libellulidae (Anisoptera)

*Erythemis vesiculosa* (Fabricius, 1775)

*Leptemys vesiculosa*: Alvarenga (1962); Mesquita and Matteo (1991).

*Miathyria marcella* (Selys in Sagra, 1857)

*Miathyria marcella*: Mesquita and Matteo (1991).

Material examined. 4♂, 3♀.

*Pantala flavescens* (Fabricius, 1798)

*Pantala flavescens*: Kirby (1890); Mesquita and Matteo (1991).

Material examined. 1♂.

*Tramea* sp.

*Tramea basalis* (Burmeister, 1839): Kirby (1890); Alvarenga (1962).

Remarks. *Libellula basalis* Burmeister, 1839 is currently considered a synonym of *Tramea abdominalis* (Rambur, 1842). The identity of the species cited by Kirby (1890) as *Tramea basalis* (Burmeister, 1839) and transcribed by Alvarenga (1962) cannot be ascertained without examination of specimens from Ridley's expedition housed in the NHMUK, due to nomenclatural confusion and ambiguities about the identity of at least three current valid species, i.e., *T. abdominalis*,

*T. binotata* (Rambur, 1842) and *T. cophysa* Hagen, 1867 (Calvert, 1906a; Ris, 1913). They are all widespread species in the Western Hemisphere. Furthermore, a species described in the 19th century, *Libellula basalis* Burmeister, 1839, was a homonym of two other species, and later on *L. basalis* Burmeister was synonymized with *T. cophysa* (Calvert, 1906a; but see Calvert, 1906b). In his revision of Libellulidae, Ris (1913) synonymized *Libellula basalis* Burmeister with *T. abdominalis* and mentioned the material from Fernando de Noronha as a synonym for *T. cophysa* (due to a misidentification by W. Kirby) based on the study by Kirby (1897). Decades later, De Marmels and Rácenis (1982) included Kirby's (1897) *T. basalis* in the synonymy of *Tramea calverti* Muttkowski, 1910. Therefore, because neither Ris (1913) or De Marmels and Rácenis (1982) cited Kirby's (1890) original study, and it is unclear if they examined those specimens, this Fernando de Noronha record is left identified only to genus level until the original material can be studied.

**ORTHOPTERA** [Responsible: D.M.M. Mendes and M.A. Monné]

This order is represented by five families and 11 species. Four species, described from local specimens, seem to be endemic. One family is a new record.

## Acrididae

*Orphulella punctata* (De Geer, 1773)

*Orphulella punctata*: Carbonell (1996).

Material examined. 6♂, 1♀.

*Orthoscapheus noronhensis* Carbonell, 1996\*

Remarks. Specimens were found in the beach (Boldró) vegetation, in dense growths of the herbaceous plant, *Philoxerus portulacoides* (Amaranthaceae), but we have no evidence of it feeding on it (Carbonell, 1996).

*Stenopola dorsalis* (Thunberg, 1827)

*Stenopola dorsalis*: Kirby (1890); Alvarenga (1962); Carbonell (1996).

Remarks. "Specimens collected on Main and Rat islands, but especially common on the latter" (Kirby, 1890).

## Gryllidae

*Gryllus (Gryllus) assimilis* (Fabricius, 1775)

*Gryllus assimilis*: Kirby (1890); Alvarenga (1962).

Material examined. 1♂, 1♀.

Remarks. "It is very common in the central district on the paths, and makes a great noise, especially about 4 o'clock in the afternoon" (Kirby, 1890).

*Miogryllus verticalis* (Serville, 1838)

*Gryllus forticeps* Saussure, 1874: Kirby (1890); Alvarenga (1962).

Material examined. 3♀.

*Tafalisca pallidocincta* (Kirby, 1890)\*

*Oecanthus(?) pallidocincta*: Kirby (1890); Alvarenga (1962).

Material examined. 2♂, 1♀.

## Gryllotalpidae

*Neoscapteriscus abbreviatus* (Scudder, 1869)

*Scapteriscus abbreviatus*: Kirby (1890).

Remarks. "Larva found in burrows in the sand under a *Conferva (Enteromorpha)* [Algae], in salt water, on the shore of San Antonio Bay, a little above high water. Perfect insect in and about the yards of

the house" (Kirby, 1890). Adult specimens from Fernando de Noronha must be collected and examined in order to confirm/correct this species identity.

#### Tettigoniidae

*Anaulacomera harpago* Brunner von Wattenwyl, 1878

*Oecella furcifera* Kirby, 1890: Alvarenga (1962).

Material examined. 14♂, 6♀.

Remarks. "In all the specimens from Fernando de Noronha the green colour has more or less faded to yellowish brown. When fresh this insect is bright green. It was common on Main Island, and especially on Rat Island" (Kirby, 1890).

*Neoconocephalus vernalis* (Kirby, 1890)\*

*Conocephalus vernalis* var. *frater*: Kirby, 1890.

Material examined. 2♂.

Remarks. "This grasshopper species was very common everywhere in the Main and Rat Island. It makes a great noise at night. The brown form [= var. *frater*], which flew about with it, was not so common" (Kirby, 1890).

*Paraplemia viridinervis* (Kirby, 1890)\*

*Meroncidius viridinervis*: Kirby, 1890; Alvarenga (1962).

Material examined. 3♂, 2♀.

#### Trigonidiidae, **new record**

Material examined. 2 specimens.

#### PHASMATODEA [Responsible: R.A. Heleodoro]

This order is being recorded based on a photo taken by Denis de Oliveira Cavalheiro.

#### Diapheromeridae

*Phanocloidea* sp., **new record**

Material examined. Photo of one specimen.

#### PHTHIRAPTERA [Responsible: D.M.M. Mendes, M.C.M. Castro, A.M. da Silva-Neto].

This order is represented by three families and at least six species (all new records). The associations between lice and birds have not been studied in the archipelago, thus, many new records are expected when such a study is carried out.

#### Menopodidae

*Actornithophilus* sp., **new record**

Material examined. 3 adults, 3 nymphs.

Remarks. As ectoparasites of *Anous minutus atlanticus* (Mathews, 1912), the black noddy bird (*trinta-réis preto*), in a recently dead specimen.

*Bonomiella* sp., **new record**

Material examined. 3 adults, 5 nymphs.

Remarks. As ectoparasites of *Zenaida auriculata noronha* Sharpe, 1890, the eared dove (*avoante*), brought to the ICMBio laboratory by a local inhabitant, checked for ectoparasites and then released.

*Hohorstiella* sp., **new record**

Material examined. 2 adults, 5 nymphs.

Remarks. As ectoparasites of *Zenaida auriculata noronha* Sharpe, 1890, the eared dove (*avoante*), brought to ICMBio laboratory by a local inhabitant, checked for ectoparasites and then released.

#### Pediculidae

*Pediculus humanus capitis* De Geer, 1778, **new record**

Remarks. The cosmopolitan human head louse is strict, obligate human ectoparasite. It is frequent in children from local schools and it is being registered based on the reports of local inhabitants and primary school teachers.

#### Phlopterae

*Columbicola* sp., **new record**

Material examined. 2 adults, 3 nymphs.

Remarks. As ectoparasites of *Zenaida auriculata noronha* Sharpe, 1890, the eared dove (*avoante*), brought to ICMBio laboratory by a local inhabitant, checked for ectoparasites and then released in the field.

*Quadriceps* sp., **new record**

Remarks. Two species identified only to genus level as ectoparasites of *Anous minutus atlanticus* (Mathews, 1912), the black noddy bird (*trinta-réis preto*), in a recently dead specimen.

#### PSOCOPTERA [Responsible: A.M. da Silva-Neto]

This order is represented by two families and at least three species (all new records).

#### Lepidopsocidae

*Echmepteryx* sp., **new record**

Material examined. 5 specimens.

*Soa flaviterminata* Enderlein, 1906, **new record**

Material examined. 2♀.

Remarks. A synanthropic species.

#### Psocidae, **new record**

Material examined. +10 specimens.

#### SIPHONAPTERA [Responsible: J.A. Rafael]

This flea order is represented by one family, one genus and one species, and is being recorded for the first time in Fernando de Noronha based on a cosmopolitan species.

#### Pulicidae

*Ctenocephalides felis felis* (Bouché, 1835), **new record**

Material examined. 2♀ (INPA) on dog.

#### THYSANOPTERA [Responsible: E.F.B. Lima]

This order is represented by two families, seven genera and ten species, all recorded for the first time in the archipelago.

## Phlaeothripidae

*Haplothrips gowdeyi* (Franklin, 1908), **new record**

Material examined. 3♀.

*Nesothrips minor* (Bagnall, 1921), **new record**

Material examined. 1♂, 1♀.

Remarks. This is the first record of *Nesothrips minor* for the Neotropical region.

## Thripidae

*Bregmatothrips venustus* Hood, 1912, **new record**

Material examined. 2♀.

*Frankliniella brevicaulis* Hood, 1937, **new record**

Material examined. 1♂.

*Frankliniella insularis* (Franklin, 1908), **new record**

Material examined. 18♀, 4♂, 5 larvae.

*Neohydatothrips gracilipes* (Hood, 1924), **new record**

Material examined. 3♀.

Remarks. This is the first record of *Neohydatothrips gracilipes* in Brazil.

*Neohydatothrips inversus* (Hood, 1928), **new record**

Material examined. 7♀.

*Neohydatothrips portoricensis* (Morgan, 1925), **new record**

Material examined. 4♀.

*Scolothrips sexmaculatus* (Pergande, 1891), **new record**

Material examined. 1♀.

*Thrips orientalis* (Bagnall, 1915), **new record**

Material examined. 5♂, 3♀.

**ZYGENTOMA** [Responsible: S.P. de Lima]

This order is represented by two families.

## Lepismatidae

*Ctenolepisma longicaudatum* Escherich, 1905

*Lepisma corticola* Ridley, 1890; Alvarenga (1962).

*Lepisma leai* Ridley, 1890; Alvarenga (1962).

Remarks. According to Ridley (1890), the specimens described as *L. corticola* were collected "in rotten wood and under stones in the Capim-Açu trail {Sapate} and the base of the Peak. It also occurred on the mainland at Pernambuco in similar localities". Apparently, it was described based only on the specimens collected in the island. The single specimen described as *L. leai* was somewhat damaged during capture (Ridley, 1890). The two species described from specimens collected in the Fernando de Noronha archipelago were synonymized under the cosmopolitan domestic pest species *C. longicaudatum* by Paclt (1967).

## Nicoletiidae

Material examined. +20 specimens.

Remarks. Several small specimens were collected under stones in Fernando de Noronha and we believe, considering the habitat, that the specimens could correspond to the species previously identified as *Machilis* by Ridley (1890). This species was quite common under stones in the archipelago.

**Discussion**

Although insects comprise the richest animal taxon in the Fernando de Noronha archipelago (and the World), they have been sorely neglected. Current awareness campaigns are directed chiefly to protect vertebrates. The main island suffered the largest impact on its biodiversity structure, especially the terrestrial fauna, and today most of the known vertebrates (Serafini et al., 2010) and insect species (Couri et al., 2008) are exotic. The current 453 species of insects recorded from the Fernando de Noronha archipelago is far below the actual number living there. There are several new family records and species are still being identified for each family. In view of the environmental changes and anthropic pressure occurring in the archipelago, a species survey needs to be performed as soon as possible.

Based on the present list, 38 species (8.39%) were described from local specimens and most of them are, most likely, endemic species [near one forth of the 30% estimated by Carbonell, 1996]. The low number of endemic species can be a direct effect of human activities related to the small size of the island (Freitas et al., 2013). This shows that Fernando de Noronha has predominantly a continental fauna and can be summarized as mostly an immigrant fauna.

However, there are still many species to be identified and we believe the percentage of endemic species is higher, and closer to Carbonell's estimate. Presently, we are not able to say which native species disappeared and which exotic species were introduced in the archipelago. Only short-term insect sampling efforts have occurred, a 'snapshot' of local species richness that is likely underestimated. Brazilian islands in general were poorly investigated in terms of insect fauna, with only Trindade and Fernando de Noronha being surveyed in the 1950s and 1960s (see Alves et al., 2019). Becker (1998) compiled a list of 77 species/morphospecies, from fourteen hexapod orders, in Trindade (part of the Archipelago of Trindade and Martin Vaz, ca. 1,200 km from continental South America), mostly flying insects, including South American continental species and migrant species well-known as a successful colonizers (Alves et al., 2019). The insect diversity of other small land masses in the South Atlantic have been investigated in the past, where it was possible to identify the native and exotic species, including the islands of West Falkland (78 native and 5 exotic), East Falkland (132 and 22), South Georgia (21 and 8), Tristan da Cunha (38 and 37), Nightingale (34 and 4) and Inaccessible (38 and 12) (Chown et al., 1998). In the remote Gonçalo Álvares Island, part of the Tristan da Cunha archipelago (3,200 km from South America, Rio de Janeiro, and 2,900 km from Africa, Cape Town), 99 species of pterygote insects (24 endemics) were recorded and, curiously, the native fauna has a Neotropical origin, while the exotic one has a Holarctic origin (Jones et al., 2003). Comparatively, the updated insect richness in Fernando de Noronha archipelago (18.4 km<sup>2</sup>) is the highest among the South Atlantic oceanic islands, only surpassed by the Pacific Archipelago of Galápagos (7,882 km<sup>2</sup>) with more than 1,800 species (Peck et al., 1998). The small size of the Fernando de Noronha archipelago and the unfavorable environment, caused by the lack of permanent fresh water sources and the low vegetation diversity, may act as limiting factors for the establishment of a larger number of species (Freitas et al., 2013). The checklist presented here more than doubles the number of species, from the previous 190 records to the current 453 species records for the archipelago, presenting 263 new records at family, genus, or species level. The high number of new recorded species on the island highlights the lack of studies on the insect fauna of Fernando de Noronha. This checklist is an important step to better understand the entomofauna of the archipelago, as well as provide the basis for monitoring, sustainably using, and preserving this biodiversity. Few insect species from the Fernando de Noronha archipelago have been analyzed for their threatened status (ICMBIO, 2018) and, according to Paulay (1994) and Triantis et al. (2010), this should be a priority since

most of the documented extinctions since the 17th century are of species which were endemic to oceanic and/or remote islands.

This paper shows how much the entomofauna is unknown in Fernando de Noronha. For example, no information on the entomofauna is available on the web. We emphasize the real necessity to receive wide support to continue studying the local poorly known fauna, which is doubled herein and certainly will double again in the near future, thus giving support to applied biological and environmental sciences.

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### Conflicts of interest

The authors declare no conflicts of interest.

### Author contribution statement

JAR, FLO and DRRF designed the study. JAR, FLO, DMMM, MSR and PCG conducted the fieldwork and collected the samples. All authors conducted species' identifications, contributed to the writing, revised the manuscript, and approved the final version.

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